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The Inescapable Need to Change Our Organizations: An Interview with Peter Senge

According to Peter Senge, author of the much-acclaimed book *The Fifth Discipline*, unless we profoundly shift the ways in which our businesses operate, we face serious social, economic, environmental, and health consequences, some of which we're already beginning to experience. Many of us have the mental model that some senior leader must be responsible for spearheading change, in our organizations and in our world. But from a systemic perspective, the reality is just the opposite. Most large systems are so complex that no one person can bring about the needed change. Rather, large-scale transformation occurs when new ideas take root in people's minds and inspire them to do things differently—many things by many people.

At the same time, what any individual organization can do alone to address the growing challenges is very small. Any enduring change strategy must therefore include building and sustaining networks of collaborators across many boundaries. Our future depends on our ability to come together—as individuals, organizations, nations—to address the growing imbalances that threaten us all.

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As many organizations know, sustainable corporate change can be elusive. Why? Because we often fail to ensure that our organization's "unwritten rules"—the invisible forces that drive people's behavior—support the new course that we're striving to chart. These rules, like the bulk of an iceberg, lie below the surface, shaping workplace culture and affecting team, division, and overall organizational functionality. A systemic leader who knows how to surface, analyze, and appropriately alter her organization's unwritten rules wields a great lever for organizational and industrywide transformation.

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School superintendents, administrators, board members, and others involved in public education face a Herculean task—gaining enough understanding of an infinitely complex system so they can make good decisions about how to allocate resources; determine the impact of district, state, and federal policies on their system; and anticipate future challenges. System dynamics and computer modeling are largely untapped tools that can help them confront this task. This article offers a model that explores the effectiveness of different professional development programs in building a critical mass of teachers skilled in teaching a standards-based curriculum.

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In this age, when many voters are attracted to political candidates from the business world who vow to run government like a corporation, can business leaders learn anything from the public sector? In their book, *A Company of Citizens: What the World's First Democracy Teaches Leaders About Creating Great Organizations* (Harvard Business School, 2003), organizational expert Brook Manville and Princeton classics professor Josiah Ober respond to this question with a resounding "yes"—provided we look 2,400 years into the past to the roots of democracy in ancient Athens.

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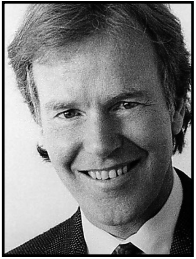
Based on the work of Daniel Goleman and others, we're learning that emotionally intelligent individuals with high levels of self-knowledge and an understanding of how to change long-entrenched habits may be best positioned to lead their organizations to lasting success. Changing habits requires practicing self-awareness, using imagery, reframing events, and integrating others' perspectives. Adopting these disciplines can boost both individual and organizational effectiveness.

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THE INESCAPABLE NEED TO CHANGE OUR ORGANIZATIONS: AN INTERVIEW WITH PETER SENGE



More than a decade has passed since Peter Senge wrote the groundbreaking book *The Fifth Discipline: The Art and Practice of the Learning Organization* (Currency/Doubleday, 1990), which *Harvard Business*

Review named one of the seminal management books of the past 75 years. Through his engagement in countless change initiatives over the years, along with his participation in conversations with thought leaders from around the world, Peter has further developed his thinking about what it will take for organizations and society as a whole to thrive in the 21st century—and the role each of us can play in making that happen. Publications editor Kali Saposnick recently sat down with Peter to learn what he perceives to be the role of organizations in responding to the promise and the challenge of the coming years.

The Systems Thinker®: What are the two or three new big ideas for management in the 21st century?

Peter Senge: Organizations will have to be much more in tune with and ultimately responsible for their impact on social and environmental well-being. In addition, to remain competitive and successful, they will need to tap the collective intelligence, spirit, and energy of their people. Bill O'Brien used to say that in the 20th century, to be effective, organizations focused on developing manufacturing, financial, and, to some degree, marketing sophistication, but they operated with mediocre people skills. In the 21st century, while manufacturing, financial, and marketing expertise will remain important, organizations that will thrive will have comparably sophisticated people skills.

These two imperatives will increasingly intertwine. As former

Volvo and IKEA CEO Goran Carstedt said, the challenge is to develop organizations “worthy of people’s commitment.” Most of us can see that our current approach to globalization is creating great stress in the world. Organizations, especially businesses, that seek to tap the insight, commitment, and creativity of their people will need to be committed to enhancing social and environmental well-being, not just to making money.

TST: What changes are most needed in the next decade? Where is the highest leverage for bringing about the kinds of changes you think would help our world?

Any enduring change strategy includes building and sustaining networks of collaborators across many boundaries.

Senge: SoL (the Society for Organizational Learning) operates from the assumption that collaboration among organizations is, and will increasingly be, vital to sustaining deep changes in the traditional management culture. When I say *management culture*, I mean the prevailing and often unquestioned assumptions and taken-for-granted practices of management in Industrial Age organizations. One traditional assumption is that, rather than having several performance requirements, the sole purpose of a business is to maximize return on invested capital. Another is that, to enhance performance, managers need to focus everyone on “the bottom line,” what accounting theorist Tom Johnson calls “management by results,” rather than on

enhancing the capacities of people at all levels to understand complexity and to learn.

These narrow assumptions may have led to innovation and success in the past, but today, what any individual organization—whether a business, hospital, governmental agency, or school—can do alone to significantly break from the cultural mainstream is very small. Each one operates as if it were tied to a rubber band. Even if an organization innovates significantly for many years, it eventually gets snapped back to the norm. For example, at any one point in time, you can always find a small number of highly innovative schools in which kids are engaged and teachers love their work. But virtually all return to average within 5 to 10 years.

