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The Leader's New Work: Building Learning Organizations

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OVER THE PAST two years, business academics and senior managers have begun talking about the notion of the learning organization. Ray Stata of Analog Devices put the idea succinctly in these pages last spring: "The rate at which organizations learn may become the only substantial source of competitive advantage." And in late May of this year, at an MIT-sponsored conference entitled "Transforming Organizations," two questions arose again and again: *How can we build organizations in which continuous learning occurs?* and, *What kind of person can best lead the learning organization?* This article, based on Senge's recently published book, *The Fifth Discipline: The Art and Practice of the Learning Organization*, begins to chart this new territory, describing new roles, skills, and tools for leaders who wish to develop learning organizations.

HUMAN BEINGS are designed for learning. No one has to teach an infant to walk, or talk, or master the spatial relationships needed to stack eight building blocks that don't topple. Children come fully equipped with an insatiable drive to explore and experiment. Unfortunately, the primary institutions of our society are oriented predominantly toward controlling rather than learning, rewarding individuals for performing for others rather than for cultivating their natural curiosity and impulse to learn. The young child entering school discovers quickly that the name of the game is getting the right answer and avoiding mistakes — a mandate no less compelling to the aspiring manager.

"Our prevailing system of management has destroyed our people," writes W. Edwards Deming, leader in the quality movement.[1] "People are born with intrinsic motivation, self-esteem, dignity, curiosity to learn, joy in learning. The forces of destruction begin with toddlers — a prize for the best Halloween costume, grades in school, gold stars, and on up through the university. On the job, people, teams, divisions are ranked — reward for the one at the top, punishment at the bottom. MBO quotas, incentive pay, business plans, put together separately, division by division, cause further loss, unknown and unknowable."

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Ironically, by focusing on performing for someone else's approval, corporations create the very conditions that predestine them to mediocre performance. Over the long run, superior performance depends on superior learning. A Shell study showed that, according to former planning director Arie de Geus, "a full one-third of the Fortune '500' industrials listed in 1970 had vanished by 1983."[2] Today, the average lifetime of the largest industrial enterprises is probably less than *half* the average lifetime of a person in an industrial society. On the other hand, de Geus and his colleagues at Shell also found a small number of companies that survived for seventy-five years or longer. Interestingly, the key to their survival was the ability to run "experiments in the margin," to continually explore new business and organizational opportunities that create potential new sources of growth.

If anything, the need for understanding how organizations learn and accelerating that learning is greater today than ever before. The old days when a Henry Ford, Alfred Sloan, or Tom Watson *learned for the organization* are gone. In an increasingly dynamic, interdependent, and unpredictable world, it is simply no longer possible for anyone to "figure it all out at the top." The old model, "the top thinks and the local acts," must now give way to integrating thinking and acting at all levels. While the challenge is great, so is the potential payoff. "The person

who figures out how to harness the collective genius of the people in his or her organization," according to former Citibank CEO Walter Wriston, "is going to blow the competition away."

Adaptive Learning and Generative Learning

The prevailing view of learning organizations emphasizes increased adaptability. Given the accelerating pace of change, or so the standard view goes, "the most successful corporation of the 1990s," according to *Fortune* magazine, "will be something called a learning organization, a consummately adaptive enterprise."[3] As the Shell study shows, examples of traditional authoritarian bureaucracies that responded too slowly to survive in changing business environments are legion.

But increasing adaptiveness is only the first stage in moving toward learning organizations. The impulse to learn in children goes deeper than desires to respond and adapt more effectively to environmental change. The impulse to learn, at its heart, is an impulse to be generative, to expand our capability. This is why leading corporations are focusing on *generative* learning, which is about creating, as well as *adaptive* learning, which is about coping.[4]

The total quality movement in Japan illustrates the evolution from adaptive to generative learning. With its emphasis on continuous experimentation and feedback, the total quality movement has been the first wave in building learning organizations. But Japanese firms' view of serving the customer has evolved. In the early years of total quality, the focus was on "fitness to standard," making a product reliably so that it would do what its designers intended it to do and what the firm told its customers it would do. Then came a focus on "fitness to need," understanding better what the customer wanted and then providing products that reliably met those needs. Today, leading edge firms seek to understand and meet the "latent need" of the customer—what customers might truly value but have never experienced or would never think to ask for. As one Detroit executive commented recently, "You could never produce the Mazda Miata solely from market research. It required a leap of imagination to see what the customer *might* want."[5]

Generative learning, unlike adaptive learning,

requires new ways of looking at the world, whether in understanding customers or in understanding how to better manage a business. For years, U.S. manufacturers sought competitive advantage in aggressive controls on inventories, incentives against overproduction, and rigid adherence to production forecasts. Despite these incentives, their performance was eventually eclipsed by Japanese firms who saw the challenges of manufacturing differently. They realized that eliminating delays in the production process was the key to reducing instability and improving cost, productivity, and service. They worked to build networks of relationships with trusted suppliers and to redesign physical production processes so as to reduce delays in materials procurement, production set up, and in-process inventory — a much higher-leverage approach to improving both cost and customer loyalty.

As Boston Consulting Group's George Stalk has observed, the Japanese saw the significance of delays because they saw the process of order entry, production scheduling, materials procurement, production, and distribution *as an integrated system.* "What distorts the system so badly is time," observed Stalk — the multiple delays between events and responses. "These distortions reverberate throughout the system, producing disruptions, waste, and inefficiency."[6] Generative learning requires seeing the systems that control events. When we fail to grasp the systemic source of problems, we are left to "push on" symptoms rather than eliminate underlying causes. The best we can ever do is adaptive learning.

The Leader's New Work

"I talk with people all over the country about learning organizations, and the response is always very positive," says William O'Brien, CEO of the Hanover Insurance companies. "If this type of organization is so widely preferred, why don't people create such organizations? I think the answer is leadership. People have no real comprehension of the type of commitment it requires to build such an organization."[7]

Our traditional view of leaders — as special people who set the direction, make the key decisions, and energize the troops — is deeply rooted in an individualistic and nonsystemic worldview. Especially in the West, leaders are *heroes* — great men (and occasionally women)

who rise to the fore in times of crisis. So long as such myths prevail, they reinforce a focus on short-term events and charismatic heroes rather than on systemic forces and collective learning.

Leadership in learning organizations centers on subtler and ultimately more important work. In a learning organization, leaders' roles differ dramatically from that of the charismatic decision maker. Leaders are designers, teachers, and stewards. These roles require new skills: the ability to build shared vision, to bring to the surface and challenge prevailing mental models, and to foster more systemic patterns of thinking. In short, leaders in learning organizations are responsible for *building organizations* where people are continually expanding their capabilities to shape their future — that is, leaders are responsible for learning.

