THE SYSTEMS THINKER™

Special Conference Issue

Building Organizational Learning Infrastructures

The systems and structures that have served our organizations well throughout the Machine Age are no longer adequate to meet the demands of the emerging business reality. Our challenge today is to create new organizational structures for managing the intricate web of interdependencies in which we operate. For this reason, "Building Organizational Learning Infrastructures" was chosen as the topic for the 1995 Systems Thinking in Action™ Conference, held on September 18–20 in Boston. The following summaries of the keynote presenta-

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tions explore the importance of learning infrastructure for creating and sustaining large-scale change. Complete recordings of the keynote sessions are available on audio- and videotape, as part of the Systems Thinking in Action Conference Collection.
—Colleen P. Lannon

Peter Block—Stewardship: A Governance Strategy for the Learning Organization

As we begin to develop new infrastructures for organizational learning, at some point we must address the ineffectiveness of our current governance systems. Peter Block argues that nothing short of political reform at the institutional level will provide us with the systems and structures needed to steward the learning organization into the future. His exploration of the concept of stewardship provides a foundation for creating institutional structures that engage each individual in the process of moving a company toward its desired future.
—CPL

Over the years, we have tried to humanize and soften our organizational structures. But all we have learned to do is adapt more effectively to what is essentially a corrupt and autocratic system. What we really need is political reform at the level of institu-

tional structure that addresses the larger issue of power—who is "in charge." Ultimately, we must ask how we can create institutions where citizens and citizenship are rediscovered. How can we create a culture where we are all accountable for what is happening?

Accountability and Patriarchy

To be accountable means to carry the well-being of an institution in one's hands. Such a change in thinking demands a redistribution of power. But given the political structures in which we now live, such redistribution is almost impossible. Our current structures are highly controlling and deeply patriarchal. Unfortunately, we all collude in maintaining that structure. We treat top management as if it is more important than other areas of the company, and we continue to express the belief that learning must start at the top (e.g., "leadership sets the vision").

In fact, most of our management practices are "colonial" strategies designed to maintain consistency, control, and predictability. If we are serious about creating learning organizations— places where surprise, discovery, and genuine contact have meaning—then we have to do something about these

artifacts of sovereignty and colonialism.

The economic motivation for change is driven by customers. They are demanding a unique response to their needs, which our current structures are incapable of providing. For example, look at the difference between Federal Express and the U.S. Post Office. At Federal Express, if I give them my last name and zip code, they know exactly who I am. More importantly, they know my needs and preferences as a customer. The post office, on the other hand, identifies me as "Current Resident." Even though they come to my house every day, they do not know me as a unique customer. It's not that the people in the post office care less about their customers than Federal Ex-

press does, it is just that Federal Express is organized to allow the customer to control the relationship. In order to make that happen in all organizations, we need to redesign our structures so that everyone feels responsible and accountable for meeting the customer's needs.

Social Architecture

So how can we design new social architecture to support accountability and responsibility? Our task is to build the capacity of local units to redesign and reconfigure themselves—whether it is a neighborhood, school, or department. That redesign should focus on five areas: job design, staff roles, human resource practices, pay practices, and financial practices.

Redesigning Jobs. How do we engage people in restructuring their jobs to ensure that they meet the needs of a market?

Staff Roles. Many of our staff functions—finance, human resources, training and development, etc.—still operate as if top management is their customer. But we cannot have an empowered workforce if we still have staff groups that serve in a policing role. By allowing line management a choice of staff services, we can remove the power from the hands of staff groups and have them *serve* local units.

Human Resource Practices. How can we redesign our human resource practices to promote partnership? One way is to put power and choice in the hands of those doing the actual work by enabling peers to do the hiring, the scheduling, and the feedback of each other.

Pay Practices. Most institutions have two pay systems: executive compensation and regular compensation. The goal for executive compensation is to pay the people at the top as much as possible, while regular compensation is targeted at suppressing labor costs. How

can we create a partnership when we have a system as divisive as that?

Pay should be based on success or failure in the marketplace. If a supervisor determines pay increases, that insulates individuals from the marketplace. We need to pay according to real business outcomes, rather than approval ratings.