From my standpoint, any enduring change strategy includes building and sustaining networks of collaborators across many boundaries. For the past several years, SoL has focused on bringing together large multinational companies, prominent nongovernmental organizations, and key governmental agencies to work on significant issues around environmental sustainability. For example, oil companies that establish residency in a country, such as Nigeria, Angola, or Venezuela, to produce oil over 50 or more years, have traditionally justified their efforts by promising that the country would be better off as a result. But there are several reasons to challenge this premise. Many countries that have exported large quantities of oil for years have seen little real economic, social, and environmental progress. Many end up as permanent oil exporters with little modern industry and strained relationships with the oil companies. Much of the profit goes to corrupt regimes that

squander it long before it benefits the society at large. "Rigged rules and double standards" in global trade, as a recent Oxfam report puts it, favor developed countries' exports over developing countries' exports, hindering industrial diversification in emerging economies. For oil companies to deliver on their promise for economic and social development in exporting countries, they cannot work alone, and SoL members are looking for ways to foster collaboration within these countries and among different multinational organizations to help this process.

Another project within the SoL community is based on German chemist Michael Braungart's idea of "intelligent materials pooling." In their new book *Cradle to Cradle: Remaking the Way We Make Things* (North Point Press, 2002), Braungart and U.S. architect William McDonough discuss the adverse environmental and health effects of current industrial products. They propose a business model in which companies collaborate to eliminate toxins from their products and integrate natural systems ideas, such as continuous reuse, into product design. This paradigm has become increasingly attractive to companies, especially in Japan and the European Union, where some governments have started passing legislation that holds private industries responsible for their products after the periods of use are over.

The basic idea is that if you produce something, you own it forever. Ideally, we'll get to the point where every product we come in contact with can be indefinitely recycled or remanufactured, and nothing ever goes into a landfill. In this way, we start to "close the loops," as the environmentalists would say, just as nature does. Nature doesn't generate waste. End products or byproducts of one living system are nutrients to another. What companies can do on their own to support such changes is often very limited. There may be no cost-effective substitute for many widely used chemicals, like PVCs, and the research costs to a company for redesigning its products could be prohibitive. But a group of companies could pool their purchasing power and work collabora-

tively with chemical producers to find substitutes, just as they could pool research efforts.

TST: What are some of the challenges organizations face as they collaborate with multiple stakeholders?

Senge: Let's look at the automobile industry. Part of the EU legislation I was just referring to requires companies to give a complete account of all the material components of a car they intend to sell. Why do we need to know this information? Well, probably about 90 percent of a vehicle's materials, starting with the seat fabric, is toxic to people. For example, in most new cars today, you can see a thin film on the inside of your window in the morning. That is not moisture; rather, it's outgassing from the dashboard's components. Braungart and McDonough point out that many of the widely used materials in everyday products are carcinogenic substances that remain in living systems for a long time. In other words, they're harmful to humans and other life. In the pharmaceutical industry, drugs are regulated to avoid the production of dangerous products. In most other industries from which we buy, use, and discard products, however, up until recently, little such regulation has existed.

But just the task of identifying material components is daunting. In making an automobile, you deal with a complex web of suppliers, few of who know the chemical composition of the products they're selling. In addition, companies selling vehicles in Europe are now faced with phase-out schedules for particular chemicals, starting with heavy metals such as lead, mercury, hexavalent chromium, and cadmium. In many cases, nobody knows how to remove these elements from vehicles or what material can be used as a substitute.

As SoL member companies collaborate, we are finding connections and possible synergies. For example, we recently discovered that Pratt & Whitney has developed a product that eliminates hexavalent chromium from fasteners. But because this product was developed for the aircraft industry, it was unknown to auto and

motorcycle manufacturers. Another collaborative project involves building common databases so that product designers can quickly determine the chemical constituents of different materials, their potential environmental and health consequences, and preferred alternatives, where they exist.

TST: Have any organizations successfully collaborated and designed sustainable product development processes?

Senge: About five years ago, Nike, Inc., began to address a serious discrepancy between its mission and its products. Founded on a vision of fitness and vitality, Nike was making products that included potentially harmful chemicals. Several Nike leaders started meeting with external and internal designers for the company to explore more sustainable practices in product design, manufacturing, and distribution. Eventually, this group evolved into a substantial network of designers and producers who are collaborating to figure out how to integrate sustainable product development into the company's core strategy for success. Nike now sells an entire line of organic clothing made from cottons produced by small farmers around the world. It's currently trying to figure out how to mass-produce nontoxic organic fibers so they can use these materials in more of their products. To pursue such large-scale collaborations, Nike initiated SoL's materials pooling project.

TST: Who will be the movers and shakers making an impact in society in the next few years?

Senge: It depends on how you interpret the phrase "movers and shakers." In our present society, the media tends to focus on the CEO, who is typically regarded as the key to the company's success. But the types of leadership truly critical to an organization's prosperity are not ones you usually read about in the newspapers or *Fortune* magazine. In the change efforts I've been engaged in, I've found that the local line leaders and what we call "internal networkers" are making the greatest impact on changing how our larger systems work.

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They're the ones operating on the ground implementing innovative ideas like materials pooling, turning schools around so students can excel, and creating community leadership organizations that eliminate gang warfare.

Many of us have the mental model that somebody—some senior leader or manager—must be controlling the organization's systems, which we ourselves feel overwhelmed by. But from a systemic perspective, the reality is just the opposite. Most large institutions are so complex that no one person—no “mover or shaker” in a position of authority—can bring about the needed change. Rather, when lots of people at all levels of an organization start to do things differently, they begin to enact new systems.

TST: How do we get a critical mass of people doing things differently?

Senge: For one, through the sharing of generative ideas, ideas that can change how people think and act. The Industrial Revolution is a perfect example of how a set of ideas can produce wide-scale change without a single plan or group in charge of the process. Over a long period of time, hundreds and thousands and ultimately hundreds of millions of people started doing things a little bit differently than they had before. As a result, factories sprang up, assembly lines were developed, public schools were created, and entrepreneurial activity exploded. As these concepts grew in people's minds, the way work was organized changed dramatically—for better and for worse.