Creative Tension: The Integrating Principle

Leadership in a learning organization starts with the principle of creative tension.[8] Creative tension comes from seeing clearly where we want to be, our "vision," and telling the truth about where we are, our "current reality." The gap between the two generates a natural tension (see Figure 1).

Creative tension can be resolved in two basic

Figure 1   The Principle of Creative Tension
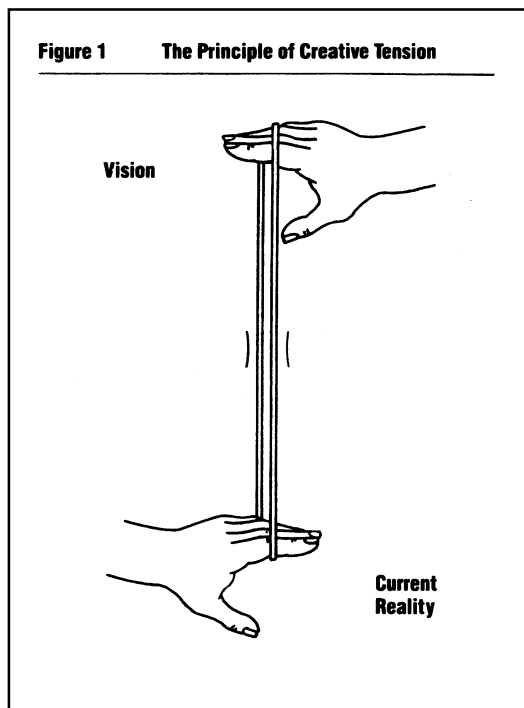
Vision

Current Reality

ways: by raising current reality toward the vision, or by lowering the vision toward current reality. Individuals, groups, and organizations who learn how to work with creative tension learn how to use the energy it generates to move reality more reliably toward their visions.

The principle of creative tension has long been recognized by leaders. Martin Luther King, Jr., once said, "Just as Socrates felt that it was necessary to create a tension in the mind, so that individuals could rise from the bondage of myths and half truths . . . so must we . . . create the kind of tension in society that will help men rise from the dark depths of prejudice and racism."[9]

Without vision there is no creative tension. Creative tension cannot be generated from current reality alone. All the analysis in the world will never generate a vision. Many who are otherwise qualified to lead fail to do so because they try to substitute analysis for vision. They believe that, if only people understood current reality, they would surely feel the motivation to change. They are then disappointed to discover that people "resist" the personal and organizational changes that must be made to alter reality. What they never grasp is that the natural energy for changing reality comes from holding a picture of what might be that is more important to people than what is.

But creative tension cannot be generated from vision alone; it demands an accurate picture of current reality as well. Just as King had a dream, so too did he continually strive to "dramatize the shameful conditions" of racism and prejudice so that they could no longer be ignored. Vision without an understanding of current reality will more likely foster cynicism than creativity. The principle of creative tension teaches that *an accurate picture of current reality is just as important as a compelling picture of a desired future.*

Leading through creative tension is different than solving problems. In problem solving, the energy for change comes from attempting to get away from an aspect of current reality that is undesirable. With creative tension, the energy for change comes from the vision, from what we want to create, juxtaposed with current reality. While the distinction may seem small, the consequences are not. Many people and organizations find themselves motivated to change only when their problems are bad enough to cause them to change. This works for a while, but the change process runs out of steam as soon as the problems driving the

change become less pressing. With problem solving, the motivation for change is extrinsic. With creative tension, the motivation is intrinsic. This distinction mirrors the distinction between adaptive and generative learning.

New Roles

The traditional authoritarian image of the leader as "the boss calling the shots" has been recognized as oversimplified and inadequate for some time. According to Edgar Schein, "Leadership is intertwined with culture formation" Building an organization's culture and shaping its evolution is the "unique and essential function" of leadership.[10] In a learning organization, the critical roles of leadership — designer, teacher, and steward — have antecedents in the ways leaders have contributed to building organizations in the past. But each role takes on new meaning in the learning organization and, as will be seen in the following sections, demands new skills and tools.

Leader as Designer

Imagine that your organization is an ocean liner and that you are "the leader." What is your role?

I have asked this question of groups of managers many times. The most common answer, not surprisingly, is "the captain." Others say, "The navigator, setting the direction." Still others say, "The helmsman, actually controlling the direction," or, "The engineer down there stoking the fire, providing energy," or, "The social director, making sure everybody's enrolled, involved, and communicating." While these are legitimate leadership roles, there is another which, in many ways, eclipses them all in importance. Yet rarely does anyone mention it.

The neglected leadership role is the *designer* of the ship. No one has a more sweeping influence than the designer. What good does it do for the captain to say, "Turn starboard 30 degrees," when the designer has built a rudder that will only turn to port, or which takes six hours to turn to starboard? It's fruitless to be the leader in an organization that is poorly designed.

The functions of design, or what some have called "social architecture," are rarely visible; they take place behind the scenes. The consequences that appear today are the result of work done long in the past, and work today will show its

benefits far in the future. Those who aspire to lead out of a desire to control, or gain fame, or simply to be at the center of the action, will find little to attract them to the quiet design work of leadership.

But what, specifically, is involved in organizational design? "Organization design is widely misconstrued as moving around boxes and lines," says Hanover's O'Brien. "The first task of organization design concerns designing the governing ideas of purpose, vision, and core values by which people will live." Few acts of leadership have a more enduring impact on an organization than building a foundation of purpose and core values.

In 1982, Johnson & Johnson found itself facing a corporate nightmare when bottles of its best-selling Tylenol were tampered with, resulting in several deaths. The corporation's immediate response was to pull all Tylenol off the shelves of retail outlets. Thirty-one million capsules were destroyed, even though they were tested and found safe. Although the immediate cost was significant, no other action was possible given the firm's credo. Authored almost forty years earlier by president Robert Wood Johnson, Johnson & Johnson's credo states that permanent success is possible only when modern industry realizes that:
• service to its customers comes first;
• service to its employees and management comes second;
• service to the community comes third; and
• service to its stockholders, last.

Such statements might seem like motherhood and apple pie to those who have not seen the way a clear sense of purpose and values can affect key business decisions. Johnson & Johnson's crisis management in this case was based on that credo. It was simple, it was right, and it worked.

If governing ideas constitute the first design task of leadership, the second design task involves the policies, strategies, and structures that translate guiding ideas into business decisions. Leadership theorist Philip Selznick calls policy and structure the "institutional embodiment of purpose."[11] "Policy making (the rules that guide decisions) ought to be separated from decision making," says Jay Forrester.[12] "Otherwise, short-term pressures will usurp time from policy creation."

