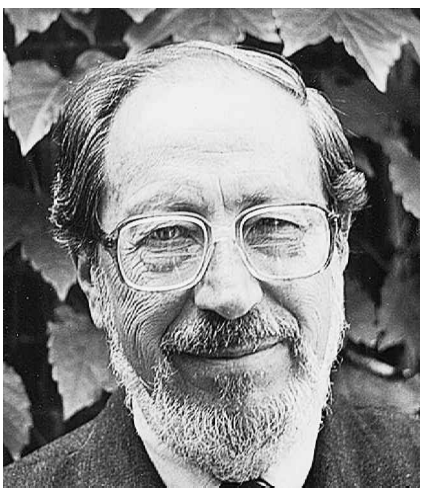
From the Founding Editor

EDITORIAL

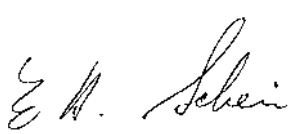


Our choice of theme—''The Devil's in the Details''—is especially relevant when we review various aspects of change theory and practice. In discussing this issue with us, Peter Senge made the cogent remark that the trouble with most change models is that they are not very practical. It is all well and good to form steering committees and to specify the relevant steps for a change program to succeed, but rarely can the reader figure out just how to go about implementing any of it.

How to correct this state of affairs? One way, reflected in this issue of *Reflections,* is to give the reader both some tools for change management and some stories that are very concrete, that tell the reader in detail what was done, why, and how. Even at that level of concreteness, questions of ''how do you do that'' will abound, but with enough cases and enough models and tools, we hope to provide sufficient detail so that readers can get a real feeling for the actual elements of a change process.

On another note entirely, I want to comment on my own piece in this issue, a piece that pulls together the change tools that I have found most useful in planning and implementing change. In the title, I have emphasized that change and stability are two sides of the same coin, yet none of us give enough attention to the stability side. Kurt Lewin understood that it is human to want things in a state of equilibrium so that we can predict what will happen next. None of us want to live in a perpetually changing world, even though that is, in fact, what the world is. So we are all ''strategic improvisation'' experts to keep things as stable as possible. But more than that, culture as a stabilizing force is valued—things that have worked in the past become customs and traditions that we want to hold onto.

So when the change agent encounters ''resistance to change,'' it is not always something bad to be overcome. Often it may be that what has been done in the past is, in fact, better than what the change process proposes. To be specific, when a manager calls for a new ''culture of openness'' or ''teamwork'' or ''customer orientation,'' we do not in fact know whether the new behaviors to be learned would produce better results. When we introduced sensitivity training into organizations in the 1960s in order to make them more open, we found some very nasty consequences to openness, like telling the boss what you really thought of him. Teamwork in many organizations causes so many new meetings to be planned that efficient work is undermined. At one point in its history, Apple was so customer oriented and so responsive to anything the customer wanted that it was in danger of going bankrupt from delivering too much service. In other words, it would behoove the change agent to think of him- or herself as a stability agent as well. What things should be preserved and why? And if certain changes are fiercely resisted, let's at least figure out why before we push harder to overcome the resistance. Culture, the ultimate conservative force, would not be so powerful if it did not serve some useful functions. The best kinds of change programs build on the strength of the culture rather than ''changing the culture.'' Food for thought.



Ed Schein

EDITORIAL

In This Issue

Edgar H. Schein and Karen Ayas

This issue asks you to pay a little more attention to the details. Some of these articles require careful reading.

While theories of change abound, most would be classified as espoused theories, not theories in use. **Chris Argyris's** seminal piece deserves thorough reading if you really want to look for the devil in the details. The defensive reasoning described in this classic is still deeply rooted in institutions and organizations to date, as Argryris points out in his comments 11 years later. **Haridimos Tsoukas,** in his insightful commentary, outlines what it takes to engage in the kind of learning that would lead to productive reasoning and profound change.