Financial Practices. How can our financial practices create ownership at the center and at the bottom of the organization? The problem with high-control systems is that they steal accountability away from people. If management decides our pay, if others organize our efforts, if we look to "the top" to define the future, we are simply reinforcing the notion that we are not responsible. By creating a culture of accountability, and by redistributing choice and power throughout the organization, we *can* create large, whole systems change.

—*Edited by Elisabeth Bowman*

Danah Zohar—A Quantum Vision for Building the Learning Organization

The top-down control that has characterized traditional management structures is no longer effective in an age of accelerating uncertainty and rapid change. The new physics of the 20th century—particularly quantum physics—offers a new model for creating the integrative, cooperative, and constantly inventive infrastructures necessary for the learning organization. In her presentation, Danah Zohar explores the implications of the Newtonian paradigm for our society and our organizations, and describes the new possibilities that present themselves when we begin to view our organizations through the lens of quantum physics. —CPL

O ur paradigm—our deeply held set of unconscious assumptions— structures our experiences without us even realizing it. Our environment shapes this paradigm, and the paradigm,

in turn, focuses our attention. It determines the questions we will ask, the expectations we will have, and the experiments we will do in our lives and in our organizations.

In fact, our brains can't help making mental models based on our paradigms. The purpose of the self-organizing system in the brain is to make patterns out of our experience. Without this pattern-making process, we would be completely scattered. The downside, however, is that our paradigms can trap us. We can get "paradigm paralysis," where we only know how to ask the questions that our paradigm allows us to ask.

Part of breaking out of paradigm paralysis is learning to ask new questions. In complexity and chaos physics today, there is this idea of being "at the edge," meaning that we are poised like a tightrope walker between too much order and too much chaos. If we can learn to poise ourselves at the edge, *that* is where we can be most creative and begin to ask new questions that will lead to new mental models and patterns.

Newtonian Physics
All of the concepts, language, expectations, and images of our culture have come down to us filtered through the lens of Newtonian physics. Newton said that the physical world consists ultimately of atoms. Each atom is impenetrable and is related to every other by way of forces of action and reaction. When one atom touches another, it knocks the other off its path. If it doesn't *want* the other off its path, the best it can do is avoid the other atom—it can "compromise."

Freud modeled his psychology of object relations after Newtonian atomism. He said, "You're an object to me, and I'm an object to you. When we meet, all we can do is bounce into each other, conflict, and go our separate

ways. Or we find avoidance strategies." This idea is the basis of our notion that the individual is the primary unit of society. It has led, unfortunately, to an emphasis on fragmentation. We divide our organizations into units, and these units compete and bounce against each other.

The quantum model, on the other hand, tells us that everything in the universe is interwoven with everything else. The quantum universe says that the world doesn't consist of separate interacting parts; it consists of sets of systems that are so interwoven that they take their identity from their relationship. For example, the way I relate to you changes me. The environment in which your organization operates changes the potentiality and the whole agenda for your organization.

Uncertainty in the Quantum Organization
A quantum organization therefore stresses dynamic integration—cooperation rather than competition. In quantum physics, C always equals more than A+B. You have to bring A and B into interrelationship to get that larger C. For example, I am an individual, and I make decisions as an individual. But I am also in relationship to others, and part of me is being evoked by participation in that field. By engaging with another person in relationship, I realize an aspect of myself to which I did not have access before.

If you have a Newtonian particle at A, and it wants to get to location B, there's one best path for that particle—it will follow the path of a straight line and go directly to B. Now in quantum systems, if you have a particle at A, you don't even know where B is or *what* B is. It's only eventually, when B comes into focus, that we see retroactively the particular path A took to get to B. Quantum physics thus says we can't predict anything, and that there's no single

"best path."

Thus, the leading principle of 20th-century science is this idea of uncertainty. For our organizations, this means that we need to develop infrastructures that will allow us to surface all our potentiality and actually *thrive* on uncertainty. If I come into a situation with the belief that I know what I want to do, I will just get the result I am looking for. But if I come to a situation with an attitude of inquiry—questioning what might be the best way forward or what insights others can offer—then new possibilities will slowly evolve and I will get a result I never imagined possible.