How did these ideas spread? Mostly through stories. Academic books usually have less short-term impact than a compelling story told informally over and over. Even more powerful is a reinforcing pattern of stories that gradually starts to build an idea in people's heads. For example, many of us have begun to internalize the notion that we're inextricably linked with others around the world because we all live on one increasingly smaller planet—a public consciousness that did not exist 50 years ago. Regardless of whether the idea evolved from seeing pictures of the

earth from space or television images from the other side of the planet, or being able to work around the clock with colleagues from Asia and Europe—we've begun to accept the “story” that we are all to a certain degree interdependent. This is a historic change but it's just at its beginning; we still to a large extent identify first with our own tribe or country.

Although we're beginning to realize how interdependent we are, few people know how to transcend the boundaries that still separate people and institutions. Just like the beginning of the Industrial Revolution, where people embraced the idea of reorganizing production for efficiency without knowing how to accomplish it, we're at the early stage of enacting systems that support an interdependent world. The idea has credibility, but we're still not sure how to do things differently. As I mentioned earlier, one way is to build networks of people and organizations who are implementing diverse ideas of interdependency and sustainability. Then, sharing stories of projects such as the materials pooling initiative can inspire more examples.

There's no end to what people can do. I've been particularly impressed with innovative projects in which young people are trying to think globally while doing things locally. Young people today have grown up acutely aware of the stresses in the world, especially those living in poverty or in countries with obvious social divisions. They're beginning to network with each other internationally to initiate changes addressing social and environmental imbalances.

For example, *Pioneers of Change*, an emerging global network of people in their 20s and early 30s, is involved in significant social change projects to produce healthy communities around the world. One of its members is developing a network of villages based on sustainable agriculture in Rwanda. Another is starting the first management school in Croatia. Another group, *Roca*, located in Massachusetts, is composed of former gang members focused on helping teenagers leave their gangs and build

their communities. If you listen carefully to these young people, you'll understand that they're all working on the same basic issue—how can we humans learn to live together in this world.

TST: *The Fifth Discipline* has been out for more than 10 years. Has its popularity resulted in the effects you hoped for? How do you view your own purpose now? Has it changed over the last 10 years?

Senge: I don't think my sense of purpose has changed very much. But it does get clearer. If you pay close attention, hopefully you learn more each day about what you're here to do in the world.

I have always been concerned with the imbalances in our patterns of development. I think the Industrial Age is a historic bubble, just like the “dot com” financial bubble. I don't think it will continue, because I don't think it *can* continue. The Industrial Age has ignored the reality that human beings are part of nature; instead, it has operated based on the idea that nature is a resource waiting to be used by us. If we go back to the idea of interdependency, human beings depend on nature in many ways for our survival. This is where traditional economics breaks down. Economics says that if the price of a commodity rises, demand for it will go down and a less expensive substitute will replace it. But there are no substitutes for air and water. There is no substitute for a healthy climate. These are common elements shared by everybody. Systems of management that do not value the “commons” cannot continue indefinitely. It's that simple. We don't know when we will hit the wall—we're probably hitting it right now. By some estimates, private soft-drink companies now own rights to more than 10 percent of the drinkable water in the world. If these companies are allowed to continue their current system of management, which focuses on exponential growth of their products, this percentage will grow even further. We have not yet seen the implications of some of our patterns of development.

I never expected *The Fifth Discipline* to have as much impact as it did.

Partly, I attribute its success to a pervasive awareness of these sorts of problems. As the old adage goes, “There’s nothing more powerful than an idea whose time has come.” No one knows what is needed, but we sense that we face immense learning challenges, which are not just individual but collective and which concern how our institutions shape our collective actions. For example, if you live in China, where economic development is happening so rapidly, everyone can clearly see the social and environmental consequences in the pollution, congestion, and social stresses that have sprung up almost over night. Unlike past industrialization in North America and Europe, which unfolded over four or five generations, or longer, China’s industrialization is taking place within one generation.

Interestingly, *The Fifth Discipline* and the fieldbooks (*The Fifth Discipline* and *The Dance of Change*) have become quite popular in China. *Schools That Learn* is about to be translated, even though it contains nothing about Chinese schools. I have found that the ideas about rethinking our systems of management and leadership on a personal level hold a particular appeal in China. In the recent past, the Chinese education system has followed Western models—urban Chinese schools look pretty much identical to urban schools in the West, in terms of what they teach and how they teach. Yet, deep down, I feel the Chinese, like all people, long for a system of management and education that reflects their own distinctive culture. Personal and institutional learning offers an integrating thread that speaks to the diverse problems we all face.

TST: Can we really make the world better by making our organizations better, or is this a naïve hope?

Senge: I don’t think it’s naïve, I think it’s inescapable.

Turn the statement around: How are you going to change the world without changing organizations, since organizations are what shape how the world works today? For example, it’s impossible for one individual, or even

a local community, to destroy an entire species, yet species around the world are becoming extinct at an alarming rate. Who is responsible for this critical situation? It’s clear that the destruction of Earth’s ecosystem is a result of millions and millions of individual actions mediated by the activities of our current global network of institutions. Governments are important but not adequate to meet the depth and breadth of the changes we face. To begin to shift our course, I believe, requires deep personal change in all of us, in the sense that

How are you going to change the world without changing organizations, since organizations are what shape how the world works today?

we must “expand our circle of compassion,” as Einstein said, beyond tribalism. These personal changes, in turn, will shift how institutions such as businesses and schools function.

So if organizations don’t change, how can the world change? What is naïve is to believe that any one person has the answer for how to do it, that there’s a single strategy or way to do it, or that change can happen quickly. Going back to our earlier conversation, ultimately, large-scale transformation occurs when new ideas take root in people’s minds and inspire them to do things differently—many things by many people.