Jürgen Dormann, chairman of Aventis (formerly Hoechst), describes his theory in use in an interview by **C. Otto Scharmer.** The case by **Ariane Berthoin Antal** and **Camilla Krebsbach-Gnath** will give you a better understanding of the context that has seeded Dormann's views on leadership and change management in a company that employs more than 90,000. As **Marla Kameny** points out, some of the details might still be missing, but to those interested, the authors refer to an earlier case study. The important lessons to be learned from the fascinating transformation story of Hoechst are underscored in the thoughtful comments by **Tom Durel,** a consultant and former CEO. The authors respond to both commentators.

Next, the centerpiece of the issue puts the change process in proper perspective and offers a toolkit for change, along with a complete manual. **Ed Schein** carefully details when to strive for change and what works and why in an article based on his own theory and practice over decades.

Three case studies of change with differing contexts and approaches, namely, communities of practice, appreciative inquiry, and planned change follow. **Daniel Bobrow** and **Jack Whalen** describe the evolution of Eureka, a system for knowledge creation and sharing at Xerox to support the customer service engineers. Their account, rich in detail, is full of insights on the natural learning processes under way in communities of practice. As **Marleen Huysman** highlights in her comments, this is a must read for those who are familiar with the seminal piece by John Seely Brown and Paul Duguid (*Reflections,* Winter 1999, volume 1, issue 2).

Adrian McLean and **Marsha George McLean** add the appreciative inquiry process to the toolbox for change. Their article is an account of change in the Inner London Magistrates' Courts Service. **Carolyn Hendrickson** and **Deborah Reidy,** both consultants in the field, comment on the power of dialogue as an intervention and on how to craft organizational change efforts.

The final article is a more conceptual piece that focuses on accelerating change. **William O. Lytle** makes the case for planned change, dismissed by many in today's high-pace, high-tech environments. Some needed optimism is stressed by **José Luis Alvarez** in his comments.

In his From the Chair column, **Peter Senge** examines the theme of this issue, suggesting that an appreciation for the ''concrete particulars'' defines an effective CEO.

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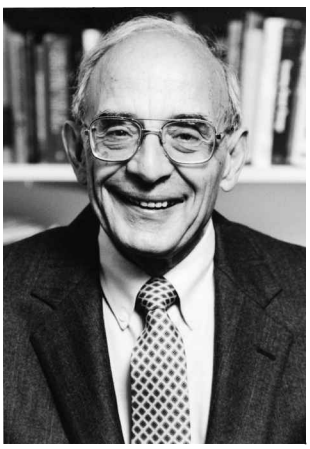
We welcome your reactions and comments. Please send your e-mail to pubs@solonline.org.

CLASSIC

Teaching Smart People How to Learn

Chris Argyris



Chris Argyris
James Bryant Conant Professor
Harvard Business School

Any company that aspires to succeed in the tougher business environment of the 1990s must first resolve a basic dilemma: success in the marketplace increasingly depends on learning, yet most people don't know how to learn. What's more, those members of the organization that many assume to be the best at learning are, in fact, not very good at it. I am talking about the well-educated, high-powered, high-commitment professionals who occupy key leadership positions in the modern corporation.

Most companies not only have tremendous difficulty addressing this learning dilemma; they aren't even aware that it exists. The reason: they misunderstand what learning is and how to bring it about. As a result, they tend to make two mistakes in their efforts to become a learning organization.

First, most people define learning too narrowly as mere ''problem solving,'' so they focus on identifying and correcting errors in the external environment. Solving problems is important. But if learning is to persist, managers and employees must also look inward. They need to reflect critically on their own behavior, identify the ways they often inadvertently contribute to the organization's problems, and then change how they act. In particular, they must learn how the very way they go about defining and solving problems can be a source of problems in its own right.

I have coined the terms ''single loop'' and ''double loop'' learning to capture this crucial distinction. To give a simple analogy: a thermostat that automatically turns on the heat whenever the temperature in a room drops below 68 degrees is a good example of single-loop learning. A thermostat that could ask, ''Why am I set at 68 degrees?'' and then explore whether or not some other temperature might more economically achieve the goal of heating the room would be engaging in double-loop learning.

