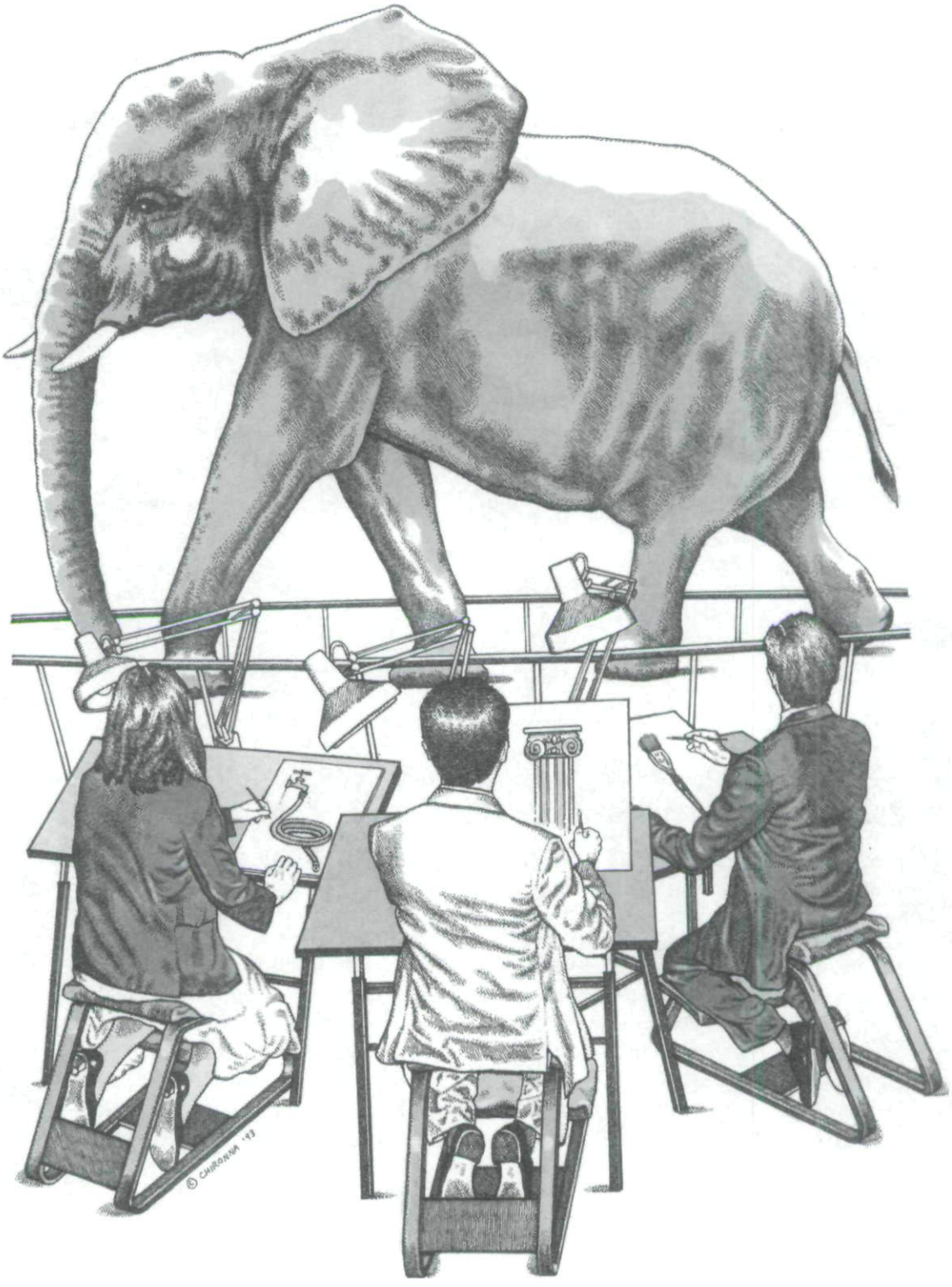

ILLUSTRATION BY RONALD CHIRONNA

Work at the MIT Center for Organizational Learning shows that developing new organizational capabilities requires deep reflection and testing.

Communities of Commitment: The Heart of Learning Organizations

FRED KOFMAN **PETER M. SENGE**

Why do we confront learning opportunities with fear rather than wonder? Why do we derive our self-esteem from knowing as opposed to learning? Why do we criticize before we even understand? Why do we create controlling bureaucracies when we attempt to form visionary enterprises? And why do we persist in fragmentation and piecemeal analysis as the world becomes more and more interconnected?

Such questions have been the heart of our work for many years. They led to the theories and methods presented in *The Fifth Discipline*. They are the driving force behind a new vision of organizations, capable of thriving in a world of interdependence and change—what we have come to call "learning organizations."

The Fifth Discipline generated significant interest, but a book is only one step toward bringing a new set of ideas and practices into the mainstream of management. Shortly after the book appeared, a group of us at MIT established the Center for Organizational Learning. The center now involves many organizations—including Ford, Harley Davidson, Electronic Data Systems, Federal Express, AT&T, Philips North America, Herman Miller, Armco Steel, and Intel—seeking major breakthroughs via partnership between researchers and practitioners.

Two years of intense practice and reflection have gone by. Some pilot projects are beginning to produce striking results. But we also have learned that it is crucial to address the opening questions. We have not found any definitive answers—nor were we looking for them—but, dwelling *in* the questions, we have found guiding principles for action.

Building learning organizations, we are discovering, requires basic shifts in how we think and interact. The changes go beyond individual corporate cultures, or even the culture of Western management; they penetrate to the bedrock assumptions and habits of our culture as a whole. We are also discovering that moving forward is an exercise in personal commitment and community building. As Dr. W. Edwards Deming says, nothing happens without "personal transformation." And the only safe space to allow for this transformation is a learning community.

So, we are coming to see our efforts as building "communities of commitment." Without commitment, the hard work required will never be done. People will just keep asking for "examples of learning organizations" rather than seeking what they can do

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Dr. Kofman came to systems thinking and organizational learning through an atypical path. This started with a *Licenciatura en Economia* from the University of Buenos Aires and continued with a Ph.D. in economics at the University of California, Berkeley. After concentrating in the design of social mechanisms for several years, he found the abstract approach of game and contract theory unsatisfactory. The search for a more practical framework took him to Berkeley's philosophy department, where he studied cognitive science, philosophy of language, and philosophy of mind.

He has led research projects in such areas as activity based costing, cycle time reduction, and supply chain management at General Motors, Chrysler, Boeing, Electronic Data Systems, Digital Equipment, and other companies.

He received the Sloan Teacher of the Year Award and Outstanding Professor-Graduate Course Award in 1992.

to build such organizations. They will keep believing that the purpose of learning is the survival of an organization rather than its generativeness. And the larger meaning of this work will elude them. Without communities of people genuinely committed, there is no real chance of going forward.