For example, today’s business leaders are recognizing that, in order for their companies to remain competitive, they must consider the health of their employees—not just medical issues but also personal well-being. They’re beginning to understand that having a group of committed, imaginative, patient people, who can work well together based on a strong sense of purpose, will make a bigger difference in whether the company is successful

than any amount of money spent on technology and marketing. As this idea of employee well-being gradually grows in people’s minds, we’ll start to see changes in organization design and management practices. But it will not happen quickly. Promising innovations will come and go. Nevertheless, even as individual innovative firms struggle, the larger trend—the collective learning across many organizations and many cultures—will continue.

For example, Plug Power is a small manufacturer of fuel cells. It is struggling, as are all the firms in this critical but nascent industry. Its CEO comes from Ford and its senior technical officer from Xerox. Both accomplished remarkable results in those two companies, but they innovated faster than the overall company cultures could absorb. Together they, along with a few hundred other folks, are now doing something that stands to be much more important than either cars or copiers for our future—creating commercially viable steps toward an environmentally sustainable energy system. They are now together because of a larger network of innovators that connected not only Ford and Xerox but several other firms, and eventually resulted in pathways for innovators coming together that otherwise would not have existed. This is exactly how change occurs in nature—the new grows up in the presence of what already exists and eventually becomes viable collectively, not as isolated individuals.

The idea that real change occurs in large networks of innovators has been one of the biggest surprises to me. I had originally thought that individual organizations could initiate and sustain significant innovation in management and culture. But I’ve discovered that, while an individual firm may run into difficulties with this process, once people cross the line into working in a way that touches who they are as human beings, and they know that this way of working together is *possible*, they do not go back. They may go elsewhere, but they do not go back. ■



SHIFTING THE UNWRITTEN RULES OF ORGANIZATIONAL BEHAVIOR

BY JON SPRINGER

As many organizations are discovering, sustainable corporate change can be elusive. Why? Because we often fail to ensure that our organization's "unwritten rules"—the invisible forces that drive people's behavior—support the new course that we're striving to chart. These rules, like the bulk of an iceberg, lie below the surface, shaping workplace culture and affecting team, division, and overall organizational functionality. A systemic leader who knows how to surface, analyze, and appropriately alter her organization's unwritten rules wields a great lever for organizational transformation.

What Are Unwritten Rules?

Whether you call them "undiscussables," "tacit understanding," "social norms," or "mental models," unwritten rules comprise an organization's unconscious accumulation of vested interests, history, beliefs, deep feelings, and customs. These rules initially develop as logical coping strategies based on what it takes to succeed within a given corporate climate. Over time, these strategies become an unspoken code that people learn to imitate by observing the behavior and following the advice of others in the organization. According to Robert Hargrove, author of *Masterful Coaching* (John Wiley & Sons, 2002), "These are rules that no one really seems to be in control of and that may be difficult to even clearly articulate, let alone change."

Unwritten rules can have a favorable, detrimental, or neutral influence on an organization. Some rules can undermine change efforts by swaying us to comply with "the way things have always been done around here." In the worst case, they can lead to Enron-like corruption in which honor and accountability become subordinate

to greed. On the other hand, unwritten rules can help organizations maintain coherence and their unique identity, as well as play a critical role in corporate success.

An example of how unwritten rules develop can be seen in the way employees respond to quick fixes such as corporate downsizing. What begins as simple thoughts, such as "I cannot ask for help; my team leader will think I'm incompetent at my job" or "I must look good or I'll end up on the list for the next downsizing," can systematically stifle learning and personal development. Ultimately, this behavior can lead to organizational failure (see "Unwritten Rules of Downsizing").

The more employees want to succeed or survive in an organization, the more likely they are to adapt to and reinforce its unwritten rules. To keep their jobs, they will go along with the status quo. To climb the corporate ladder, they will observe how their predecessors did so and emulate their behavior. Regardless of an organization's stated values and goals, most employees behave according to the unwritten rules that best support their ability to achieve their personal goals.

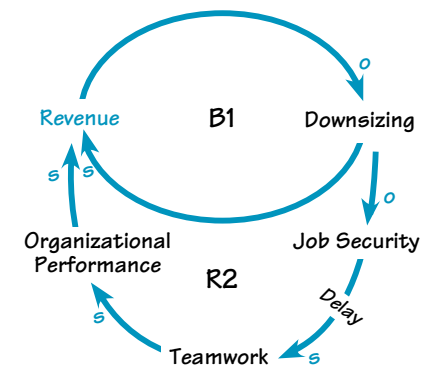
Uncovering Unwritten Rules

How does an organization address its unwritten rules? First, leaders need to expose them. They must do so carefully, because making explicit an organization's inner workings can initially lead to ambiguity and emotional discomfort, conditions that most employees tend to fear and avoid. Leaders must be objective, highly empathetic, and employ methods that ensure that employees feel reasonably safe in disclosing their deep and sometimes previously unarticulated thoughts and feelings about the workplace.

Interview Employees. One way to elicit unwritten rules is to interview employees. As Peter Scott-Morgan states in *The Unwritten Rules of the Game: Master Them, Shatter Them, and Break Through the Barriers to Organizational Change* (McGraw-Hill, 1994), "The goal is to set the interviewee off on a stream of consciousness about the pressures he or she and others feel within the company and how these relate to specific aspects of business performance" (see "Sample Interview Questions" on p. 7). During the interviews, carefully document the responses for future analysis.

Meet with Groups and Distribute Surveys. Another technique is for a leader to conduct group meetings coupled with surveys. Meet with employees of an area undergoing a change initiative to discuss the nature of unwritten rules and workplace assumptions, putting them at ease as

UNWRITTEN RULES OF DOWNSIZING



Fear of job loss leads to thoughts such as, "I must look competent" or "I cannot ask for help." Such thoughts undermine teamwork, collaboration, and learning, ultimately eroding organizational performance. As a result, the company loses revenue and will more likely resort to further downsizing.