Highly skilled professionals are frequently very good at single-loop learning. After all, they have spent much of their lives acquiring academic credentials, mastering one or a number of intellectual disciplines, and applying those disciplines to solve real-world problems. But ironically, this very fact helps explain why professionals are often so bad at double-loop learning.

Put simply, because many professionals are almost always successful at what they do, they rarely experience failure. And because they have rarely failed, they have never learned how to learn from failure. So whenever their single-loop learning strategies go wrong, they become defensive, screen out criticism, and put the ''blame'' on anyone and everyone but themselves. In short, their ability to learn shuts down precisely at the moment they need it the most.

The propensity among professionals to behave defensively helps shed light on the second mistake that companies make about learning. The common assumption is that getting people to learn is largely a matter of motivation. When people have the right attitudes and commitment, learning automatically follows. So companies focus on creating new organizational structures—compensation programs, performance reviews, corporate cultures, and the like—that are designed to create motivated and committed employees.

But effective double-loop learning is not simply a function of how people feel. It is a reflection of how they think—that is, the cognitive rules or reasoning they use to design

and implement their actions. Think of these rules as a kind of ''master program'' stored in the brain, governing all behavior. Defensive reasoning can block learning even when the individual commitment to it is high, just as a computer program with hidden bugs can produce results exactly the opposite of what its designers had planned.

Companies can learn how to resolve the learning dilemma. What it takes is to make the ways managers and employees reason about their behavior a focus of organizational learning and continuous improvement programs. Teaching people how to reason about their behavior in new and more effective ways breaks down the defenses that block learning.

All of the examples that follow involve a particular kind of professional: fast-track consultants at major management consulting companies. But the implications of my argument go far beyond this specific occupational group. The fact is, more and more jobs—no matter what the title—are taking on the contours of ''knowledge work.'' People at all levels of the organization must combine the mastery of some highly specialized technical expertise with the ability to work effectively in teams, form productive relationships with clients and customers, and critically reflect on and then change their own organizational practices. And the nuts and bolts of management—whether of high-powered consultants or service representatives, senior managers or factory technicians—increasingly consists of guiding and integrating the autonomous but interconnected work of highly skilled people.

How Professionals Avoid Learning

For 15 years, I have been conducting in-depth studies of management consultants. I decided to study consultants for a few simple reasons. First, they are the epitome of the highly educated professionals who play an increasingly central role in all organizations. Almost all of the consultants I've studied have MBAs from the top three or four U.S. business schools. They are also highly committed to their work. For instance, at one company, more than 90% of the consultants responded in a survey that they were ''highly satisfied'' with their jobs and with the company.

Professionals embody the learning dilemma: they are enthusiastic about continuous improvement—and often the biggest obstacle to its success.

I also assumed that such professional consultants would be good at learning. After all, the essence of their job is to teach others how to do things differently. I found, however, that these consultants embodied the learning dilemma. The most enthusiastic about continuous improvement in their own organizations, they were also often the biggest obstacle to its complete success.

As long as efforts at learning and change focused on external organizational factors—job redesign, compensation programs, performance review, and leadership training—the professionals were enthusiastic participants. Indeed, creating new systems and structures was precisely the kind of challenge that well-educated, highly motivated professionals thrived on.

And yet the moment the quest for continuous improvement turned to the professionals' *own* performance, something went wrong. It wasn't a matter of bad attitude. The professionals' commitment to excellence was genuine, and the vision of the company was clear. Nevertheless, continuous improvement did not persist. And the longer the continuous improvement efforts continued, the greater the likelihood that they would produce ever-diminishing returns.

What happened? The professionals began to feel embarrassed. They were threatened by the prospect of critically examining their own role in the organization. Indeed, because they were so well paid (and generally believed that their employers were supportive and fair), the idea that their performance might not be at its best made them feel guilty.

Far from being a catalyst for real change, such feelings caused most to react defensively. They projected the blame for any problems away from themselves and onto what they said were unclear goals, insensitive and unfair leaders, and stupid clients.