BUT COMMITMENT TO WHAT?

In this paper we will explore basic shifts in the guiding ideas of contemporary management. We argue that the main dysfunctions in our institutions—fragmentation, competition, and reactiveness—are actually byproducts of our success over thousands of years in conquering the physical world and in developing our scientific, industrial culture. So, it should come as no surprise that these dysfunctions are deeply rooted. Nor should it surprise us that our first response, "to overcome these problems" is part of the very mindset that generated them. Fragmentation, competition, and reactiveness are not problems to be solved—they are frozen patterns of thought to be dissolved.

The solvent we propose is a new way of thinking, feeling, and being: a culture of systems. Fragmentary thinking becomes systemic when we recover "the memory of the whole," the awareness that wholes actually precede parts. Competition becomes cooperation when we discover the "community nature of the self" and realize our role as challengers to help each other excel. Reactiveness becomes creating when we see the "generative power of language," how language brings forth distinctions from the undivided flow of life.

Together these changes represent a new "Galilean Shift." Galileo's heliocentric revolution moved us from looking at the earth as the center around which all else revolved to seeing our place in a broader pattern. In the new systems worldview, we move from the primacy of pieces to the primacy of the whole, from absolute truths to coherent interpretations, from self to community, from problem solving to creating.

Thus the nature of the commitment re-

quired to build learning organizations goes beyond people's typical "commitment to their organizations." It encompasses commitment to changes needed in the larger world and to seeing our organizations as vehicles for bringing about such changes.

This is a theoretical paper for practitioners. Contradictory as it may sound, there is nothing more practical than a good theory. The problem with "seven step methods to success," "keys to successful organizations," and similar "how-tos" is that, ultimately, they aren't very practical. Life is too complex and effective action too contextual. Real learning—the development of new capabilities—occurs over time, in a continuous cycle of theoretical action and practical conceptualization. The impatient quest for improvements all too often results in superficial changes that leave deeper problems untouched. Herein lies a core leadership paradox: Action is critical, but the action we need can spring only from a reflective territory that includes not only cognition but body, emotions, and spirit as well.

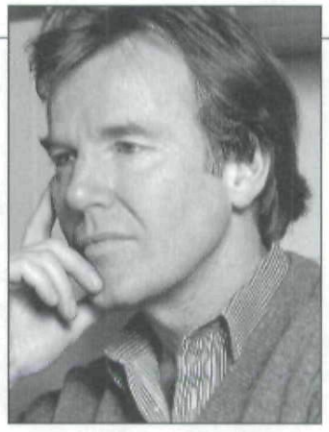
AREAS OF CULTURAL DYSFUNCTION

Organizations are microcosms of the larger society. Thus, at the heart of any serious effort to alter how organizations operate lies a concern with addressing the basic dysfunctions of our larger culture. We believe that there are three fundamental problems with our current paradigm: fragmentation, competition, and reactiveness.

Fragmentation

We continually fragment problems into pieces; yet the major challenges we face in our organizations and beyond are increasingly systemic.

The analytic way to address a complex situation is to break it into components, study each component in isolation, and then synthesize the components back into a whole. For a wide range of issues, there is little loss in assuming a mechanical structure and ignoring



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Dr. Senge has lectured extensively throughout the world, translating the abstract ideas of systems theory into tools for better understanding of economic and organizational change. His areas of special interest focus on decentralizing the role of leadership in an organization to enhance the capacity of all people to work productively toward common goals. Dr. Senge's work articulates a cornerstone position of human values in the workplace; namely, that vision, purpose, alignment, and systems thinking are essential if organizations are to realize their potentials. He has worked with leaders in business, education, healthcare, and government.

Dr. Senge received a B.S. in engineering from Stanford University, an M.S. in social systems modeling and a Ph.D. in management from MIT. He lives with his wife and two children in central Massachusetts.

systemic interactions. But for our most important problems, linear thinking is ineffective. Problems like runaway costs in our health care system or the decline of a corporation's vitality and innovativeness resist piecemeal, analytic approaches. We live in a world that is more like Humpty Dumpty than a jigsaw puzzle: All the king's horses and all the king's men can't put the system together again.

Our enchantment with fragmentation starts in early childhood. Since our first school days, we learn to break the world apart and disconnect ourselves from it. We memorize isolated facts, read static accounts of history, study abstract theories, and acquire ideas unrelated to our life experience and personal aspirations. Economics is separate from psychology, which is separate from biology, which has little connection with art. We eventually become convinced that knowledge is accumulated bits of information and that learning has little to do with our capacity for effective action, our sense of self, and how we exist in our world.

Today, fragmentation is the cornerstone of what it means to be a professional, so much so that we call ourselves "specialists." Accountants worry about the books, operations managers worry about production and inventory, marketing managers worry about customer base, and nobody worries about the business as a whole.

The word *health* has the same roots as "whole" (the old English *hal*, as in "hale and hearty"). Like people, organizations can get sick and die. They also need to be cured and healed. Yet, like physicians who focus only on their specialty, most consultants operate from the analytic tradition. They fragment complex situations into symptoms, treat the symptoms, and rarely inquire into the deeper causes of problems: how we learn and act together with a sense of shared aspiration. Consequently, management experts have very little ability to influence organizational health. All too often, their solutions contribute to a vicious pattern of "programs of the month" that fail and get replaced by the next program of the month.

In business, fragmentation results in "walls" or "chimneys" that separate different functions into independent and often warring fiefdoms. Product designers, for instance, disregard marketing surveys and "throw the product over the wall" to manufacturing, which finds the design impossible to produce. After making the "appropriate" changes (appropriate in their minds, since they never bother to check back with design) and producing the product, manufacturing "throws it over" to sales. Salesmen find themselves stuck with a low-quality product that does not meet customer requirements. The product gets sent back and departments start blaming each other. This process constantly repeats itself.

In public affairs, fragmentation is making our society increasingly ungovernable. We know the problem as the dominance of "special interest groups" and political lobbies.

Pointing fingers at each other is now a favorite national sport, but recently a new variant has appeared: pointing fingers at the walls. Academics, consultants, and managers unite in blaming the barbed-wire fences separating organizational functions for poor-quality, high-cost products. In response, many companies are trying to "reengineer" themselves away from stovepipe structures and toward horizontal business processes that cut across traditional functions and power hierarchies. While potentially significant, such changes often prove difficult to implement and those that are implemented only "reap the low-hanging fruit."

The reason is that the walls that exist in the physical world are reflections of our mental walls. The separation between the different functions is not just geographic, it lives in the way we think. Redesigns that "throw down the walls" between different functions may have little enduring effect unless they also change the fragmentary mental models that created the walls in the first place.