Sample questions to uncover unwritten rules include:

- What are the most important behaviors for getting ahead in your area?
- Are people valued more for seniority than for performance? Why?
- If you were teaching a new employee “the ropes,” what would you tell her about your team or organizational culture and practices?
- What has happened to people who have been direct, open, and honest about issues? Why?
- Are problems uncovered or covered up? In what manner is this done? Why?
- What are the ineffective behaviors that we practice in our organization? What are the underlying rules and attitudes that cause these behaviors?

much as possible. Then hand out a survey, consisting of open-ended questions geared to extracting the rules, and give participants a week to submit their responses anonymously. Near the conclusion of the meeting, encourage participants to share some of their responses within the group to elicit additional input.

Solicit Feedback from the Edge. A third method is to seek out the thoughts of those on the “edge.” In *Wide-Angle Vision: Beat Your Competition by Focusing on Fringe Competitors, Lost Customers, and Rogue Employees* (John Wiley & Sons, 1996), Wayne Burkan defines the edge as “trouble-making employees, complaining customers, and fringe competitors who are constantly challenging the rules.” Solicit and analyze feedback from these groups because it often reveals unspoken norms. For example, a customer complaint might reveal that your customer service reps are abiding by the rule, “it is not safe to stick your neck out to address an unhappy customer’s request, so just regurgitate company policy.”

During the uncovering process, not all responses will reflect actual rules. Some may just illuminate symptoms, attitudes, or other unproductive behaviors in the organization. To determine the unwritten rule underlying any input you receive, continue to ask “Why?” until you get to the root cause. If someone says, “It doesn’t pay to work smart,” asking why can elicit, “Because there is no reward for doing so.” Why? “Because management doesn’t link bonuses or appreciation to going the extra mile.” And so forth.

Categorizing Unwritten Rules

Once you uncover an unwritten rule, identify whether it benefits, harms, or has no impact on the organization. To do so, ask whether the rule supports the organization’s best interest, goals, and strategy. If the answer is yes, you should further reinforce and reward it. If the answer is no, you need to determine whether it is neutral and can be ignored or whether it is dysfunctional and needs attention.

An example of an appropriate rule for a department striving for efficiency might be that the first person to arrive in the office each morning turns on the copier, thus enabling coworkers to avoid delays in using the machine. An obsolete/neutral rule might be to change the daisywheel printer ribbon when the type becomes illegible. Because of rapid technological changes, many rules related to technology rapidly drop off the radar screen of organizational memory.

I witnessed a dysfunctional rule in a corporation where the CEO wanted to establish teamwork as an organizational norm. Because he based his management team’s bonuses on their comparative individual performance rather than the organization’s overall performance, the following unwritten rule developed: “The better I look compared to my peers, the more spoils I win.” Consequently, the management team never worked effectively together.

Addressing Unwritten Rules

To counteract the power of dysfunctional rules, leaders must first acknowledge the concerted effort it will take to alter employees’ beliefs and actions.

Then they must choose the best approach for moving forward. In his video *The Paradigm Prism*, Joel Barker advocates that leaders intentionally reverse dysfunctional rules; for instance, “seeking assistance reveals incompetence” could be replaced with “learning from and respecting others is something we value.” Leaders then need to show employees they stand behind the replacement rules by consistently and meaningfully rewarding behavior congruent with them. In the example of the management team whose bonus system contradicted its stated goal of creating teamwork, the reward system could be adjusted to include individual, team, and organizational performance, thus encouraging synergistic effort.

Gaining Competitive Advantage

The bottom line when counteracting dysfunctional rules is to remember that rules drive behavior. Whatever action you take to reverse an unwritten rule must lead unequivocally to the desired behavior. Therefore, before implementing a policy, dictum, or action, carefully consider its possible systemic consequences. Also, routinely observe employee behavior and adjust the drivers of behaviors as necessary through performance metrics, leadership role modeling, or organizational policy. By removing as many obstacles as possible to employees’ efforts to make your organization successful, you can develop a committed, innovative, high-performance culture and gain a competitive advantage.

Unwritten rules and assumptions also exist at the industry level. It is in this realm that even greater potential competitive advantage resides. By transcending the rules and assumptions that shape our worldview, companies can evolve new products, breakthrough innovations, and major industrywide changes. Exposing and effectively responding to the unwritten rules of your industry could catapult your organization to the top of your field. ■

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MAKING BETTER SCHOOL POLICY DECISIONS USING COMPUTER MODELING

BY DANIEL D. BURKE

School superintendents, administrators, board members, and others involved in public education face a Herculean task—gaining enough understanding of an infinitely complex system so they can make good decisions about how to allocate resources; determine the impact of district, state, and federal policies on their system; and anticipate future challenges. System dynamics and computer modeling are largely untapped tools that can help decision-makers illustrate the possible results of differing policy and resource-allocation decisions and unearth unintended consequences of these decisions, all in a no-risk, time-compressed environment.

Anticipating System Behavior

School districts are made up of many components, including district staff, individual schools, teachers and administrators within those schools, parent councils, and students. The sheer number and variety of these actors make it difficult to see their interdependence and to notice how an action in one part of the system affects the others. Add to this complexity policies originating from agencies outside the district, such as state education departments and the U.S. Department of Education, and the task of assessing how best to direct resources to meet students' needs becomes almost hopelessly confusing.

Systems thinking and system dynamics tools, including casual loop diagrams, stocks and flows, and computer simulation, can shed light on the interrelationships among components and, perhaps more important, illustrate how outcomes may result from feedback loops rather than from simple, linear chains of cause and

effect. These tools also make explicit the delays that often occur between a change in one component of a system and its effect on others. The interplay of feedback and delays can produce unanticipated system behavior, as shown by the mandating of smaller class sizes in California. When the legislature passed the new law, schools had to increase the number of classes they offered at each grade level to accommodate the same number of students. To do so, they needed to hire more teachers. Because becoming a teacher through traditional means requires at least four years of pre-service training, the number of teachers available fell short of meeting the needs of all schools. Suburban districts with greater resources filled their spots by recruiting teachers from urban districts, leaving those schools woefully understaffed. Proponents of the new law had failed to anticipate this unfortunate outcome of the change in class size.