Consider this example. At a premier management consulting company, the manager of a case team called a meeting to examine the team's performance on a recent consulting project. The client was largely satisfied and had given the team relatively high marks, but

the manager believed the team had not created the value added that it was capable of and that the consulting company had promised. In the spirit of continuous improvement, he felt that the team could do better. Indeed, so did some of the team members.

The manager knew how difficult it was for people to reflect critically on their own work performance, especially in the presence of their manager, so he took a number of steps to make possible a frank and open discussion. He invited to the meeting an outside consultant whom team members knew and trusted—''just to keep me honest,'' he said. He also agreed to have the entire meeting tape-recorded. That way, any subsequent confusions or disagreements about what went on at the meeting could be checked against the transcript. Finally, the manager opened the meeting by emphasizing that no subject was off limits—including his own behavior.

''I realize that you may believe you cannot confront me,'' the manager said. ''But I encourage you to challenge me. You have a responsibility to tell me where you think the leadership made mistakes, just as I have the responsibility to identify any I believe you made. And all of us must acknowledge our own mistakes. If we do not have an open dialogue, we will not learn.''

The professionals took the manager up on the first half of his invitation but quietly ignored the second. When asked to pinpoint the key problems in the experience with the client, they looked entirely outside themselves. The clients were uncooperative and arrogant. ''They didn't think we could help them.'' The team's own managers were unavailable and poorly prepared. ''At times, our managers were not up to speed before they walked into the client meetings.'' In effect, the professionals asserted that they were helpless to act differently—not because of any limitations of their own but because of the limitations of others.

The manager listened carefully to the team members and tried to respond to their criticisms. He talked about the mistakes that he had made during the consulting process. For example, one professional objected to the way the manager had run the project meetings. ''I see that the way I asked questions closed down discussions,'' responded the manager. ''I didn't mean to do that, but I can see how you might have believed that I had already made up my mind.'' Another team member complained that the manager had caved in to pressure from his superior to produce the project report far too quickly, considering the team's heavy work load. ''I think that it was my responsibility to have said no,'' admitted the manager. ''It was clear that we all had an immense amount of work.''

Finally, after some three hours of discussion about his own behavior, the manager began to ask the team members if there were any errors *they* might have made. ''After all,'' he said, ''this client was not different from many others. How can we be more effective in the future?''

The professionals repeated that it was really the clients' and their own managers' fault. As one put it, ''They have to be open to change and want to learn.'' The more the manager tried to get the team to examine its own responsibility for the outcome, the more the professionals bypassed his concerns. The best one team member could suggest was for the case team to ''promise less''—implying that there was really no way for the group to improve its performance.

The case team members were reacting defensively to protect themselves, even though their manager was not acting in ways that an outsider would consider threatening. Even if there were some truth to their charges—the clients may well have been arrogant and closed, their own managers distant—the *way* they presented these claims was guaranteed to stop learning. With few exceptions, the professionals made attributions about the behavior of the clients and the managers but never publicly tested their claims. For instance, they said that the clients weren't motivated to learn but never really presented any evidence supporting that assertion. When their lack of concrete evidence was pointed out to them, they simply repeated their criticisms more vehemently.

If the professionals had felt so strongly about these issues, why had they never mentioned them during the project? According to the professionals, even this was the fault of others. ''We didn't want to alienate the client,'' argued one. ''We didn't want to be seen as whining,'' said another.

The professionals were using their criticisms of others to protect themselves from the potential embarrassment of having to admit that perhaps they too had contributed to the

team's less-than-perfect performance. What's more, the fact that they kept repeating their defensive actions in the face of the manager's efforts to turn the group's attention to its own role shows that this defensiveness had become a reflexive routine. From the professionals' perspective, they weren't resisting; they were focusing on the ''real'' causes. Indeed, they were to be respected, if not congratulated, for working as well as they did under such difficult conditions.

The end result was an unproductive parallel conversation. Both the manager and the professionals were candid; they expressed their views forcefully. But they talked past each other, never finding a common language to describe what had happened with the client. The professionals kept insisting that the fault lay with others. The manager kept trying, unsuccessfully, to get the professionals to see how they contributed to the state of affairs they were criticizing. The dialogue of this parallel conversation looks like this:

Professionals: ''The clients have to be open. They must want to change.''