Competition

We have become overdependent on competition, to the extent that it is our only model for change and learning.

There is nothing intrinsically wrong with

competition. It can be great fun. It can promote invention and daring. The problem is that we have lost the balance between competition and cooperation precisely at a time when we most need to work together.

In the United States, we tend to see competition among individuals as the ultimate mechanism for change and improvement in human affairs. We continually think in terms of war and sports analogies when we interpret management challenges. We need to "beat the competition," "overcome resistance to our new program," "squeeze concessions from the labor union," or "take over this new market." We have a metaphorical tunnel vision. We rarely think about how the process of developing leaders may be more like parenting than competing, or about how developing a new culture may be more like gardening than a military campaign.

Fascinated with competition, we often find ourselves competing with the very people with whom we need to collaborate. Members of a management team compete with one another to show who is right, who knows more, or who is more articulate or persuasive. Divisions compete with one another when they ought to cooperate to share knowledge. Team project leaders compete to show who is the best manager, even if it means covering up problems for which, ultimately, everyone will pay. Recently, Dr. Deming told a story of a man who discovered he was continually competing with his wife. The man was dumbfounded at the discovery. "Who would want to be married to a loser?" he asked.

Our overemphasis on competition makes *looking* good more important than *being* good. The resulting fear of not looking good is one of the greatest enemies of learning. To learn, we need to acknowledge that there is something we don't know and to perform activities that we're not good at. But in most corporations, ignorance is a sign of weakness; temporary incompetence is a character flaw.

How impossible it would be for a child to learn to walk if she were afraid of falling and looking foolish. Yet, that is exactly what happened in schools that made us feel foolish when we made mistakes, and continues in organizations that rank our performance on the basis of management-by-objectives.

In response, many of us have developed defenses that have become second nature—like working out our problems in isolation, always displaying our best face in public, and never saying "I don't know." The price we pay is enormous. In fact, we become masters of what Chris Argyris calls "skilled incompetence," skillful at protecting ourselves from the threat and pain that come with learning, but also remaining incompetent and blinded to our incompetence.

Overemphasis on competition also reinforces our fixation on short-term measurable results. Consequently, we lack the discipline needed for steady practice and deeper learning, which often produces few manifest consequences for long periods of time.

The quick-fix mentality also makes us "system blind." Many of today's problems come from yesterday's solutions, and many of today's solutions will be tomorrow's problems. What is most perplexing is that many quick fixes, from cost cutting to marketing promotions, are implemented even though no one believes they address underlying problems. But we still feel compelled to implement these "solutions." We need to show results, and fast, regardless of the long-term, system-wide consequences.

Reactiveness

We have grown accustomed to changing only in reaction to outside forces, yet the wellspring of real learning is aspiration, imagination, and experimentation.

As children, we accomplish some of our most astounding learning without any external motivation. We learn to walk, we learn to talk, we learn to be human not because we have to but because we want to. Eventually, however, we become conditioned to reacting to others' directions, to depending on others' approval. There is nothing intrinsically wrong with external authority; it would be inefficient to learn about the dangers of fingers-in-plugs experientially. The problem is that our current institutions exercise authority in a way

that undermines our intrinsic drive to learn.

For most of us, reactiveness was reinforced on a daily basis in school. We solved problems identified by others, read what was assigned, wrote what was required. Gradually, reactiveness became a way of life. Fitting in, being accepted, became more important than being ourselves. We learned that the way to succeed was to focus on the teachers' questions as opposed to our own.

Reactiveness is a double bane of continuous learning. First, the attitude, "if it ain't broke don't fix it," prevents the steady improvement of products and processes. Moreover, when something is broken, the immediate reaction is to call an expert—a specialist—to fix it. Regardless of the specialist's success, his intervention will create a black-box mentality that prevents the organization from developing its own capacities for continual learning.

The pervasiveness of a reactive stance in management is evident in the fixation on problem solving. Many managers think that management *is* problem solving. But problem solving is fundamentally different from creating. The problem solver tries to make something go away. A creator tries to bring something new into being. The impetus for change in problem solving lies outside ourselves—in some undesired external condition we seek to eliminate. The impetus for change in the creating mode comes from within. Only the creating mode leads to a genuine sense of individual and collective power, because only in the creating mode do people orient themselves to their intrinsic desires. It is a testament to how reactive we are that many leaders see the absence of vision as a "problem" to be solved in their company and set about writing and disseminating vision and mission statements as the solution.

It is a small step from the problem-solving orientation to a system of management that is dominated by fear, the ultimate external motivator. This is evident today in the simple fact that most leaders believe that people are willing to change only in times of crisis. This leads to the most pervasive leadership strategy in America—create a crisis, or at least a perception of crisis. Crises can produce episodes of change. But they produce little learning.

Moreover, management by fear and crisis becomes a self-fulfilling prophecy. Because it *does* produce short-term results, managers see their crisis orientation as vindicated, people in the organization grow accustomed to "waiting for the next crisis," managers' belief in the apathy of the troops is reinforced, and they become more predisposed to generate the next crisis.

ROOTS OF OUR CULTURAL CRISIS

These problems are deeply rooted. They are not just mistakes we keep repeating—they spring directly from our past successes. The triumph of reductionism and mechanical thinking has given rise to a set of conditions for which they are no longer suited.

Humankind has achieved unimaginable successes in controlling its physical and social environment. We have come a long way since the days in which our ancestors had to defend themselves from other animals, work continually to secure food, and survive in extreme weather conditions. We have learned to create safe dwellings, increase our food supply, harness powerful sources of energy, and provide a level of material well-being beyond that previously available only to monarchs. In doing so, we have continually adapted and changed our environment to our benefit, to the point that today we appear on the verge of modifying the very genetic code that programs our species' development.

But this progress has not been without consequence. The very same skills of separation, analysis, and control that gave us the power to shape our environment are producing ecological and social crises in our outer world, and psychological and spiritual crises in our inner world. Both these crises grow out of our success in separating ourselves from the larger fabric of life. When we begin to understand the origins of our problems, we begin to see that the "existential crisis" of early 20th century philosophy and the "environ-

mental crisis" of late 20th century ecology are inseparable—caused by the co-evolution of fragmentary world views, social structures, lifestyles, and technology.

There are two aspects to the story: one evolutionary and one cultural. The first concerns deep patterns of behavior established in the human organism over millions of years. The second concerns deep cultural beliefs that probably started with the agricultural revolution.

Throughout our history as a species, the primary threats to our survival came as sudden dramatic events: saber-tooth tigers, floods, earthquakes, attacks by rival tribes. Today, the primary threats to our survival are slow, gradual processes—environmental destruction, the global arms race (which continues unabated by the breakup of the Soviet Union), and decay of our nation's educational system and its family and community structure.