By showing the potential behavior over time of multiple scenarios based on specific inputs, computer modeling offers policymakers and administrators the ability to visualize the long-term effects of specific decisions before those decisions are implemented. We can also use models to identify unexpected interactions between system components; ask "what if" questions about changes in system parameters; run no-cost experiments that compress time and space; and reflect on, expose, test, and improve the mental models upon which we rely to make decisions about difficult problems. Thus, *computer modeling could allow school-system leaders to make more effective decisions by building their understanding of long-term consequences of resource decisions in a complex environment.*

Evaluating Professional Development Programs

To illustrate how a district can use computer modeling to analyze its options, I have created a simulation that explores the impact of professional development programs for teachers. Many school districts have responded to the call for better educational performance by implementing a standards-based curriculum. They offer professional development workshops to increase teachers' ability to communicate this new curriculum to their students. The workshops are often formatted as multi-week summer programs.

Research has shown that teachers can learn to communicate the new curriculum through professional development training, so the question for a district is not whether summer workshops can build capacity, but whether they can do so for a critical mass of teachers in a reasonable time period. What factors play a role in this issue? Which workshops are most effective? What are the costs associated with this form of professional development? These questions are amenable to modeling because we can determine quantitative values for most of the important variables—such as the number of teachers in training and the turnover rate of teachers—and reasonable estimates for the qualitative variables—such as the effectiveness of the workshops and the relationship between the length of the workshop and the willingness of teachers to enroll in it.

I followed these steps to build the model:

- 1. Define the teacher stocks.** All the teachers in the district fall into three stocks: Those who are not familiar with the standards; those who are attending a workshop to learn

about the standards; and those who are familiar with the standards.

2. Establish the flow between stocks. Teachers who aren't familiar with the standards can take a workshop to gain familiarity; teachers in the workshop may become familiar with the standards and move into the "familiar" stock or may not gain much from the workshop and return to the "unfamiliar" stock; and both "familiar" and "unfamiliar" teachers may leave the system each year.

3. Identify and assign values to the important system parameters and variables.

4. Incorporate funding components.

The model is based on the following assumptions:

- The number of teachers in the system remains constant at 10,000, and at the starting point, 10 percent of the teachers are already familiar with the standards-based curriculum. Workshops vary in length from one day to five weeks.
- Ten percent of the teachers leave and are replaced each year (with 10 percent of new teachers entering in the "familiar" stage), and the rate at which teachers leave the system is

higher for teachers in the "unfamiliar" pool than in the "familiar" pool.

- In the baseline simulation, 1,000 teachers participate in the three-week workshop; this number can vary up or down by a factor of three.
- Fewer teachers participate in longer workshops, more in shorter ones. However, longer workshops are more effective. The initial success rate for teachers reaching the "familiar-with-standards" stage in a three-week workshop is 30 percent. This base rate increases linearly over time as more and more teachers (those for whom training was not effective the first time) retake the workshop.
- There are 25 teachers in each workshop. The cost of the workshop includes a stipend of \$300/week/teacher for each of 25 participating teachers and an additional cost of \$2,500/week for the instructor, supplies, and space.

"Modeling Professional Development" illustrates the model's basic features.

Analyzing Results

The simulation yields several non-intuitive results, the most important being that these workshops alone can-

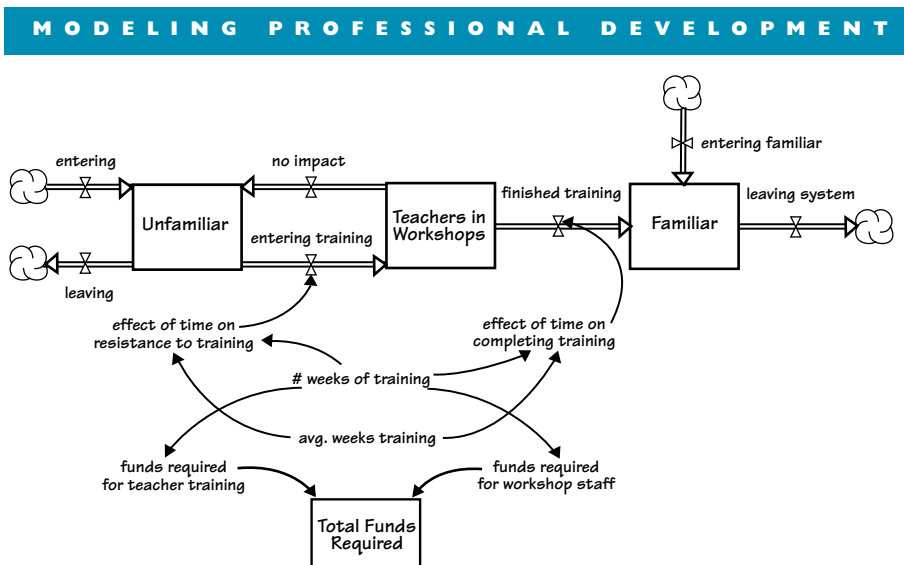
not adequately deal with the problem of building the necessary capacity in the teacher workforce. Even after 10 years of providing three-week workshops, only 52 percent of the teachers are skilled in presenting a standards-based curriculum—and this number includes teachers who were capable before they enrolled in the workshops. The results clearly show that the workshops do not produce a critical mass of teachers with the desired capabilities in a reasonable amount of time.

Another unexpected result of this analysis is that the five-week workshops result in the largest number of trained teachers over a 10-year period, even though the smallest number of teachers enrolls in them. Holding all else constant, approximately 5,200 teachers achieve the desired level of ability after participating in a five-week workshop, while only about 2,800 teachers reach this stage through one-week workshops. The longer workshop is also the most cost-effective per teacher trained: \$2,300 per teacher for a five-week workshop; \$2,635 for a three-week workshop; and \$3,100 for a one-week workshop.