Traditionally, writers like Selznick and Forrester have tended to see policy making and implementation as the work of a small number of senior managers. But that view is changing. Both the dynamic business environment and the mandate of the learning organization to engage

people at all levels now make it clear that this second design task is more subtle. Henry Mintzberg has argued that strategy is less a rational plan arrived at in the abstract and implemented throughout the organization than an "emergent phenomenon." Successful organizations "craft strategy" according to Mintzberg, as they continually learn about shifting business conditions and balance what is desired and what is possible.[13] The key is not getting the right strategy but fostering strategic thinking. "The choice of individual action is only part of . . . the policymaker's need," according to Mason and Mitroff.[14] "More important is the need to achieve insight into the nature of the complexity and to formulate concepts and world views for coping with it."

Behind appropriate policies, strategies, and structures are effective learning processes; their creation is the third key design responsibility in learning organizations. This does not absolve senior managers of their strategic responsibilities. Actually, it deepens and extends those responsibilities. Now, they are not only responsible for ensuring that an organization have well-developed strategies and policies, but also for ensuring that processes exist whereby these are continually improved.

In the early 1970s, Shell was the weakest of the big seven oil companies. Today, Shell and Exxon are arguably the strongest, both in size and financial health. Shell's ascendance began with frustration. Around 1971, members of Shell's "Group Planning" in London began to foresee dramatic change and unpredictability in world oil markets. However, it proved impossible to persuade managers that the stable world of steady growth in oil demand and supply they had known for twenty years was about to change. Despite brilliant analysis and artful presentation, Shell's planners realized, in the words of Pierre Wack, that they "had failed to change behavior in much of the Shell organization."[15] Progress would probably have ended there, had the frustration not given way to a radically new view of corporate planning.

As they pondered this failure, the planners' view of their basic task shifted: "We no longer saw our task as producing a documented view of the future business environment five or ten years ahead. Our real target was the microcosm (the 'mental model') of our decision makers." Only when the planners reconceptualized their basic task as fostering learning rather than devising plans did their insights begin to have an impact.

The initial tool used was "scenario analysis," through which planners encouraged operating managers to think through how they would manage in the future under different possible scenarios. It mattered not that the managers believed the planners' scenarios absolutely, only that they became engaged in ferreting out the implications. In this way, Shell's planners conditioned managers to be mentally prepared for a shift from low prices to high prices and from stability to instability. The results were significant. When OPEC became a reality, Shell quickly responded by increasing local operating company control (to enhance maneuverability in the new political environment), building buffer stocks, and accelerating development of non-OPEC sources — actions that its competitors took much more slowly or not at all.

Somewhat inadvertently, Shell planners had discovered the leverage of designing institutional learning processes, whereby, in the words of former planning director de Geus, "Management teams change their shared mental models of their company, their markets, and their competitors."[16] Since then, "planning as learning" has become a byword at Shell, and Group Planning has continually sought out new learning tools that can be integrated into the planning process. Some of these are described below.

Leader as Teacher

"The first responsibility of a leader," writes retired Herman Miller CEO Max de Pree, "is to define reality."[17] Much of the leverage leaders can actually exert lies in helping people achieve more accurate, more insightful, and more *empowering* views of reality.

Leader as teacher does *not* mean leader as authoritarian expert whose job it is to teach people the "correct" view of reality. Rather, it is about helping everyone in the organization, oneself included, to gain more insightful views of current reality. This is in line with a popular emerging view of leaders as coaches, guides, or facilitators.[18] In learning organizations, this teaching role is developed further by virtue of explicit attention to people's mental models and by the influence of the systems perspective.
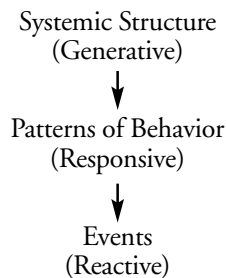
The role of leader as teacher starts with bringing to the surface people's mental models of important issues. No one carries an organization, a market, or a state of technology in his or her

head. What we carry in our heads are assumptions. These mental pictures of how the world works have a significant influence on how we perceive problems and opportunities, identify courses of action, and make choices.

One reason that mental models are so deeply entrenched is that they are largely tacit. Ian Mitroff, in his study of General Motors, argues that an assumption that prevailed for years was that, in the United States, "Cars are status symbols. Styling is therefore more important than quality."[19] The Detroit automakers didn't say, "We have a *mental model* that all people care about is styling." Few actual managers would even say publicly that all people care about is styling. So long as the view remained unexpressed, there was little possibility of challenging its validity or forming more accurate assumptions.

But working with mental models goes beyond revealing hidden assumptions. "Reality," as perceived by most people in most organizations, means pressures that must be borne, crises that must be reacted to, and limitations that must be accepted. Leaders as teachers help people *restructure their views of reality* to see beyond the superficial conditions and events into the underlying causes of problems — and therefore to see new possibilities for shaping the future.

Specifically, leaders can influence people to view reality at three distinct levels: events, patterns of behavior, and systemic structure.

<div align="center">

Systemic Structure
(Generative)

↓

Patterns of Behavior
(Responsive)

↓

Events
(Reactive)

</div>

The key question becomes *where do leaders predominantly focus their own and their organization's attention?*

Contemporary society focuses predominantly on events. The media reinforces this perspective, with almost exclusive attention to short-term, dramatic events. This focus leads naturally to explaining what happens in terms of those events: "The Dow Jones average went up sixteen points because high fourth-quarter profits were announced yesterday."

Pattern-of-behavior explanations are rarer, in contemporary culture, than event explanations,

but they do occur. "Trend analysis" is an example of seeing patterns of behavior. A good editorial that interprets a set of current events in the context of long-term historical changes is another example. Systemic, structural explanations go even further by addressing the question, "What causes the patterns of behavior?"

In some sense, all three levels of explanation are equally true. But their usefulness is quite different. Event explanations — who did what to whom — doom their holders to a reactive stance toward change. Pattern-of-behavior explanations focus on identifying long-term trends and assessing their implications. They at least suggest how, over time, we can respond to shifting conditions. Structural explanations are the most powerful. Only they address the underlying causes of behavior at a level such that patterns of behavior can be changed.

By and large, leaders of our current institutions focus their attention on events and patterns of behavior, and, under their influence, their organizations do likewise. That is why contemporary organizations are predominantly reactive, or at best responsive — rarely generative. On the other hand, leaders in learning organizations pay attention to all three levels, but focus especially on systemic structure; largely by example, they teach people throughout the organization to do likewise.

Leader as Steward

This is the subtlest role of leadership. Unlike the roles of designer and teacher, it is almost solely a matter of attitude. It is an attitude critical to learning organizations.