Dialogue
The larger question we need to address as individuals and organizations is, "How can we dip into that rich field of potentiality and develop a whole that is greater than the sum of the parts?" Dialogue is one way to do this, because we come to a dialogue with a willingness to share our uncertainty, our pain, and our expectations. Through that process, something rather magical happens. Suddenly, everything comes together, and new ideas emerge. With those new ideas, our present position evolves—not through a Newtonian perspective, but through questioning and uncertainty. And from that experience, we arrive at a new way of thinking.

—Edited by Kellie Wardman O'Reilly

Karl-Henrik Robèrt—The Natural Step: A Framework for Large-Scale Change
Moving from fragmentation to wholeness means expanding our perspective to include the larger system. In his talk, Karl-Henrik Robèrt describes The Natural Step, a large-scale social and environmental movement that is based on the following premise: "If you want a large number of people to work

together in a coordinated way, they must share an image of the system of which they are a part." His story provides an illustration of how a common shared vision can become the catalyst for effecting large-scale change. —CPL

The Natural Step is a federation of professional associations in Sweden—economists, doctors, business leaders, lawyers, entertainers, etc.—that are working toward developing a sustainable society. There are approximately 10,000 people participating in The Natural Step, working together on cooperative projects. What binds our group together is a collective understanding of the larger system of which we are a part.

A system is like a tree—the trunk and the branches are the underlying principles that give form and structure to the system, while the leaves represent the various efforts we can take to meet the principles. If we look at our work in The Natural Step from this perspective, we can see that the various associations—the engineers and scientists, doctors and lawyers—are each operating as the leaves, providing input from their background, while the trunk provides an overarching unity to our work. Because we are operating out of a shared mental model of the system as a whole, we are able to operate effectively as a team, rather than simply a collection of individuals. By working cooperatively toward the same overall principles of sustainability, we believe we can create large-scale change.

There Is No "Away"

We know from physics—from the principal of the conservation of matter—that the Earth cannot expand in volume or size to support its inhabitants. Matter doesn't disappear on Earth, but it does change forms. That is the core of our dilemma: we are systematically turning our natural resources into gar-

bage. We are consuming resources and turning them into dispersed waste faster than they can be reconstituted back into resources.

Our whole biosphere operates as a system of natural cycles. For over two million years, the human species took part in those cycles, utilizing resources in a manner that was sustainable. Then we identified concentrated energy, such as fossil fuels and nuclear power, which gave us access to tremendous flows of matter. Now that we have the power to utilize these resources, we are flooding our own ecosystem. We are turning back the evolutionary clock and making our species extinct. This is the global challenge that we face.

Toward Sustainability

So what are some overall principles for sustainability? Clearly, a sustainable society must integrate itself into the natural cycles of the Earth. Since matter cannot disappear, the sum of the living resources must equal the waste that is emitted back into the system. With this in mind, it is not difficult to identify the overall principle for sustainability in our whole ecosphere: there must be a balance in these flows. The basic principles can be summarized in four system conditions:

1. Extracted substances from the Earth's crust must not systematically increase in nature. Nature cannot sustain a systematic increase of dispersed junk from the Earth's crust. Why? Because substances disperse, but they do not disappear. Every substance becomes a toxin if its concentration is too high.

2. Substances produced by society must not systematically increase in nature. For the same reason as above, we must not produce unnatural, persistent substances such as DDT, PCB, or freons, which contribute to a systematic

increase of man-made compounds. When we produce more compounds than can be handled in the system, they naturally increase in concentration and become deleterious to the system as a whole.

3. The physical basis for the productivity and diversity of nature must not be systematically deteriorated. This principle refers to the Earth's system itself—its physical needs. We cannot keep digging up the earth, eliminating forests, and destroying the species that coexist in this system.

4. We must have a fair and efficient use of energy and other resources. If one billion people starve while another billion have a definitive over-production of goods, this cannot be perceived as a fair and efficient use of resources to meet human needs.