Manager: ''It's our task to help them see that change is in their interest.''

Professionals: ''But the clients didn't agree with our analyses.''

Manager: ''If they didn't think our ideas were right, how might we have convinced them?''

Professionals: ''Maybe we need to have more meetings with the client.''

Manager: ''If we aren't adequately prepared and if the clients don't think we're credible, how will more meetings help?''

Professionals: ''There should be better communication between case team members and management.''

Manager: ''I agree. But professionals should take the initiative to educate the manager about the problems they are experiencing.''

Professionals: ''Our leaders are unavailable and distant.''

Manager: ''How do you expect us to know that if you don't tell us?''

Conversations such as this one dramatically illustrate the learning dilemma. The problem with the professionals' claims is not that they are wrong but that they aren't useful. By constantly turning the focus away from their own behavior to that of others, the professionals bring learning to a grinding halt. The manager understands the trap but does not know how to get out of it. To learn how to do that requires going deeper into the dynamics of defensive reasoning—and into the special causes that make professionals so prone to it.

Defensive Reasoning and the Doom Loop

What explains the professionals' defensiveness? Not their attitudes about change or commitment to continuous improvement; they really wanted to work more effectively. Rather, the key factor is the way they reasoned about their behavior and that of others.

It is impossible to reason anew in every situation. If we had to think through all the possible responses every time someone asked, ''How are you?'' the world would pass us by. Therefore, everyone develops a theory of action—a set of rules that individuals use to design and implement their own behavior as well as to understand the behavior of others. Usually, these theories of actions become so taken for granted that people don't even realize they are using them.

One of the paradoxes of human behavior, however, is that the master program people actually use is rarely the one they think they use. Ask people in an interview or questionnaire to articulate the rules they use to govern their actions, and they will give you what I call their ''espoused'' theory of action. But observe these same people's behavior, and you will quickly see that this espoused theory has very little to do with how they actually behave. For example, the professionals on the case team said they believed in continuous improvement, and yet they consistently acted in ways that made improvement impossible.

When you observe people's behavior and try to come up with rules that would make sense of it, you discover a very different theory of action—what I call the individual's ''theory-in-use.'' Put simply, people consistently act inconsistently, unaware of the contradiction between their espoused theory and their theory-in-use, between the way they think they are acting and the way they really act.

What's more, most theories-in-use rest on the same set of governing values. There seems to be a universal human tendency to design one's actions consistently according to four basic values:

1. To remain in unilateral control;
2. To maximize ''winning'' and minimize ''losing'';
3. To suppress negative feelings; and
4. To be as ''rational'' as possible—by which people mean defining clear objectives and evaluating their behavior in terms of whether or not they have achieved them.

The purpose of all these values is to avoid embarrassment or threat, feeling vulnerable or incompetent. In this respect, the master program that most people use is profoundly defensive. Defensive reasoning encourages individuals to keep private the premises, inferences, and conclusions that shape their behavior and to avoid testing them in a truly independent, objective fashion.

Because the attributions that go into defensive reasoning are never really tested, it is a closed loop, remarkably impervious to conflicting points of view. The inevitable response to the observation that somebody is reasoning defensively is yet more defensive reasoning. With the case team, for example, whenever anyone pointed out the professionals' defensive behavior to them, their initial reaction was to look for the cause in somebody else—clients who were so sensitive that they would have been alienated if the consultants had criticized them or a manager so weak that he couldn't have taken it had the consultants raised their concerns with him. In other words, the case team members once again denied their own responsibility by externalizing the problem and putting it on someone else.

In such situations, the simple act of encouraging more open inquiry is often attacked by others as ''intimidating.'' Those who do the attacking deal with their feelings about possibly being wrong by blaming the more open individual for arousing these feelings and upsetting them.

Needless to say, such a master program inevitably short-circuits learning. And for a number of reasons unique to their psychology, well-educated professionals are especially susceptible to this.