While stewardship has long been recognized as an aspect of leadership, its source is still not widely understood. I believe Robert Greenleaf came closest to explaining real stewardship, in his seminal book *Servant Leadership*.[20] There, Greenleaf argues that "The servant leader *is* servant first. . . . It begins with the natural feeling that one wants to serve, to serve *first*. This conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions."

Leaders' sense of stewardship operates on two levels: stewardship for the people they lead and stewardship for the larger purpose or mission that underlies the enterprise. The first type arises from a keen appreciation of the impact one's leadership

can have on others. People can suffer economically, emotionally, and spiritually under inept leadership. If anything, people in a learning organization are more vulnerable because of their commitment and sense of shared ownership. Appreciating this naturally instills a sense of responsibility in leaders. The second type of stewardship arises from a leader's sense of personal purpose and commitment to the organization's larger mission. People's natural impulse to learn is unleashed when they are engaged in an endeavor they consider worthy of their fullest commitment. Or, as Lawrence Miller puts it, "Achieving return on equity does not, as a goal, mobilize the most noble forces of our soul."[21]

Leaders engaged in building learning organizations naturally feel part of a larger purpose that goes beyond their organization. They are part of changing the way businesses operate, not from a vague philanthropic urge, but from a conviction that their efforts will produce more productive organizations, capable of achieving higher levels of organizational success and personal satisfaction than more traditional organizations. Their sense of stewardship was succinctly captured by George Bernard Shaw when he said,

> This is the true joy in life, the being used for a purpose you consider a mighty one, the being a force of nature rather than a feverish, selfish clod of ailments and grievances complaining that the world will not devote itself to making you happy.

New Skills

New leadership roles require new leadership skills. These skills can only be developed, in my judgment, through a lifelong commitment. It is not enough for one or two individuals to develop these skills. They must be distributed widely throughout the organization. This is one reason that understanding the *disciplines* of a learning organization is so important. These disciplines embody the principles and practices that can widely foster leadership development.

Three critical areas of skills (disciplines) are building shared vision, surfacing and challenging mental models, and engaging in systems thinking.[22]

Building Shared Vision

How do individual visions come together to create shared visions? A useful metaphor is the hologram, the three-dimensional image created by interacting light sources.

If you cut a photograph in half, each half shows only part of the whole image. But if you divide a hologram, each part, no matter how small, shows the whole image intact. Likewise, when a group of people come to share a vision for an organization, each person sees an individual picture of the organization at its best. Each shares responsibility for the whole, not just for one piece. But the component pieces of the hologram are not identical. Each represents the whole image from a different point of view. It's something like poking holes in a window shade; each hole offers a unique angle for viewing the whole image. So, too, is each individual's vision unique.

When you add up the pieces of a hologram, something interesting happens. The image becomes more intense, more lifelike. When more people come to share a vision, the vision becomes more real in the sense of a mental reality that people can truly imagine achieving. They now have partners, co-creators; the vision no longer rests on their shoulders alone. Early on, when they are nurturing an individual vision, people may say it is "my vision." But, as the shared vision develops, it becomes both "my vision" and "our vision."

The skills involved in building shared vision include the following:
• **Encouraging Personal Vision.** Shared visions emerge from personal visions. It is not that people only care about their own self-interest — in fact, people's values usually include dimensions that concern family, organization, community, and even the world. Rather, it is that people's capacity for caring is *personal.*
• **Communicating and Asking for Support.** Leaders must be willing to continually share their own vision, rather than being the official representative of the corporate vision. They also must be prepared to ask, "Is this vision worthy of your commitment?" This can be difficult for a person used to setting goals and presuming compliance.
• **Visioning as an Ongoing Process.** Building shared vision is a never-ending process. At any one point there will be a particular image of the future that is predominant, but that image will evolve. Today, too many managers want to dispense with the "vision business" by going off and writing the Official Vision Statement. Such statements almost always lack the vitality, freshness, and excitement of a genuine vision that

comes from people asking, "What do we really want to achieve?"

• **Blending Extrinsic and Intrinsic Visions.** Many energizing visions are extrinsic — that is, they focus on achieving something relative to an outsider, such as a competitor. But a goal that is limited to defeating an opponent can, once the vision is achieved, easily become a defensive posture. In contrast, intrinsic goals like creating a new type of product, taking an established product to a new level, or setting a new standard for customer satisfaction can call forth a new level of creativity and innovation. Intrinsic and extrinsic visions need to coexist; a vision solely predicated on defeating an adversary will eventually weaken an organization.

• **Distinguishing Positive from Negative Visions.** Many organizations only truly pull together when their survival is threatened. Similarly, most social movements aim at eliminating what people don't want: for example, anti-drugs, anti-smoking, or anti-nuclear arms movements. Negative visions carry a subtle message of powerlessness: people will only pull together when there is sufficient threat. Negative visions also tend to be short term. Two fundamental sources of energy can motivate organizations: fear and aspiration. Fear, the energy source behind negative visions, can produce extraordinary changes in short periods, but aspiration endures as a continuing source of learning and growth.

Surfacing and Testing Mental Models

Many of the best ideas in organizations never get put into practice. One reason is that new insights and initiatives often conflict with established mental models. The leadership task of challenging assumptions without invoking defensiveness requires reflection and inquiry skills possessed by few leaders in traditional controlling organizations.[23]

• **Seeing Leaps of Abstraction.** Our minds literally move at lightning speed. Ironically, this often slows our learning, because we leap to generalizations so quickly that we never think to test them. We then confuse our generalizations with the observable data upon which they are based, treating the generalizations *as if they were data.* The frustrated sales rep reports to the home office that "customers don't really care about quality, price is what matters," when what actually happened was that three consecutive large customers refused to place an order unless a larger discount was offered. The sales rep treats her

generalization, "customers care only about price," as if it were absolute fact rather than an assumption (very likely an assumption reflecting her own views of customers and the market). This thwarts future learning because she starts to focus on how to offer attractive discounts rather than probing behind the customers' statements. For example, the customers may have been so disgruntled with the firm's delivery or customer service that they are unwilling to purchase again without larger discounts.

• **Balancing Inquiry and Advocacy.** Most managers are skilled at articulating their views and presenting them persuasively. While important, advocacy skills can become counterproductive as managers rise in responsibility and confront increasingly complex issues that require collaborative learning among different, equally knowledgeable people. Leaders in learning organizations need to have both inquiry and advocacy skills.[24]

Specifically, when advocating a view, they need to be able to:

— explain the reasoning and data that led to their view;

— encourage others to test their view (e.g., Do you see gaps in my reasoning? Do you disagree with the data upon which my view is based?); and

— encourage others to provide different views (e.g., Do you have either different data, different conclusions, or both?).