Creating a Sustainable Society

Thus, the four system conditions make up the trunk of the tree—the absolute,
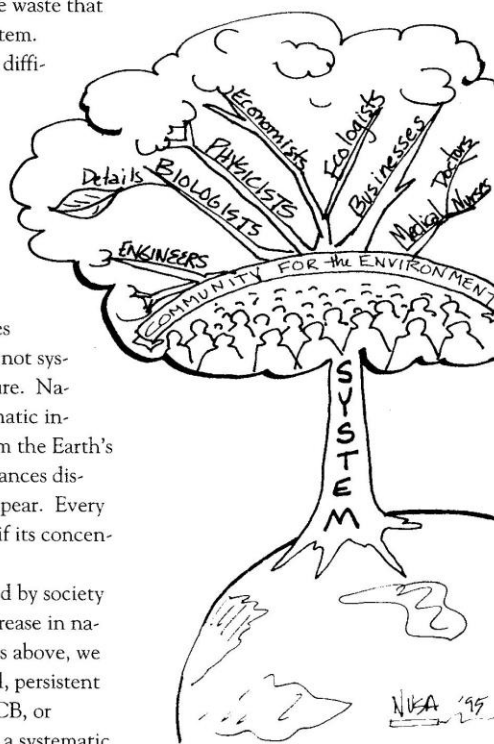
bottom-line conditions for the entire system. If we want to create a sustainable society, we must live in agreement with these basic principles. For businesses, operating according to these basic principles is also a way of saving money and becoming more efficient.

As part of our work in The Natural Step, we work with businesses to identify the systemic consequences of their actions. By referring to the four basic system conditions, we identify the consequences of current practices, and offer professional advice on how to operate within those principles as well as prosper from them. We train businesses to make investments that help them improve their image in the short term and set the stage for greater profitability in the long term. For example, if we continually convert non-renewable resources into garbage, the prices of those resources will inevitably go up.

We also prompt businesses to ask themselves this critical question: "Are we systematically making ourselves less economically dependent on resources or practices that have no future?" For example, suppose we are trying to decide if we should rely more or less on mining a particular substance. If there is very little room for more mining in the system because it will violate a system condition, it is not a good long-term strategy. Any smart team understands that you will be hit by the future market or by future legislation if you systematically depend on something that has no future.

So the rules of the game for the future involve making ourselves economically independent of violating the four system conditions. If we do not succeed in this effort, the consequences are obvious—we are our own Titanic. If we go down, we all die together. The laws of nature supersede man-made laws, and they will impose themselves on us whether we want it or not—it's just a matter of time. In realizing this, we can make a choice—to continue to

follow unsustainable practices that we will pay for in the long term, or begin to profit *now* from smart investments that take into account the natural infrastructure of which we are a part.

—*Edited by Diane J. Reed*

Peter M. Senge—Building Learning Infrastructures

Sustaining large-scale change requires more than a one-time shift in structures and habits—it requires deeply embedded infrastructures that enable the continued creation and dissemination of new knowledge. Peter Senge discusses the recent innovations in infrastructure that are making the learning organization a sustainable phenomenon. His discussion of infrastructure then becomes a springboard for exploring the role of storytelling in creating a larger context and meaning for our work. —CPL

There has been a lot of emphasis in business lately on the importance of infrastructure. Reengineering, business process redesign, and rethinking performance measures all have to do with the infrastructure of organizations—what wires things together. I believe that fundamental innovations in infrastructure are important in order to create an environment where the work we are doing can continue. These innovations in infrastructure fall into two categories: (1) rethinking and redesigning existing infrastructures; and (2) creating new infrastructures to support learning.

Redesigning Existing Infrastructure. One area of potential leverage involves redesigning existing organizational infrastructures—the processes that currently hold together organizations. For example, Shell International Petroleum Company's rise from a mediocre position in the world oil industry to preeminence was the redesign of a critical infrastructure—its planning process. Shell's planners discovered that having a single plan was becoming irrelevant in a world of unpredictability and change.