Nearly all the consultants I have studied have stellar academic records. Ironically, their very success at education helps explain the problems they have with learning. Before they enter the world of work, their lives are primarily full of successes, so they have rarely experienced the embarrassment and sense of threat that comes with failure. As a result, their defensive reasoning has rarely been activated. People who rarely experience failure, however, end up not knowing how to deal with it effectively. And this serves to reinforce the normal human tendency to reason defensively.

In a survey of several hundred young consultants at the organizations I have been studying, these professionals describe themselves as driven internally by an unrealistically high ideal of performance: ''Pressure on the job is self-imposed.'' ''I must not only do a good job; I must also be the best.'' ''People around here are very bright and hard-working; they are highly motivated to do an outstanding job.'' ''Most of us want not only to succeed but also to do so at maximum speed.''

The very success of professionals at education helps explain the problems they have with learning.

These consultants are always comparing themselves with the best around them and constantly trying to better their own performance. And yet they do not appreciate being required to compete openly with each other. They feel it is somehow inhumane. They prefer to be the individual contributor—what might be termed a ''productive loner.''

Behind this high aspiration for success is an equally high fear of failure and a propensity to feel shame and guilt when they do fail to meet their high standards. ''You must avoid mistakes,'' said one. ''I hate making them. Many of us fear failure, whether we admit it or not.''

To the extent that these consultants have experienced success in their lives, they have not had to be concerned about failure and the attendant feelings of shame and guilt. But to exactly the same extent, they also have never developed the tolerance for feelings of failure or the skills to deal with these feelings. This in turn has led them not only to fear

failure but also fear the fear of failure itself. For they know that they will not cope with it superlatively—their usual level of aspiration.

The consultants use two intriguing metaphors to describe this phenomenon. They talk about the ''doom loop'' and ''doom zoom.'' Often, consultants will perform well on the case team, but because they don't do the jobs perfectly or receive accolades from their managers, they go into a doom loop of despair. And they don't ease into the doom loop, they zoom into it.

As a result, many professionals have extremely ''brittle'' personalities. When suddenly faced with a situation they cannot immediately handle, they tend to fall apart. They cover up their distress in front of the client. They talk about it constantly with their fellow case team members. Interestingly, these conversations commonly take the form of badmouthing clients.

Such brittleness leads to an inappropriately high sense of despondency or even despair when people don't achieve the high levels of performance they aspire to. Such despondency is rarely psychologically devastating, but when combined with defensive reasoning, it can result in a formidable predisposition against learning.

There is no better example of how this brittleness can disrupt an organization than performance evaluations. Because it represents the one moment when a professional must measure his or her own behavior against some formal standard, a performance evaluation is almost tailor-made to push a professional into the doom loop. Indeed a poor evaluation can reverberate far beyond the particular individual involved to spark defensive reasoning throughout an entire organization.

Performance evaluation is tailor-made to push professionals into the doom loop.

At one consulting company, management established a new performance-evaluation process that was designed to make evaluations both more objective and more useful to those being evaluated. The consultants participated in the design of the new system and in general were enthusiastic because it corresponded to their espoused values of objectivity and fairness. A brief two years into the new process, however, it had become the object of dissatisfaction. The catalyst for this about-face was the first unsatisfactory rating.

Senior managers had identified six consultants whose performance they considered below standard. In keeping with the new evaluation process, they did all they could to communicate their concerns to the six and to help them improve. Managers met with each individual separately for as long and as often as the professional requested to explain the reasons behind the rating and to discuss what needed to be done to improve—but to no avail. Performance continued at the same low level and, eventually, the six were let go.

When word of the dismissal spread through the company, people responded with confusion and anxiety. After about a dozen consultants angrily complained to management, the CEO held two lengthy meetings where employees could air their concerns.

At the meetings, the professionals made a variety of claims. Some said the performance-evaluation process was unfair because judgments were subjective and biased and the criteria for minimum performance unclear. Others suspected that the real cause for the dismissals was economic and that the performance-evaluation procedure was just a fig leaf to hide the fact that the company was in trouble. Still others argued that the evaluation process was antilearning. If the company were truly a learning organization, as it claimed, then people performing below the minimum standard should be taught how to reach it. As one professional put it: ''We were told that the company did not have an up-or-out policy. Up-or-out is inconsistent with learning. You misled us.''