When inquiring into another's views, they need to:

— actively seek to understand the other's view, rather than simply restating their own view and how it differs from the other's view; and

— make their attributions about the other and the other's view explicit (e.g., Based on your statement that . . . ; I am assuming that you believe . . . ; Am I representing your views fairly?).

If they reach an impasse (others no longer appear open to inquiry), they need to:

— ask what data or logic might unfreeze the impasse, or if an experiment (or some other inquiry) might be designed to provide new information.

• **Distinguishing Espoused Theory from Theory in Use.** We all like to think that we hold certain views, but often our actions reveal deeper views. For example, I may proclaim that people are trustworthy, but never lend friends money and jealously guard my possessions. Obviously, my deeper mental model (my theory in use), differs from my espoused theory. Recognizing gaps between espoused views and theories in use

(which often requires the help of others) can be pivotal to deeper learning.

• **Recognizing and Defusing Defensive Routines.** As one CEO in our research program puts it, "Nobody ever talks about an issue at the 8:00 business meeting exactly the same way they talk about it at home that evening or over drinks at the end of the day." The reason is what Chris Argyris calls "defensive routines," entrenched habits used to protect ourselves from the embarrassment and threat that come with exposing our thinking. For most of us, such defenses began to build early in life in response to pressures to have the right answers in school or at home. Organizations add new levels of performance anxiety and thereby amplify and exacerbate this defensiveness. Ironically, this makes it even more difficult to expose hidden mental models, and thereby lessens learning.

The first challenge is to recognize defensive routines, then to inquire into their operation. Those who are best at revealing and defusing defensive routines operate with a high degree of self-disclosure regarding their own defensiveness (e.g., I notice that I am feeling uneasy about how this conversation is going. Perhaps I don't understand it or it is threatening to me in ways I don't yet see. Can you help me see this better?)

Systems Thinking

We all know that leaders should help people see the big picture. But the actual skills whereby leaders are supposed to achieve this are not well understood. In my experience, successful leaders often *are* "systems thinkers" to a considerable extent. They focus less on day-to-day events and more on underlying trends and forces of change. But they do this almost completely intuitively. The consequence is that they are often unable to explain their intuitions to others and feel frustrated that others cannot see the world the way they do.

One of the most significant developments in management science today is the gradual coalescence of managerial systems thinking as a field of study and practice. This field suggests some key skills for future leaders:

• **Seeing Interrelationships, Not Things, and Processes, Not Snapshots.** Most of us have been conditioned throughout our lives to focus on things and to see the world in static images. This leads us to linear explanations of systemic phenomenon. For instance, in an arms race each party is convinced that the other is *the cause* of

problems. They react to each new move as an isolated event, not as part of a process. So long as they fail to see the interrelationships of these actions, they are trapped.

• **Moving beyond Blame.** We tend to blame each other or outside circumstances for our problems. But it is poorly designed systems, not incompetent or unmotivated individuals, that cause most organizational problems. Systems thinking shows us that there is no outside — that you and the cause of your problems are part of a single system.

• **Distinguishing Detail Complexity from Dynamic Complexity.** Some types of complexity are more important strategically than others. Detail complexity arises when there are many variables. Dynamic complexity arises when cause and effect are distant in time and space, and when the consequences over time of interventions are subtle and not obvious to many participants in the system. The leverage in most management situations lies in understanding dynamic complexity, not detail complexity.

• **Focusing on Areas of High Leverage.** Some have called systems thinking the "new dismal science" because it teaches that most obvious solutions don't work — at best, they improve matters in the short run, only to make things worse in the long run. But there is another side to the story. Systems thinking also shows that small, well-focused actions can produce significant, enduring improvements, if they are in the right place. Systems thinkers refer to this idea as the principle of "leverage." Tackling a difficult problem is often a matter of seeing where the high leverage lies, where a change — with a minimum of effort — would lead to lasting, significant improvement.

• **Avoiding Symptomatic Solutions.** The pressures to intervene in management systems that are going awry can be overwhelming. Unfortunately, given the linear thinking that predominates in most organizations, interventions usually focus on symptomatic fixes, not underlying causes. This results in only temporary relief, and it tends to create still more pressures later on for further, low-leverage intervention. If leaders acquiesce to these pressures, they can be sucked into an endless spiral of increasing intervention. Sometimes the most difficult leadership acts are to refrain from intervening through popular quick fixes and to keep the pressure on everyone to identify more enduring solutions.

While leaders who can articulate systemic ex-

planations are rare, those who *can* will leave their stamp on an organization. One person who had this gift was Bill Gore, the founder and long-time CEO of W.L. Gore and Associates (makers of GoreTex and other synthetic fiber products). Bill Gore was adept at telling stories that showed how the organization's core values of freedom and individual responsibility required particular operating policies. He was proud of his egalitarian organization, in which there were (and still are) no "employees," only "associates," all of whom own shares in the company and participate in its management. At one talk, he explained the company's policy of controlled growth: "Our limitation is not financial resources. Our limitation is the rate at which we can bring in new associates. Our experience has been that if we try to bring in more than a 25 percent per year increase, we begin to bog down. Twenty-five percent per year growth is a real limitation; you can do much better than that with an authoritarian organization." As Gore tells the story, one of the associates, Esther Baum, went home after this talk and reported the limitation to her husband. As it happened, he was an astronomer and mathematician at Lowell Observatory. He said, "That's a very interesting figure." He took out a pencil and paper and calculated and said, "Do you realize that in only fifty-seven and a half years, everyone in the world will be working for Gore?"

Through this story, Gore explains the systemic rationale behind a key policy, limited growth rate — a policy that undoubtedly caused a lot of stress in the organization. He suggests that, at larger rates of growth, the adverse effects of attempting to integrate too many new people too rapidly would begin to dominate. (This is the "limits to growth" systems archetype explained below.) The story also reaffirms the organization's commitment to creating a unique environment for its associates and illustrates the types of sacrifices that the firm is prepared to make in order to remain true to its vision. The last part of the story shows that, despite the self-imposed limit, the company is still very much a growth company.

The consequences of leaders who lack systems thinking skills can be devastating. Many charismatic leaders manage almost exclusively at the level of events. They deal in visions and in crises, and little in between. Under their leadership, an organization hurtles from crisis to crisis. Eventually, the worldview of people in the organization becomes dominated by events and reactiveness. Many, especially those who are deeply committed, become burned out. Eventually, cynicism comes to pervade the organization. People have no control over their time, let alone their destiny.