But the planning process itself—the act of bringing people together to develop strategies in response to various scenarios—was increasingly important. Shell's scenario planning process, which was eventually named "planning as learning," represents an extraordinarily elegant strategy for creating new learning capabilities in organizations.

Creating New Infrastructures. In addition to rethinking the elements of infrastructure that have always existed, over the last few years a whole host of new innovations in learning infrastructure have emerged. For example, coaching networks have become an important part of team development. Coaching can take the form of educational initiatives, diagnosis, intervention design, facilitation, and core process consultation. At EDS there are now about 100 "transformational coaches" who have gone through a one-year training program in these skills, and several other companies are developing similar networks of internal coaches.

Another area of infrastructure development centers around redesigning the work environment so that working and learning become inseparable. This includes innovations such as learning laboratories and applied practice fields. For example, at Ford Motor Company, the 1995 Lincoln Continental team created a new car development learning laboratory. Federal Express has also developed a global sales learning laboratory, and there are many other learning laboratories being used in other companies.

These individual learning experiences have had some well-documented successes. But the next challenge is how to share the insights from individual teams throughout the respective companies. We are gradually coming to realize that there is no infrastructure in our organizations to enable serious analysis and reflection on what is being

learned. One possible way to do this is through learning histories—a formal process that is being developed for capturing data on critical learning incidents. As one example, for 150 years the U.S. Army has had learning historians who provide it with a rich sense of its own history and its ability to learn from the past.

Why Talk about Infrastructure?

We can get very excited about the new infrastructures that are being developed, but building infrastructure is not an end in and of itself. Organizational learning infrastructures are part of a larger group of elements that are essential for designing a learning organization—what I have termed "organizational architecture" (see "Framework for the Learning Organization"). And organizational architecture really functions in the service of a larger purpose, which is to create an environment in which the "deep learning cycle" can be initiated, energized, and sustained. The deep learning

cycle involves developing fundamental new skills and capabilities, which lead people to see the world differently and then to develop fundamental new attitudes and beliefs.

Essentially, we need to develop sufficient organizational architecture in order to begin to sustain this deep learning cycle—to be able to create some degree of critical mass of new collective capacity. As this capacity develops, it further expands our collective ability to listen to the larger pattern of what is emerging—the "implicate order" that I referred to in my original presentation of this framework at the 1993 *Systems Thinking in Action™* Conference.

This brings us to a new point in the cycle, as we reflect on the emerging story—a new, deeper set of "guiding ideas."

What Is Our Story?

I think this brings us to the question, "What is our new cultural story?" Cultures ultimately need a story in order to be vital. But as a society and as a cul-

ture, we have lost our story. The old story—the account of how the world came to be and how we fit into it—sustained us for a long period of time. It shaped our emotional attitudes, provided us with life purpose, and energized our actions. But it is no longer functioning properly, and we have not learned a new one.

Dee Hock, the founder of VISA International, says that "we are living in an era of massive institutional failure on every front." The mismatch between our large institutions and the deeply complex interdependent world we live in is evident in our current environmental crises, in the chaos and perpetual crises of businesses, in our paralysis in confronting national political issues, in the breakdown of our societal infrastructure and civic spirit, etc. There is not a single critical institution that is not failing in the eyes of the public.

As the cycle moves another turn, it's time for a new set of guiding ideas. It's time for a new story of how human beings and human institutions can rediscover our place in a larger natural order. As Sarita Chawla asked, "What is the story our grandchildren would want us to be telling today?"

—*Edited by Colleen P. Lannon*

Peter Block is a consultant and speaker whose work focuses on ways to create empowering organizations. He is the author of *Stewardship* and *The Empowered Manager*

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Framework for the Learning Organization

Innovations in infrastructure are part of a larger group of elements—organizational architecture—that are essential for designing a learning organization. Organizational architecture really functions in the service of a larger purpose, which is to create an environment in which the "deep learning cycle" can be initiated, energized, and sustained. The deep learning cycle involves developing fundamental new skills and capabilities, which lead people to see the world differently and to develop fundamental new attitudes and beliefs.