We are poorly prepared for a world of slowly developing threats. We have a nervous system focused on external dramatic events. A loud noise or a sharp change in our visual field brings us immediately to alert. Our adrenaline system heightens our awareness and strength. In extreme cases, our nervous system produces a state of shock that filters signals of physical pain, allowing continued reasoning and decision making. The irony is that all of these capabilities become potentially counterproductive in a world of slow, gradually emerging systemic crises. All our instincts are to wait until the gradual changes develop into crises—when it is often too late to take effective action.

Moreover, past threats were external; their causes were outside our control. Today's primary threats are all endogenous, the byproducts of our own actions. There is no enemy out there to blame. As Pogo says, "We have met the enemy and they is us." Nor will blaming ourselves individually help. The causes lie in collective behaviors and unintended side effects of actions that make individual sense. There is no blame, there is no guilt, just a need to think differently.

This conflict between the nature of our most important problems and our instinctive ways of thinking and acting is no less catastrophic in organizations. Most of the primary threats to survival and vitality in organizations develop slowly, and they are not caused externally. The problems of General Motors and IBM, for instance, did not arise overnight. Arrogance, insulation, and rigidification developed over decades of success. At IBM, even as the symptoms of decline became more and more apparent, the sustained profitability of the core mainframe products allowed managers and investors to ignore growing signals of trouble. Only when an overwhelming crisis (record losses) occurred was there sufficient alarm to take bold action.

Thus our evolutionary programming predisposes us to seeing external threats and to reactiveness. Layered onto it is a culture of fragmentation and competition, and together they hold us captive. But the capacity can be loosened if we begin to understand that our cultural history is but one historical path, a path that could have drifted toward a different present. The first step in exposing this illusory "naturalness" of our present way of thinking is to reflect on its genealogy. As David Bohm, a preeminent quantum physicist put it: "Starting with the agricultural revolution, and continuing through the industrial revolution, increasing fragmentation in the social order has produced a progressive fragmentation in our thought."

There is growing evidence that many pre-agricultural societies were not dominated by fragmentation and competition. The evidence is controversial because it contradicts the established orthodoxy to view ancient societies as having always been like us, but "less civilized."

Thomas Merton wrote of the magnificent Monte Alban culture that flourished in southwestern Mexico from about 500 BC to about 500 AD with "no evidence of militarism or war. . . . Self-realization in such a context implied not so much ego-consciousness of the isolated subject in the face of a multitude of objects as the awareness of a network of relationships in which one had a place to mesh. One's identity was the intersection of cords where one 'belonged.'"

Joseph Campbell spoke of the ancient Indo-European myth of the Goddess who "teaches compassion for all living beings. There also you come to appreciate the real sanctity of the earth itself, because it is the body of the Goddess." Recent advances in archeological research are suggesting that the myth of the Goddess may have predominated throughout central Europe in the late Paleolithic and early Neolithic cultures. These cultures may have been neither warlike nor male dominated, as long assumed. Riane Eisler claims that the period from approximately 5000 BC to 1500 BC was a "remarkably peaceful time," with little evidence of fortifications or implements of warfare. Men and women shared power, and there was an overarching "quality of mind" based on "recognition of their oneness with nature." Such "partnership" cultures were eventually transcended by "dominator" cultures, according to Eisler—the cultures of the "thunderbolt hurlers, like Zeus or Yahweh," according to Campbell. Many now believe that the last broad flowering of partnership cultures in Europe occurred in the Minoan civilization on Crete.

The classic Greek culture and the emerging Christian era mark crucial crossroads that lead directly to the contemporary Western scientific and religious world views.

In ancient Greece, the world was a "cosmos," not an inert environment ruled by the abstract laws of physics. The earth was the space where gods and mortals shared their passion, wisdom, and folly. The Greeks walked with the gods. But classical Greek thought also established the foundation for the "scientific" view—the view that later set man as an observer apart from the world. Two-thousand years later, building on Aristotle's classical category theory, Descartes propounded a rigorous split between subject and object, observer and observed, human and nature.

If classic Greece laid the foundation for justifying the split of man and nature, the Catholic Church institutionalized the split between man and God. According to Elaine Pagels, professor of religion at Princeton, the split lay at the very heart of the foundation of the church—in fact, it was *the* strategy used to differentiate the sect that eventually became the church from other early Christian sects that had very different interpretations of Jesus' teachings. "What we call Christianity (today) actually represents only a small selection of specific sources, chosen from among dozens," according to Pagels.

In particular, recently discovered "Gnostic gospels," banned as heresy by the early church, are based on belief in the human capacity for direct knowing or *gnosis*. "To know oneself," says Pagels, "at the deepest level, is simultaneously to know God; this is the secret of *gnosis*." "Abandon the search for God," wrote the Gnostic teacher Monoimus. "Look for him by taking yourself as the starting point. If you carefully investigate these matters, you will find him in *yourself*." By contrast, by the second century, the architects of the early church had established a very different view, the church as intermediary between man and God. According to Pagels, "God became accessible to humanity [only] through the church."

Thus were sown the seeds of the fragmentation evident today. Their fruit has grown steadily. "The belief that man was separate from nature," writes Krishnamurti, "evolved into the idea that nature was a resource for man's benefit. Nature became a "resource," a "standing in reserve." We became the masters of the world with a license to exploit it. We stopped living as part of nature and began living with disposable things that were just waiting to be used. "Because we do not love the earth and the things of the earth but merely utilize them," said Krishnamurti, "we have lost touch with life."

A GALILEAN SHIFT

The analytic model assigns a primary status to the parts and assumes that they exist independent from a whole. This view generates deep inconsistencies that lie behind many of our most pressing social and organizational problems. Its flaws are not surface but structural: David Bohm argues that the quest "to

put the pieces together" is fundamentally futile when operating from a belief in the primacy of parts, "like trying to assemble the fragments of a shattered mirror." Worse yet, the analytic model doesn't accept its contingent status. It adopts the face of necessity and claims universal validity. As Bohm says, "Thought creates the world and then says, 'I didn't do it.'"

Our work at the center began by putting separation and fragmentation into their historical context. This prepared us for the next step: exposing the limits of analysis and developing an alternative paradigm—one that can help to recover the memory of the whole.

As we move forward, we can use three fundamental theses to shift our understanding of ourselves and the world in which we live. Just as Galileo proposed that the earth was not the center of the universe, we are proposing here that parts, ego, and reality are not the center of a more meaningful way of life. Each reflects the fragmented world view we have come to accept. Each needs to be reexamined.

1. The Primacy of the Whole

The analytic perspective involves a three-part process: (1) break the system into its component parts, (2) study each part in isolation, and (3) assemble an understanding of the whole from an understanding of the parts. The implicit assumption is that systems are aggregates of parts that interact relatively weakly and in a linear fashion. In this notion of systems, one can restrict attention to the parts and trust that optimizing each one amounts to optimizing the whole.