Similar problems arise with the "visionary strategist," the leader with vision who sees both patterns of change and events. This leader is better prepared to manage change. He or she can explain strategies in terms of emerging trends, and thereby foster a climate that is less reactive. But such leaders still impart a responsive orientation rather than a generative one.

Many talented leaders have rich, highly systemic intuitions but cannot explain those intuitions to others. Ironically, they often end up being authoritarian leaders, even if they don't want to, because only they see the decisions that need to be made. They are unable to conceptualize their strategic insights so that these can become public knowledge, open to challenge and further improvement.

New Tools

Developing the skills described above requires new tools — tools that will enhance leaders' conceptual abilities and foster communication and collaborative inquiry. What follows is a sampling of tools starting to find use in learning organizations.

Systems Archetypes

One of the insights of the budding, managerial systems-thinking field is that certain types of systemic structures recur again and again. Countless systems grow for a period, then encounter problems and cease to grow (or even collapse) well before they have reached intrinsic limits to growth. Many other systems get locked in runaway vicious spirals where every actor has to run faster and faster to stay in the same place. Still others lure individual actors into doing what seems right locally, yet which eventually causes suffering for all.[25]

Some of the system archetypes that have the broadest relevance include:

• **Balancing Process with Delay.** In this archetype, decision makers fail to appreciate the time delays involved as they move toward a goal. As a result, they overshoot the goal and may even produce recurring cycles. Classic example: Real estate developers who keep starting new projects until the market has gone soft, by

which time an eventual glut is guaranteed by the properties still under construction.

• **Limits to Growth.** A reinforcing cycle of growth grinds to a halt, and may even reverse itself, as limits are approached. The limits can be resource constraints, or external or internal responses to growth. Classic examples: Product life cycles that peak prematurely due to poor quality or service, the growth and decline of communication in a management team, and the spread of a new movement.

• **Shifting the Burden.** A short-term "solution" is used to correct a problem, with seemingly happy immediate results. As this correction is used more and more, fundamental long-term corrective measures are used less. Over time, the mechanisms of the fundamental solution may atrophy or become disabled, leading to even greater reliance on the symptomatic solution. Classic example: Using corporate human resource staff to solve local personnel problems, thereby keeping managers from developing their own interpersonal skills.

• **Eroding Goals.** When all else fails, lower your standards. This is like "shifting the burden," except that the short-term solution involves letting a fundamental goal, such as quality standards or employee morale standards, atrophy. Classic example: A company that responds to delivery problems by continually upping its quoted delivery times.

• **Escalation.** Two people or two organizations, who each see their welfare as depending on a relative advantage over the other, continually react to the other's advances. Whenever one side gets ahead, the other is threatened, leading it to act more aggressively to reestablish its advantage, which threatens the first, and so on. Classic examples: Arms race, gang warfare, price wars.
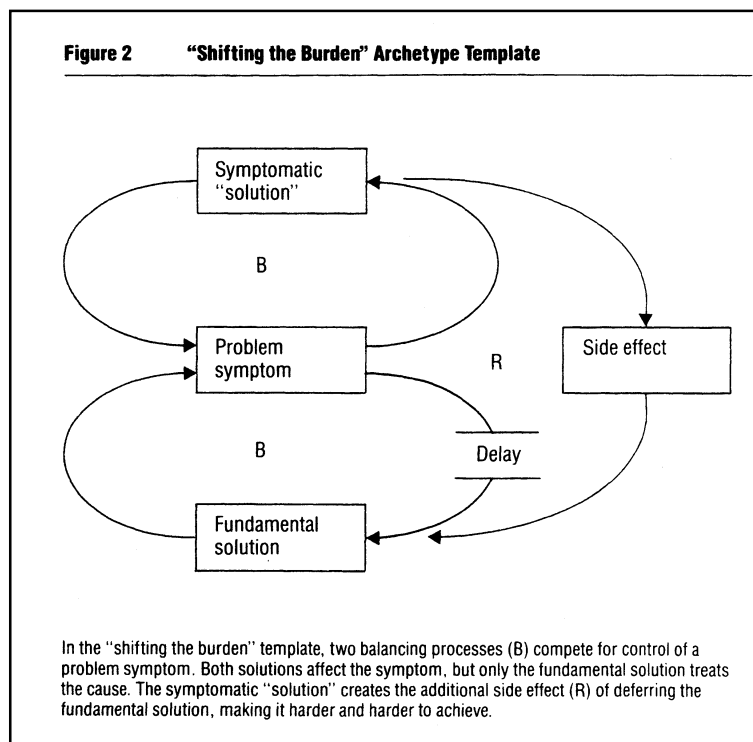
• **Tragedy of the Commons.**[26] Individuals keep intensifying their use of a commonly available but limited resource until all individuals start to experience severely diminishing returns. Classic examples: Sheepherders who keep increasing their flocks until they overgraze the common pasture; divisions in a firm that share a common salesforce and compete for the use of sales reps by upping their sales targets, until the salesforce burns out from overextension.

• **Growth and Underinvestment.** Rapid growth approaches a limit that could be eliminated or pushed into the future, but only by aggressive investment in physical and human capacity. Eroding goals or standards cause investment that is too weak, or too slow, and

customers get increasingly unhappy, slowing demand growth and thereby making the needed investment (apparently) unnecessary or impossible. Classic example: Countless once-successful growth firms that allowed product or service quality to erode, and were unable to generate enough revenues to invest in remedies.

The Archetype template is a specific tool that is helping managers identify archetypes operating in their own strategic areas (see Figure 2).[27] The template shows the basic structural form of the archetype but lets managers fill in the variables of their own situation. For example, the shifting the burden template involves two balancing processes ("B") that compete for control of a problem symptom. The upper, symptomatic solution provides a short-term fix that will make the problem symptom go away for a while. The lower, fundamental solution provides a more enduring solution. The side effect feedback ("R") around the outside of the diagram identifies unintended exacerbating effects of the symptomatic solution, which, over time, make it more and more difficult to invoke the fundamental solution.

Several years ago, a team of managers from a leading consumer goods producer used the shifting the burden archetype in a revealing way. The problem they focused on was financial stress,

Figure 2   "Shifting the Burden" Archetype Template

In the "shifting the burden" template, two balancing processes (B) compete for control of a problem symptom. Both solutions affect the symptom, but only the fundamental solution treats the cause. The symptomatic "solution" creates the additional side effect (R) of deferring the fundamental solution, making it harder and harder to achieve.

which could be dealt with in two different ways: by running marketing promotions (the symptomatic solution) or by product innovation (the fundamental solution). Marketing promotions were fast. The company was expert in their design and implementation. The results were highly predictable. Product innovation was slow and much less predictable, and the company had a history over the past ten years of product-innovation mismanagement. Yet only through innovation could they retain a leadership position in their industry, which had slid over the past ten to twenty years. What the managers saw clearly was that the more skillful they became at promotions, the more they shifted the burden away from product innovation. But what really struck home was when one member identified the unintended side effect: the last three CEOs had all come from advertising function, which had become the politically dominant function in the corporation, thereby institutionalizing the symptomatic solution. Unless the political values shifted back toward product and process innovation, the managers realized, the firm's decline would accelerate — which is just the shift that has happened over the past several years.