We can generalize this kind of model to other areas of professional development, because the results are independent of the workshop content. Administrators have access to the quantitative data for their district (such as number of teachers in the system, distribution by length of service, teacher leaving rate, funding available for workshops) and can reasonably estimate values for the qualitative variables (such as percent of teachers who require specific professional development, workshop effectiveness, relationship of workshop length to teacher resistance and workshop effectiveness) from prior experience. Plugging these numbers into a computer simulation would give them a general tool for predicting the impact of a summer workshop on professional development in any content area.

Similar models could let stakeholders examine other questions, such as the impact of rationing workshop participation depending on teachers' average time of service in the system.

Continued on next page >



In the model, all teachers in the district fall into three stocks: Those who are not familiar with the standards; those who are attending a workshop to learn about the standards; and those who are familiar with the standards. Teachers who aren't familiar with the standards can take a workshop to gain familiarity; teachers in the workshop may become familiar with the standards and move into the "familiar" stock or may not gain much from the workshop and return to the "unfamiliar" stock; and both "familiar" and "unfamiliar" teachers may leave the system each year. Running the simulation shows that these workshops alone cannot adequately deal with the problem of building the necessary capacity in the teacher workforce.

➤ Continued from previous page

Should administrators concentrate on those who will remain in the system longest, that is, younger teachers? Or is there value in offering training opportunities to experienced teachers, who can serve as opinion leaders in changing the system's culture? This analysis could also be incorporated into an expanded model to include the use of mentors and school- and web-based professional development. By exploring these variables as well, districts might come upon a formula

for producing a multi-component professional development system with the capacity to bring a critical mass of teachers up to speed on new curriculum requirements in an acceptable time period.

As I hope I've shown here, computer modeling offers a valuable planning and decision-support tool for school districts. This approach permits "no-risk" analysis of competing policy choices and resource allocations and, while it does not offer definitive answers, it can help school-system

leaders understand the impact of their decisions and guide them toward making better-informed allocations of scarce resources. ■

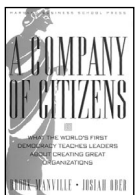
Daniel D. Burke, Ph.D., has a broad understanding of K-graduate educational systems. As deputy director for education, the CNA Corporation (CNAC), he leads the research and analysis activities of CNAC's public education group. Before joining CNAC, Dan was a researcher in molecular biology and produced an extensive record of curriculum innovations. He also played an important role in the National Science Foundation's K-12 education reform programs.



F R O M T H E R E S O U R C E S H E L F

BUILDING A COMPANY OF CITIZENS

BY JANICE MOLLOY



A Company of Citizens
by Brook Manville and Josiah Ober

In this age, when many voters are attracted to political candidates from the business world who vow to run government like a corporation, can business leaders learn anything from the public sector? In their book, *A Company of Citizens: What the World's First Democracy Teaches Leaders About Creating Great Organizations* (Harvard Business School, 2003), organizational expert Brook Manville and Princeton classics professor Josiah Ober respond to this question with a resounding "yes"—provided we look 2,400 years into the past to the roots of democracy in ancient Athens. By showing how Athens soared to greatness when other city-states failed, the authors distill a set of principles for linking individual initiative with collective action to achieve unprecedented success.

For nearly 200 years, the Athenians outmaneuvered, outwitted, and

outperformed their rivals in the Aegean Sea on the battlefield, in the marketplace, and in intellectual and artistic pursuits. While city-states such as Sparta favored centralized control, Athens rose to preeminence in the region through the development of democratic processes based on the participation of all citizens in governance (a class that admittedly excluded women and many others). By understanding their rights and responsibilities, Athenian citizens became highly motivated and deeply engaged. They didn't leave leadership to a special class of high-level managers or politicians—they knew that they *were* the organization and that their way of life would survive only through the concerted efforts of all.

Far from creating stifling levels of bureaucracy, the participative nature of Athenian governance led to a speed, agility, and commitment to action that top-down regimes couldn't match. As one of many examples of the power of self-governance, Manville and Ober cite the Athenians' defeat of Persia's vastly superior forces in 480 B.C.

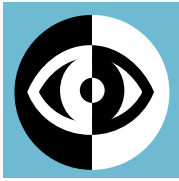
Through open deliberations, the citizen Assembly had agreed on a bold plan

for overcoming the Persian threat. The ships of the newly built Athenian navy—rowed by determined citizens rather than passive slaves—lured the enemy's boats into narrow straits near the island of Salamis. There, the locals' collective knowledge of wind conditions and geographical features gave them an advantage over the larger Persian force. The Athenians' subsequent defeat of the Persians represents a major turning point in the history of Western civilization.

Lessons for Today

Although the stakes may not be quite so high for our organizations, we can learn much from how the Athenians were able to capitalize on the collective talents of a diverse citizenry. Especially important for organizations in knowledge-intensive fields, building cultures and systems of participatory governance involves all employees in determining the organization's destiny. The results may be new surges of energy, creativity, and accountability in the workplace—and perhaps even beyond. ■

Janice Molloy is managing editor of *The Systems Thinker*.



A NEW EXECUTIVE CURRICULUM

BY MICHAEL O'BRIEN

What is the most valuable contribution executives make to their companies, expertise or leadership? I say leadership. Knowledge and technical capabilities, no matter how broad, are the threshold skills everyone must have to do the job. Leadership is the distinguishing competency that star performers exhibit that the average performers do not. But leadership takes judgment, which involves something of a sixth sense—a high performance of personal mastery.

This analysis raises interesting questions about the best training for today's business leaders. As former *New York Times* science writer Daniel Goleman suggests in his book, *Primal Leadership* (Harvard Business School Press, 2002), the latest scientific findings indicate that brainy but dogmatic bosses rarely rise to be stars in an age when organizational speed and flexibility are the key to survival.