Decomposition is a time honored way of dealing with complex problems, but it has big limitations in a world of tight couplings and nonlinear feedbacks. The defining characteristic of a system is that it *cannot* be understood as a function of its isolated components. First, the behavior of the system doesn't depend on what each part is doing but on how each part is interacting with the rest. A car's engine may be working just fine, but if the transmission column is detached from it, the car won't move.

Second, to understand a system we need to understand how it fits into the larger system of which it is a part. To use an example of Russell Ackoff's, we will never understand why standard cars have seats for four or five if we look at the physical properties of its elements. Human beings create teleological systems, systems with purpose. To understand the car design, we need to see how it fits into a society of families who travel together.

Third, and most important, what we call the parts need not be taken as primary. In fact, how we define the parts is fundamentally a matter of perspective and purpose, not intrinsic in the nature of the "real thing" we are looking at.

For example, consider an airplane. We might say that it is made of the fuselage, the wings, the tail, and a cockpit. But we might also say it is made of metal parts and plastic parts. We might also say it is made of a right half and a left half, and so on. What makes an airplane cannot be found in the parts—after all, a submarine also has a fuselage and a tail—but in how the parts emerge as distinctions from a coherent whole.

Rather than being objective, what we call the parts is highly subjective. No set of categories is natural or inherent to a system. There is no intrinsic right or wrong. It is a matter of purpose and awareness of choices, and of remembering the genealogy of categories invoked—the distinctions that we now see "out there" arose within a certain tradition and are contingent on it.

Rather than thinking of a world of "parts" that form "wholes," we start by recognizing that we live in a world of wholes within wholes. Rather than trying to "put the pieces together" to make the whole, we recognize that the world is already whole.

At the same time, the systems view recognizes that distinctions enable the observer to draw forth operational worlds. The whole may be more fundamental, but it is unmanageable. For example, the division of labor enabled societies to achieve levels of material well-being that would have otherwise been impossible. Henry Ford would have never been able to build as many cars as fast and as economically

as he did had he not divided operations according to Frederick Taylor's principles.

But, once the workers become "workers" and the supervisors became "supervisors," rigidity sets in. To reestablish fluidity, the capacity for learning and change, we must remember the contingent nature of the distinctions within which we are trapped. We must once again confront the whole. Reflecting on what this means with one another, Martin Buber said:

> Even as a melody is not composed of tones, nor a verse of words, nor a statue of lines—one must pull and tear to turn a unity into a multiplicity—so it is with the human being to whom I say Thou. I can abstract from him the color of his hair or the sound of his speech or the style of his graciousness; I can do this again and again; but immediately he is no longer my Thou.

2. The Community Nature of the Self

Newtonian physicists were startled to discover that at the core of the atom, at the center of matter there is ... nothing, no thing, pure energy. When they reached into the most fundamental building block of nature, they found a pregnant void—stable patterns of probability striving to connect with other patterns of probability. This discovery revolutionized the physical sciences, initiating the quantum era.

By the same token, we are startled to discover that at the core of the person, at the center of selfhood there is ... nothing, pure energy. When we reach into the most fundamental basis of our being we find a pregnant void, a web of relationships. When somebody asks us to talk about ourselves, we talk about family, work, academic background, sports affiliations, etc. In all this talk, where is our "self"? The answer is nowhere, because the self is not a thing, but, as Jarome Brunner says, "a point of view that unifies the flow of experience into a coherent narrative"—a narrative striving to connect with other narratives and become richer.

We normally think that the individual has a primordial origin and that selfhood is given to each one independent of the cultural or group practices in which that person happens to grow up. But, as Clifford Geertz says, "There is no such thing as human nature independent of culture."

When we forget about the social milieu in which we exist as people, we attain a spurious security and stability. We identify our egos with our selves. We take the contingent features of our current character and reify them into a substantive personality. Thus, we assign a primordial value to our ego (part) and see the community (whole) as secondary. We see the community as nothing but a network of contractual commitments in symbolic and economic exchanges. We think that encounters with others are transactions that can add or subtract to the array of possessions of the ego.

But the constitution of the self happens only in a community. The community supports certain ways of being and constrains the expressions of individuality to certain patterns of behavior—whatever we regard as acting "crazy" or inappropriate expresses our community of origin and upbringing much more than our intrinsic predispositions.

As with all deep cultural assumptions, the assumed primacy of the ego-self hides its contingent status, until we discover a different culture. For example, in many indigenous cultures of southern Africa the common greeting is "I see you." What it means to be a person in such a culture is to be in relationship. When we confront such a culture, where speaking a person's name acknowledges that person's existence, it seems "crazy" to us. After all, for us, the "self" is myself, isolated from other selves.

But a systems view of life suggests that the self is never "given" and is always in the process of transformation. Whenever we do not take the other as an object for use, whenever we see the other as a legitimate fellow human being with which we can learn and change—a "Thou"—we engage in a passionate interaction that can open new possibilities for our being.

3. Language as Generative Practice

In our everyday sense of the world, we see reality as "out there" and ourselves as observers "in here." Our Western tradition compels us to "figure out" how nature works so that we can achieve what we want. But what if what shows up for us as "reality" is inseparable from our language and actions? What if we are part of not apart from the world? What if our crisis is, at least in part, a crisis of perception and meaning, springing from a "naive realist" perspective of the observer as one who describes an external reality? What if observation itself is the beginning of the fragmentation?

The puzzle of the "ultimate ground" for knowing has confronted philosophers for a long time. There is a story of the humble novice who asks the great sage what it is that keeps the world from falling through space. The sage responds that the earth stays aloft because it rests on a great turtle. But, the student asks, "What is it that holds the turtle up?" "Why," responds the teacher, "it is because the turtle rests upon another great turtle." "But," cries out the student, "that turtle too must be supported." "Yes, indeed," responds the master, "it is turtles all the way down."

The alternative to naive "realism" is not solipsism, a view that there is "nothing out there," and therefore nothing to be learned, nothing to be valued. The alternative, we propose, is recognizing the generative role of the traditions of observation and meaning shared by a community. We invent structures and distinctions to organize the otherwise unmanageable flow of life. That organization allows us to operate effectively, but it can become a tranquilizing barrier to exploration and creativity. The more efficient a model of the world turns out to be, the more it recedes into the background and becomes transparent. The more successful the model's strategies, the more the map of reality becomes "reality" itself. The danger of success is that the thinking behind it can become entrenched and disregard the necessary context of its effectiveness. When a model loses its "situation" and generalizes its validity to universal categories, it sooner or later stalls our capacity to deal freshly with the world and each other.