Charting Strategic Dilemmas

Management teams typically come unglued when confronted with core dilemmas. A classic example was the way U.S. manufacturers faced the low cost-high quality choice. For years, most assumed that it was necessary to choose between the two. Not surprisingly, given the short-term pressures perceived by most managements, the prevailing choice was low cost. Firms that chose high quality usually perceived themselves as aiming exclusively for a high quality, high price market niche. The consequences of this perceived either-or choice have been disastrous, even fatal, as U.S. manufacturers have encountered increasing international competition from firms that have chosen to consistently improve quality *and* cost.

In a recent book, Charles Hampden-Turner presented a variety of tools for helping management teams confront strategic dilemmas creatively.[28] He summarizes the process in seven steps:
• **Eliciting the Dilemmas.** Identifying the opposed values that form the "horns" of the dilemma, for example, cost as opposed to quality, or local initiative as opposed to central coordination and control. Hampden-Turner suggests that humor can be a distinct asset in this process

since "the admission that dilemmas even exist tends to be difficult for some companies."
• **Mapping.** Locating the opposing values as two axes and helping managers identify where they see themselves, or their organization, along the axes.
• **Processing.** Getting rid of nouns to describe the axes of the dilemma. Present participles formed by adding "ing" convert rigid nouns into processes that imply movement. For example, central control versus local control becomes "strengthening national office" and "growing local initiatives." This loosens the bond of implied opposition between the two values. For example, it becomes possible to think of "strengthening national services from which local branches can benefit."
• **Framing/Contextualizing.** Further softening the adversarial structure among different values by letting "each side in turn be the frame or context for the other." This shifting of the "figure-ground" relationship undermines any implicit attempts to hold one value as intrinsically superior to the other, and thereby to become mentally closed to creative strategies for continuous improvement of both.
• **Sequencing.** Breaking the hold of static thinking. Very often, values like low cost and high quality appear to be in opposition because we think in terms of a point in time, not in terms of an ongoing process. For example, a strategy of investing in new process technology and developing a new production-floor culture of worker responsibility may take time and money in the near term, yet reap significant long-term financial rewards.
• **Waving/Cycling.** Sometimes the strategic path toward improving both values involves cycles where both values will get "worse" for a time. Yet, at a deeper level, learning is occurring that will cause the next cycle to be at a higher plateau for both values.
• **Synergizing.** Achieving synergy where significant improvement is occurring along all axes of all relevant dilemmas. (This is the ultimate goal, of course.) Synergy, as Hampden-Turner points out, is a uniquely systemic notion, coming from the Greek *syn-ergo* or "work together."

"The Left-Hand Column": Surfacing Mental Models

The idea that mental models can dominate business decisions and that these models are often tacit and even contradictory to what people es-

pouse can be very threatening to managers who pride themselves on rationality and judicious decision making. It is important to have tools to help managers discover for themselves how their mental models operate to undermine their own intentions.

One tool that has worked consistently to help managers see their own mental models in action is the "left-hand column" exercise developed by Chris Argyris and his colleagues. This tool is especially helpful in showing how we leap from data to generalization without testing the validity of our generalizations.

When working with managers, I start this exercise by selecting a specific situation in which I am interacting with other people in a way that is not working, that is not producing the learning that is needed. I write out a sample of the exchange, with the script on the right-hand side of the page. On the left-hand side, I write what I am thinking but not saying at each stage in the exchange (see sidebar).

The left-hand column exercise not only brings hidden assumptions to the surface, it shows how they influence behavior. In the example, I make two key assumptions about Bill: he lacks confidence and he lacks initiative. Neither may be literally true, but both are evident in my internal dialogue, and both influence the way I handle the situation. Believing that he lacks confidence, I skirt the fact that I've heard the presentation was a bomb. I'm afraid that if I say it directly, he will lose what little confidence he has, or he will see me as unsupportive. So I bring up the subject of the presentation obliquely. When I ask Bill what we should do next, he gives no specific course of action. Believing he lacks initiative, I take this as evidence of his laziness; he is content to do nothing when action is definitely required. I conclude that I will have to manufacture some form of pressure to motivate him, or else I will simply have to take matters into my own hands.

The exercise reveals the elaborate webs of assumptions we weave, within which we become our own victims. Rather than dealing directly with my assumptions about Bill and the situation, we talk around the subject. The reasons for my avoidance are self-evident: I assume that if I raised my doubts, I would provoke a defensive reaction that would only make matters worse. But the price of avoiding the issue is high. Instead of determining how to move forward to resolve our problems, we end our exchange with no clear course of action. My assumptions about

Bill's limitations have been reinforced. I resort to a manipulative strategy to move things forward.

The exercise not only reveals the need for skills in surfacing assumptions, but that we are the ones most in need of help. There is no one right way to handle difficult situations like my exchange with Bill, but any productive strategy revolves around a high level of self-disclosure and willingness to have my views challenged. I need to recognize my own leaps of abstraction regarding Bill, share the events and reasoning that are

The Left-Hand Column: An Exercise

Imagine my exchange with a colleague, Bill, after he made a big presentation to our boss on a project we are doing together. I had to miss the presentation, but I've heard that it was poorly received.

Me: How did the presentation go?
Bill: Well, I don't know. It's really too early to say. Besides, we're breaking new ground here.
Me: Well, what do you think we should do? I believe that the issues you were raising are important.
Bill: I'm not so sure. Let's just wait and see what happens.
Me: You may be right, but I think we may need to do more than just wait.

Now, here is what the exchange looks like with my "left-hand column":

What I'm Thinking	What Is Said
Everyone says the presentation was a bomb.	**Me:** How did the presentation go?
Does he really not know how bad it was? Or is he not willing to face up to it?	**Bill:** Well, I don't know. It's too early to say. Besides, we're breaking new ground here.
	Me: Well, what do you think we should do? I believe that the issues you were raising are important.
He really is afraid to see the truth. If he only had more confidence, he could probably learn from a situation like this.	**Bill:** I'm not so sure. Let's just wait and see what happens.
I can't believe he doesn't realize how disastrous that presentation was to our moving ahead.	**Me:** You may be right, but I think we may need to do more than just wait.
I've got to find some way to light a fire under the guy.	