Likewise, in a cover story several years ago, *Time* magazine sifted through the current thinking and reported, "New brain research suggests that emotions, not IQ, may be the true measure of human intelligence." The bottom-line significance of what *Time* called "EQ" was suggested by management expert Karen Boylston: "Customers are telling businesses, 'I don't care if every member of your staff graduated with honors from Harvard, Stanford, and Wharton. I will take my business and go where I am understood and treated with respect.'"

If the evolutionary pressures of the marketplace make EQ, not IQ, the hot ticket for business success, it seems likely that both individual executives and boards of directors need to know how to cultivate it. I have a modest proposal: embrace a highly personal practice aimed at improving these four adaptive skills:

1. Practice Self-Awareness. Psychologists call this discipline "metacognition"; Buddhist monks know it as "mindfulness"; Socrates referred to it as the "examined life." I think of it as thinking differently on purpose and noticing what you're feeling and thinking. Whatever you call it, practicing this skill is a way of escaping the conditioned confines of your past.

Raise your consciousness by catching yourself in the act of thinking as often as possible; routinely notice your emotions and ask if you're facing facts or indulging biases.

2. Use Imagery. This is what you see Olympic ski racers doing before they enter the starting gate. With closed eyes and swaying bodies, they run the course in their minds, which ultimately improves their performance. You can do a similar thing by setting aside time each day to dream with gusto about what you want to achieve.

3. Frame and Reframe Events. When the Greek Stoic Epictetus said 2,000 years ago that it isn't events that matter but our opinion of them, this is what he was talking about. Every time something important happens, assign as many interpretations to it as possible, even zany ones. Then go with the interpretation most supportive of your dreams.

4. Integrate the Perspectives of Others. Brain research shows that our view of the world is physiologically limited by our genes and the experiences we've had. Learning to incorporate the useful perspectives of others is nothing less than a form of amplifying your senses. The next time someone interprets something differently than you do, pause to consider that a gift of perception is being offered, if you'll only accept it.

Mastering the emotional components of these four practices often

proves to be the most difficult for senior executives, but as Goleman has emphasized, doing so can yield "Resonant Leadership"—emotionally intelligent leaders. By practicing self-awareness, leaders notice their moods and emotions and how these are influencing their behaviors. By using imagery, they can go beyond the intellectual data to make smart choices that look to others like "leaps of faith." By framing and reframing events and integrating the perspectives of others, leaders can manage their own reactions, thereby improving their emotional state and that of their organizations.

Although the recommendations suggested above may appear simplistic, they are based on what we know about the mechanisms of the mind. The bad news: it's hard to change power of habits—the electromagneticism of established neural pathways will literally pull you away from changing your practices. This may be why history repeats itself. The good news is that not only is it possible to change our behaviors, it's actually easier than overcoming a chemical dependency such as alcoholism. But you must have a discipline for doing it. Hence, the method recommended here.

No, it's not a curriculum in the sense that an MBA is. But what the latest research seems to imply is that without the software of emotional maturity and self-knowledge, the hardware of academic training alone is worth less and less. ■

Michael O'Brien, Ed.D., is president and founder of O'Brien Group. The firm specializes in executive coaching and executive team development and can be reached at 513-821-9580 or www.obriengroup.us.



PEGASUS NOTES

LEARNING LINKS

Pioneers of Change

www.pioneersofchange.net

Pioneers of Change is an emerging global learning community of committed young people in their 20s and early 30s from diverse cultural, social, and professional backgrounds. The web site includes resources to support deep social change such as articles by thought leaders, a “book club,” a large collection of links, and information about various “pioneering ventures” from around the world.

To explore the latest “At Any Rate™” learning lab, go to <http://www.pegasus.com/AAR/model.html>.

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FROM THE FIELD

DynamiQUEST 2003

May 9, 9 a.m.–3 p.m.

Alden Hall, Worcester Polytechnic Institute, Worcester, MA

DynamiQUEST provides a venue for students in grades 5–12 to showcase work in which they have employed the tools and methods of system dynamics (SD) and systems thinking (ST). This event:

- Lets students display their work and evaluate their next steps on a learning continuum
- Provides a way for students to see how others are applying ST/SD to real-world problems
- Lets teachers from different schools see student work in ST/SD
- Provides a venue for teachers and kids to network
- Gives students and teachers a chance to celebrate their progress

Students (and teachers) are at various places along the road to developing proficiency with employing SD and ST to address complex issues and increase understanding. DynamiQUEST creates an environment in which kids can receive feedback from other kids as well as from teachers and professionals well versed in SD/ST. In this noncompetitive setting, a 5th-grader’s behavior over time graph is as valid as an 11th-grader’s functional model. Both represent vital stages in the development of a systems thinker/dynamic modeler. Learn more about DynamiQUEST by going to http://www.clexchange.org/dq/cle_dq.html.

Systems Thinking Lessons in Children’s Literature

The Waters Foundation web site is featuring monthly reviews of children’s literature with a systems thinking slant. Each month, Linda Booth Sweeney, the author of *When a Butterfly Sneezes* (Pegasus Communications, 2001), summarizes the systems thinking lessons in a children’s book. The reviews include a quick look at the story, teaching tips, questions to ask readers in different age groups, comments from people who have used the book, and a list of other stories that illustrate similar concepts. The first two books Booth Sweeney has reviewed are *Billibonk and the Thorn Patch* by Philip Ramsey and *One Grain of Rice: A Mathematical Folktale* by Demi. To access the reviews, go to www.watersfoundation.org/index.cfm?menu=applications&action=literature. The Waters Foundation is a nonprofit organization with the vision of delivering academic and lifetime benefits through the effective application of systems thinking and dynamic modeling concepts and tools for the purpose of increasing understanding of dynamic, complex systems.

For information about reading and using causal loop diagrams, go to www.pegasus.com/cld.html.