The map is not the territory, but we can only guide ourselves with maps. As cartographers, however, we are far from neutral. Our perceptual apparatus, with its biological, personal, and cultural filters, is actively involved in the construction of these maps. So, where is the territory underlying the maps?

As philosopher Hubert Dreyfus says, "It is interpretation all the way down." The issue is deeper than recognizing that the map is not the territory. We have to face the possibility that we have no access beyond our culture to such a thing as a territory. We only have provisional maps permanently open to revision and recreation.

This may sound nihilistic. If there is no ultimate ground for values, why choose one system over another? Why is democracy better than totalitarianism? Why is anything better than anything else? Why even bother to care? The solution to the nihilistic dilemma comes from a self-reflective principle: Those contexts that display their precarious nature, those contexts that invite revision and recreation are inherently better than those which hide their precarious nature and fight revisionist attempts. The best constructs for explaining and organizing the world will imitate life itself. They will be in a continual state of becoming.

When we fail to recognize this principle, we lose the capacity to understand others. We become rigid. We lose the ability to learn. We lose the child within us who lives in awe and who understands what Einstein meant when he said that the most beautiful experience in the world is "the experience of the mysterious."

OPERATING PRINCIPLES

As we endeavor to embody these theses in our work at the MIT Learning Center, several operating principles are emerging. These "principles" are neither rigid nor all encompassing. In effect, each grows out of a question, and in many ways the questions themselves may be

the keys to moving forward—questions such as, "What do we mean when we speak of a *learning organization*?"

There is No Such Thing as a "Learning Organization"

Along with "total quality management" and "process reengineering," "organizational learning" has become the latest buzzword. Just as there is no such thing as a "smart kid," however, there is no such thing as a "learning organization." "Learning organization" is a category that we create in language. Like every linguistic creation, this category is a double-edged sword that can be empowering or tranquilizing. The difference lies in whether we see language as a set of labels that describe a preexisting reality, or as a medium in which we can articulate new models for living together.

When we speak of a "learning organization," we are not describing an external phenomenon or labeling an independent reality. We are articulating a view that involves us—the observers—as much as the observed in a common system. We are taking a stand for a vision, for creating a type of organization we would truly like to work within and which can thrive in a world of increasing interdependency and change.

It is not what the vision is, but what the vision does that matters. In the early 1970s, Alan Kay led the researchers at Xerox PARC who developed the first true precursors to the personal computer. In fact, Kay and his colleagues were pursuing a different vision—they wanted to create the "dynabook," a fully interactive learning tool which would be as portable as a book. Unfortunately, they failed. The prototype they built was too large and was never produced in volume. It embodied, however, numerous component technologies, such as the "mouse" and an "iconic" interface that we all now know as the "Macintosh" interface—which eventually gave birth to the personal computer industry. That the Xerox researchers failed to produce the "dynabook" is now an obscure footnote in history, for the dynabook vision became, as Kay would say, "a forcing function for change."

What, then, are the types of changes we are seeking to encourage through pursuing the "learning organization" vision?

The Learning Organization Embodies New Capabilities Beyond Traditional Organizations

We believe a learning organization must be grounded in three foundations (1) a culture based on transcendent human values of love, wonder, humility, and compassion; (2) a set of practices for generative conversation and coordinated action; and (3) a capacity to see and work with the flow of life as a system.

In learning organizations, cultural norms defy our business tradition. Acceptance of the other as a legitimate being—a Thou—(our meaning of love), replaces the traditional will to homogeneity. The ever-surprising manifestations of the world show up as opportunities to grow, as opposed to a frustrating breakdowns for which somebody must take the blame (wonder). People understand that life is not condensable, that any model is an operational simplification always ready for improvement (humility). And when they encounter behaviors that they neither understand nor condone, people are able to appreciate that such actions arise from viewpoints and forces that are, in some sense, as valid as the viewpoints and forces that influence their own behaviors (compassion).

Learning organizations are spaces for generative conversations and concerted action. In them, language functions as a device for connection, invention, and coordination. People can talk from their hearts and connect with one another in the spirit of dialogue (from the Greek *dia+logos*—moving through). Their dialogue weaves a common ongoing fabric and connects them at a deep level of being. When people talk and listen to each other this way, they create a field of alignment that produces tremendous power to invent new realities in conversation, and to bring about these new realities in action.

In learning organizations, people are always inquiring into the systemic consequences of their actions, rather than just focusing on lo-

EXHIBIT 1
SHIFTING THE BURDEN

One of the reasons the myth of the great leader is so appealing is that it absolves us of responsibility for developing leadership capabilities more broadly. Viewed systemically, there is a "shifting the burden" structure: a perceived "need for leadership" (a problem symptom) can be met through developing leadership capacities throughout the group or organization (the "fundamental solution") or through relying on the hero leader (the symptomatic solution). Success in finding a hero leader reinforces a belief in the group's own powerlessness (the shifting the burden "side effect"), thus making the fundamental solution more difficult. The diagram is as follows:

cal consequences. They can understand the interdependencies underlying complex issues and act with perceptiveness and leverage. They are patient in seeking deeper understanding rather than striking out to "fix" problem symptoms—because they know that most fixes are temporary at best, and often result in more severe problems in the future.

As a result of these capabilities, learning organizations are both more generative and more adaptive than traditional organizations. Because of their commitment, openness, and ability to deal with complexity, people find security not in stability but in the dynamic equilibrium between holding on and letting go—holding on and letting go of beliefs, assumptions, and certainties. What they know takes a second place to what they can learn, and simplistic answers are always less important than penetrating questions.

Developing such organizational capabilities will obviously require vision, patience, and courage. What is the nature of the leadership that will be required to move forward?

Learning Organizations Are Built by Communities of Servant Leaders

Leadership takes on important new meanings in learning organizations. In essence, the leaders are those building the new organization and its capabilities. They are the ones "walking ahead," regardless of their management position or hierarchical authority. Such leadership is inevitably collective.

Our conventional notions of leadership are embedded in myths of heroes—great individuals severed from their community who make their way through individual will, determination, and cleverness. While there may be much to admire in such persons, we believe that our attachment to individualistic notions of leadership may actually block the emergence of the leadership of teams, and ultimately, organizations and societies that can lead themselves (see Exhibit 1). While we wait for the great leader who will save the day, we surrender the confidence and power needed to make progress toward learning organizations.

As the myth of the hero leader fades, a

new myth of teams and communities that can lead themselves is emerging. In 1983, successful grassroots community organizers from around the world gathered for a unique meeting in the United States. This group of "Gandhis of the world" produced a beautiful articulation of this new leadership myth:

> Our times are increasingly characterized by the awakening of the human force all over the planet, expressing itself in popular movements, grassroots communities, and local organizations. This world force is a new kind of leadership capable of synthesizing the expressions of groups and organizing for action. Leadership from and of the group—and from the least among us—is the hope for change in our time.