Learning at Hanover Insurance

Hanover Insurance has gone from the bottom of the property and liability industry to a position among the top 25 percent of U.S. insurance companies over the past twenty years, largely through the efforts of CEO William O'Brien and his predecessor, Jack Adam. The following comments are excerpted from a series of interviews Senge conducted with O'Brien as background for his book.

Senge: Why do you think there is so much change occurring in management and organizations today? Is it primarily because of increased competitive pressures?

O'Brien: That's a factor, but not the most significant factor. The ferment in management will continue until we find models that are more congruent with human nature.

One of the great insights of modern psychology is the hierarchy of human needs. As Maslow expressed this idea, the most basic needs are food and shelter. Then comes belonging. Once these three basic needs are satisfied, people begin to aspire toward self-respect and esteem, and toward self-actualization — the fourth- and fifth-order needs.

Our traditional hierarchical organizations are designed to provide for the first three levels, but not the fourth and fifth. These first three levels are now widely available to members of industrial society but our organizations do not offer people sufficient opportunities for growth.

Senge: How would you assess Hanover's progress to date?

O'Brien: We have been on a long journey away from a traditional hierarchical culture. The journey began with everyone understanding some guiding ideas about purpose, vision, and values as a basis for participative management. This is a better way to begin building a participative culture than by simply letting people in on "decision making." Before there can be meaningful participation, people must share certain values and pictures about where we are trying to go. We discovered that people have a real need to feel that they're part of

an ennobling mission. But developing shared visions and values is not the end, only the beginning.

Next we had to get beyond mechanical, linear thinking. The essence of our jobs as managers is to deal with "divergent" problems — problems that have no simple answer. "Convergent" problems — problems that have a "right" answer — should be solved locally. Yet we are deeply conditioned to see the world in terms of convergent problems. Most managers try to force-fit simplistic solutions and undermine the potential for learning when divergent problems arise. Since everyone handles the linear issues fairly well, companies that learn how to handle divergent issues will have a great advantage.

The next basic stage in our progression was coming to understand inquiry and advocacy. We learned that real openness is rooted in people's ability to continually inquire into their own thinking. This requires exposing yourself to being wrong — not something that most managers are rewarded for. But learning is very difficult if you cannot look for errors or incompleteness in your own ideas.

What all this builds to is the capability throughout an organization to manage mental models. In a locally controlled organization, you have the fundamental challenge of learning how to help people make good decisions without coercing them into making particular decisions. By managing mental models, we create "self-concluding" decisions — decisions that people come to themselves — which will result in deeper conviction, better implementation, and the ability to make better adjustments when the situation changes.

Senge: What concrete steps can top managers take to begin moving toward learning organizations?

O'Brien: Look at the signals you send through the organization. For example, one critical signal is how you spend your time. It's hard to build a learning organization if people are unable to take the time to think through important matters. I rarely set up an

appointment for less than one hour. If the subject is not worth an hour, it shouldn't be on my calendar.

Senge: Why is this so hard for so many managers?

O'Brien: It comes back to what you believe about the nature of your work. The authoritarian manager has a "chain gang" mental model: "The speed of the boss is the speed of the gang. I've got to keep things moving fast, because I've got to keep people working." In a learning organization, the manager shoulders an almost sacred responsibility: to create conditions that enable people to have happy and productive lives. If you understand the effects the ideas we are discussing can have on the lives of people in your organization, you will take the time. ∎

leading to my concern over the project, and be open to Bill's views on both. The skills to carry on such conversations without invoking defensiveness take time to develop. But if both parties in a learning impasse start by doing their own left-hand column exercise and sharing them with each other, it is remarkable how quickly everyone recognizes their contribution to the impasse and progress starts to be made.

Learning Laboratories: Practice Fields for Management Teams

One of the most promising new tools is the learning laboratory or "microworld": constructed microcosms of real-life settings in which management teams can learn how to learn together.

The rationale behind learning laboratories can best be explained by analogy. Although most management teams have great difficulty learning (enhancing their collective intelligence and capacity to create), in other domains team learning is the norm rather than the exception — team sports and the performing arts, for example. Great basketball teams do not start off great. They learn. But the process by which these teams learn is, by and large, absent from modern organizations. The process is a continual movement between practice and performance.

The vision guiding current research in management learning laboratories is to design and construct effective practice fields for management teams. Much remains to be done, but the broad outlines are emerging.

First, since team learning in organizations is an individual-to-individual and individual-to-system phenomenon, learning laboratories must combine meaningful business issues with meaningful interpersonal dynamics. Either alone is incomplete.

Second, the factors that thwart learning about complex business issues must be eliminated in the learning lab. Chief among these is the inability to experience the long-term, systemic consequences of key strategic decisions. We all learn best from experience, but we are unable to experience the consequences of many important organizational decisions. Learning laboratories remove this constraint through system dynamics simulation games that compress time and space.

Third, new learning skills must be developed. One constraint on learning is the inability of managers to reflect insightfully on their assumptions and to inquire effectively into each other's assumptions. Both skills can be enhanced in a learning laboratory, where people can practice surfacing assumptions in a low-risk setting. A note of caution: It is far easier to design an entertaining learning laboratory than it is to have an impact on real management practices and firm traditions outside the learning lab. Research on management simulations has shown that they often have greater entertainment value than educational value. One of the reasons appears to be that many simulations do not offer deep insights into systemic structures causing business problems. Another reason is that they do not foster new learning skills. Also, there is no connection between experiments in the learning lab and real life experiments. These are significant problems that research on learning laboratory design is now addressing.

Developing Leaders and Learning Organizations

In a recently published retrospective on organization development in the 1980s, Marshall Sashkin and N. Warner Burke observe the return of an emphasis on developing leaders who can develop organizations.[29] They also note Schein's critique that most

top executives are not qualified for the task of developing culture.[30] Learning organizations represent a potentially significant evolution of organizational culture. So it should come as no surprise that such organizations will remain a distant vision until the leadership capabilities they demand are developed. "The 1990s may be the period," suggest Sashkin and Burke, "during which organization development and (a new sort of) management development are reconnected."

I believe that this new sort of management development will focus on the roles, skills, and tools for leadership in learning organizations. Undoubtedly, the ideas offered above are only a rough approximation of this new territory. The sooner we begin seriously exploring the territory, the sooner the initial map can be improved — and the sooner we will realize an age-old vision of leadership:

> The wicked leader is he who the people despise.
>
> The good leader is he who the people revere.
>
> The great leader is he who the people say, "We did it ourselves."
>
> —Lao Tsu ∎

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