The emergence of collective leadership does not means that there are no "leadership positions" like CEO or general or president in learning organizations. Management hierarchies are often functional. But the clash of collective leadership and hierarchical leadership nonetheless poses a core dilemma for learning organizations. This dilemma cannot be reconciled given traditional notions of hierarchical leaders as the people "in control" or "in charge." For this, then, implies that those "below" are not in control. A hierarchical value system then arises that, as Analog Devices CEO Ray Stata puts it, "holds the person higher up the hierarchy as somehow a more important being."

Alternatively, the dilemma can become a source of energy and imagination through the idea of "servant leadership," people who lead because they chose to serve, both to serve one another and to serve a higher purpose.

Servant leadership offers a unique mix of idealism and pragmatism. At one level, the concept is an ideal, appealing to deeply held beliefs in the dignity and self-worth of all people and the democratic principle that a leader's power flows from those led. But it is also highly practical. It has been proven again and again in military campaigns that the only leader whom soldiers will reliably follow when their lives are on the line is the leader who is both competent and who soldiers believe is committed to their well-being.

As such leadership communities begin to grow, how will learning begin to be integrated into work?

Learning Arises Through Performance *and* Practice

It was common in native American cultures to set aside sacred spaces for learning. So too in our organizations today, learning is too important to leave to chance. It will not be adequate to offer training and hope that people will be able to apply new insights and methods. Nor will help from consultants be sufficient to bring about the fundamental shifts in thinking and interacting and the new capabilities needed to sustain those shifts. It will be necessary to redesign work if the types of ideas developed above are to find their way into the mainstream of management practice.

We believe that a guiding idea for redesigning work will be virtual learning spaces, or what have come to be known at the Learning Center as "managerial practice fields." The learning that occurs in sports teams and the performing arts is embedded in continuous movement between a practice field and a performance field. It is impossible to imagine a chamber music ensemble or a theater troop learning without rehearsal, just as it is impossible to imagine a championship basketball team that never practices. Yet, that is exactly what happens in most organizations. People only perform. They rarely get to practice, especially together.

Several design principles come together in creating effective managerial practice fields: (1) The learner learns what the learner wants to learn, so focus on key managerial issues. (2) The people who need to learn are the people who have the power to take action, so focus on key operational managers as opposed to staff. (3) Learning often occurs best through "play," through interactions in a transitional medium where it is safe to experiment and reflect. (4) Learning often requires altering the flow of time: slow down the action to enable reflection on tacit assumptions

and counterproductive ways of interacting; or, at other times, speed up time to reveal how current decisions can create unanticipated problems in the long term. (5) Learning often requires "compressing space," as well as time, so that the learner can see the effects of his or her actions in other parts of a larger system. (Computer simulation and related tools may be needed for principles 4 and 5.) (6) This transitional medium must look like the action domain of the learners. (7) The learning space must be seamlessly integrated into the work space for an ongoing cycle of reflection, experimentation, and action.

If learning becomes more integrated into how we work, where does "work" end and "learning" begin?

Process and Content Are Inseparable

Because our culture is so caught up in separation, we have been led, according to David Bohm, "to seek some fantasy of action...that would end the fragmentation in the content (of our thought) while leaving the fragmentation in the actual process of thinking untouched." So, for example, executives seek to improve fragmented policies and strategies without addressing the fragmented and competitive relationships among the managers who formulated the strategies and policies. Consultants propose new process-oriented organizational designs without addressing the modes of thinking and interacting that cause us to focus on things rather than processes in the first place. Management educators treat either "technical" issues like operations, marketing, or finance, or behavioral issues like organization culture, decision making, or change.

In our normal ways of looking at things, the content or issues we are interested in are separate from the processes we might use to learn about them. Yet, this very separation may be the primary obstacle to potential breakthroughs in situations where content and process are inseparable. For example, early in one of our Learning Center field projects, the team began to address the company culture of punishment for bad news. But, rather than blaming the "culture" or "management," the members of the group explored their own reactions to hearing about problems, especially from subordinates. They began to surface their fears about mistakes and their automatic reactions and defensive responses, like heightened competitiveness or a tendency to cover up the problems. Gradually, they reached some deep insight into their "culture of punishment" and their own role in sustaining it.

If indeed it is possible to progress toward learning organizations, what are some of the reasons we might resist such changes?

Learning is Dangerous

Learning occurs between a fear and a need. On the one hand, we feel the need to change if we are to accomplish our goals. On the other hand, we feel the anxiety of facing the unknown and unfamiliar. To learn significant things, we must suspend some basic notions about our worlds and our selves. That is one of the most frightening propositions for the ego.

The conventional notion of learning is transactional. There is a learner who has a certain way of operating and a certain knowledge. If this knowledge proves to be incomplete or ineffective, the learner has the ability to drop part of it, change some of it, or add some new ideas to it. This may be an accurate description of how we learn to find better bargains or make better investments, but it fails to get to the heart of the type of learning involved when we are questioning deep beliefs and mental models.

The problem with this view is that the self is not separate from the ideas and assumptions that form it. Our mental models are not like pieces of clothing that we can put on or take off. They are basic constitutive structures of our personality. For all intents and purposes, most of the time, we *are* our mental models.

The learning required in becoming a learning organization is "transformational learning." Static notions of who we are must be checked at the door. In transformational learning, there are no problems "out there" to

be solved independent of how we think and act in articulating these problems. Such learning is not ultimately about tools and techniques. It is about who we are. We often prefer to fail again and again rather than let go of some core belief or master assessment.

This explains the paradox of learning. Even when we claim we want to learn, we normally mean that we want to *acquire* some new tool or understanding. When we see that *to learn*, we must be willing to look foolish, to let another teach us, learning doesn't always look so good anymore.

It is little coincidence that virtually all spiritual disciplines, regardless of culture or religious setting, are practiced in communities. Only with the support, insight, and fellowship of a community can we face the dangers of learning meaningful things.

THEORY IN PRACTICE: THE WORK OF THE ORGANIZATIONAL LEARNING CENTER

The "liaison officers" of the MIT Learning Center are individuals from each participating company who work together to reflect on what we are learning and to translate these reflections into improved management practices for the center. It was in this group that we first began to realize that building learning organizations was grounded in developing leadership communities. A core question has occupied us throughout this year: "How do such communities form, grow, and become influential in moving large organizations forward?"

Ford's Vic Leo has suggested a three-stage "architecture of engagement:" (1) finding those predisposed to this work, (2) core community-building activities, and (3) practical experimentation and testing.

Predisposition

It is easy to waste time attempting to bring about changes with people who do not want, or are not ready for, such changes. When the liaison officers reflected on how they became involved in systemic thinking and organizational learning, we discovered that there were aspects of each person's background that made that person predisposed. In some cases, it was academic training. In others, particular work or life experiences. In all cases, they were deeply drawn to the "systems perspective." They needed no convincing that much problem solving in organizations leaves deeper sources of problems untouched, and that the roots of these difficulties lie in how we think and how we interact. They were skeptical of conventional strategies for organizational improvement—reorganizations, training, management programs, speeches from "on high." Predisposition is important, especially in the early stages of building momentum when there are few practical results to point to.

Those not predisposed to systems thinking should not be excluded, but they may play less important roles at the outset. Over time, many people who are initially confused, threatened, or nonresponsive to systems thinking and learning often become the most enthusiastic supporters. If they are not included, because they raise difficult questions or disagree with certain ideas, what starts as a learning community can degenerate into a cult.

Community-Building Activities

How those predisposed begin to know each other and to work together involves an ongoing cycle of community-building activities and practical experimentation. The former must be intense enough and open-ended enough to foster trusting personal relationships and to lay a foundation of knowledge and skills. The latter must offer realistic starting steps in applying new knowledge and skills to important issues.

For example, at the Learning Center, a five-day introductory course explores the tools, methods, and personal dimensions of the "Galilean Shift." There is practice with systems thinking tools and dialogue, and with reflecting on and articulating personal vi-

sions. Just as important, the course often results in what the liaison officers called a "piercing experience," where the systems perspective begins to take on a deeper meaning and the nature of the journey ahead becomes clearer.

Moreover, it is a journey that we are all taking together. There are no "teachers" with correct answers, only guides with different areas of expertise and experience that may help along the way. Each of us gives up our own certainty and recognizes our interdependency within the larger community of practitioners. The honest, humble, and purposeful "I don't know" grounds our vision for learning organizations. In this sense, the five-day introductory course begins to forge the vessel within which the learning center staff and the company managers begin to operate as a community.

This vessel is reinforced and expanded through a variety of other meetings and communications media, including electronic mail, bulletin boards, and research documents. Especially important are semiannual "systems applications conferences," originally organized for reporting on projects underway in participating organizations. These large gatherings, which typically involve 100 to 150 people, have become an ongoing dialogue rather than a one-way reporting on various projects. Remarkably, we are finding that the more we organize around dialogue, and the less we plan out elaborate agendas, the more we accomplish. (Note: For more information on dialogue, see subsequent articles by William Isaacs and Edgar Schein in this issue.)

Practical Experimentation and Testing

Ultimately, what nurtures the unfolding community most is serious, active experimentation where people wrestle with crucial strategic and operational issues. In our work at the center, we undertake learning projects in conjunction with groups of managers who have taken the five-day introductory course. Most projects focus on key issues, because of the resulting motivation for learning and because of the potential for significant improvement in business results.

Currently, two types of "practice field" projects are underway: dialogue projects and learning laboratory projects. Dialogue projects focus directly on the deeper patterns of communication that underlie whatever issues are being confronted by a management team.

Learning laboratory projects focus on specific areas such as new product development, management accounting and control systems, and services management. Here are some examples.

A team at Ford, responsible for creating the next generation Lincoln Continental, is also creating a New Car Development Learning Laboratory. The project has two interrelated objectives: to improve the effectiveness of the team in its current project and to develop better theory and tools that will lead to broader systemic thinking in product development at Ford.

One of the most daunting tasks in car product development is to balance autonomy of component engineering teams with optimal design for the car as a whole. For example, many component teams, such as electronic fuel handling and climate control, place demands on the car's electrical system. If every component team optimizes its own efforts, the total load can exceed the capacity of the alternator. Trying to convince each team separately that it should sacrifice accomplishes little; it may only raise fears that other component teams will then be able to command more of the alternator capacity.

This is actually an example of a general systems phenomenon called "tragedy of the commons." The term refers to situations in which there are common resources upon which all depend, like a commons for grazing sheep. Individual incentives, such as one family's efforts to increase the size of its flock, will eventually destroy the commons for all. Using system archetypes, Ford's team has been able to conceptualize the particular interdependencies involved in achieving an optimal total vehicle electronic system. They also have identified other basic "commons" that recur in all car development efforts. They are develop-

ing a general approach that can lead to early identification of commons and to establishment of specific management mechanisms to assure that commons are not "overgrazed."

At the same time, the team is developing a new car. Early returns show unprecedented levels of internal coordination. For example, at a recent checkpoint, the team had a level of "parts on time" twice the average.

Another example of a learning project is Chrysler's use of system dynamics computer simulation to introduce "activity-based costing" throughout the organization. The project's goal is to create an experiential laboratory where the users of the new system can reflect on the shortcomings of current accounting methods and the improvements of activity-based information. So far, Chrysler has used the laboratory in five new implementations, with all operations managers ranking an introductory session above 90 (ranking goes from 1 for terrible to 100 for best seminar ever attended).

Our one-year program, the learning laboratories, and dialogue projects all spring from the Galilean shift; all follow the operating principles articulated earlier in this paper. In all cases, what started as a "practice field" has led to penetrating insights into critical business issues. The practice fields are gradually becoming integrated into everyday company activities. When we started the pilot projects, we had a vision of transforming organizations through learning processes focused on significant business problems. We saw practice fields as a place where teams could meet to reflect on structures, identify counterproductive behaviors, experiment with alternative strategies, and design solutions for actual work settings. The core of the projects, in our minds, were "management flight simulators," computer simulations based on systems thinking. The simulators would enable managers to "compress time and space" so as to better understand the long-term consequences of their decisions and to reflect on their assumptions.

The management flight simulators are powerful tools that have shown their worth repeatedly, but the projects are yielding something more. We are finding that the notion of practice fields was far more radical that we originally believed. When people have a transitional medium where they can relate to each other safely and playfully, where they can openly explore the most difficult and "undiscussable" systemic issues, they begin to see their learning community as something precious. "People will misunderstand what we are doing as problem solving," said one senior manager recently, "when in fact we are creating a new way of managing."

CONCLUSION

Building learning organizations is not an individual task. It demands a shift that goes all the way to the core of our culture. We have drifted into a culture that fragments our thoughts, that detaches the world from the self and the self from its community. We have gained control of our environment but have lost our artistic edge. We are so focused on our security that we don't see the price we pay: living in bureaucratic organizations where the wonder and joy of learning have no place. Thus we are losing the spaces to dance with the ever-changing patterns of life. We are losing ourselves as fields of dreams.

We believe that to regain our balance we must create alternative ways of working and living together. We need to invent a new, more learningful model for business, education, health care, government and family. This invention will come from the patient, concerted efforts of communities of people invoking aspiration and wonder. As these communities manage to produce fundamental changes, we will regain our memory—the memory of the community nature of the self and of the poetic nature of language and the world—the memory of the whole.

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