The CEO tried to explain the logic behind management's decision by grounding it in the facts of the case and by asking the professionals for any evidence that might contradict these facts.

Is there subjectivity and bias in the evaluation process? Yes, responded the CEO, but ''we strive hard to reduce them. We are constantly trying to improve the process. If you have any ideas, please tell us. If you know of someone treated unfairly, please bring it up. If any of you feel that you have been treated unfairly, let's discuss it now or, if you wish, privately.''

Is the level of minimum competence too vague? ''We are working to define minimum competence more clearly,'' he answered. ''In the case of the six, however, their

performance was so poor that it wasn't difficult to reach a decision.'' Most of the six had received timely feedback about their problems. And in the two cases where people had not, the reason was that they had never taken the responsibility to seek out evaluations—and, indeed, had actively avoided them. ''If you have any data to the contrary,'' the CEO added, ''let's talk about it.''

Were the six asked to leave for economic reasons? No, said the CEO. ''We have more work than we can do, and letting professionals go is extremely costly for us. Do any of you have any information to the contrary?''

As to the company being antilearning, in fact, the entire evaluation process was designed to encourage learning. When a professional is performing below the minimum level, the CEO explained, ''we jointly design remedial experiences with the individual. Then we look for signs of improvement. In these cases, either the professionals were reluctant to take on such assignments or they repeatedly failed when they did. Again, if you have information or evidence to the contrary, I'd like to hear about it.''

The CEO concluded: ''It's regrettable, but sometimes we make mistakes and hire the wrong people. If individuals don't produce and repeatedly prove themselves unable to improve, we don't know what else to do except dismiss them. It's just not fair to keep poorly performing individuals in the company. They earn an unfair share of the financial rewards.''

Instead of responding with data of their own, the professionals simply repeated their accusations but in ways that consistently contradicted their claims. They said that a genuinely fair evaluation process would contain clear and documentable data about performance—but they were unable to provide firsthand examples of the unfairness that they implied colored the evaluation of the six dismissed employees. They argued that people shouldn't be judged by inferences unconnected to their actual performance—but they judge management in precisely this way. They insisted that management define clear, objective, and unambiguous performance standards—but they argued that any humane system would take into account that the performance of a professional cannot be precisely measured. Finally, they presented themselves as champions of learning—but they never proposed any criteria for assessing whether an individual might be unable to learn.

In short, the professionals seemed to hold management to a different level of performance than they held themselves. In their conversation at the meetings, they used many of the features of ineffective evaluation that they condemned—the absence of concrete data, for example, and the dependence on a circular logic of ''heads we win, tails you lose.'' It is as if they were saying, ''Here are the features of a fair performance-evaluation system. You should abide by them. But we don't have to when we are evaluating you.''

Indeed, if we were to explain the professionals' behavior by articulating rules that would have to be in their heads in order for them to act the way they did, the rules would look something like this:

1. When criticizing the company, state your criticism in ways that you believe are valid—but also in ways that prevent others from deciding for themselves whether your claim to validity is correct.
2. When asked to illustrate your criticisms, don't include any data that others could use to decide for themselves whether the illustrations are valid.
3. State your conclusions in ways that disguise their logical implications. If others point out those implications to you, deny them.

Of course, when such rules were described to the professionals, they found them abhorrent. It was inconceivable that these rules might explain their actions. And yet in defending themselves against this observation, they almost always inadvertently confirmed the rules.

Learning How to Reason Productively

If defensive reasoning is as widespread as I believe, then focusing on an individual's attitudes or commitment is never enough to produce real change. And as the previous example illustrates, neither is creating new organizational structures or systems. The problem is that even when people are genuinely committed to improving their performance and management has changed its structures in order to encourage the ''right'' kind of

behavior, people still remain locked in defensive reasoning. Either they remain unaware of this fact, or if they do become aware of it, they blame others.

There is, however, reason to believe that organizations can break out of this vicious circle. Despite the strength of defensive reasoning, people genuinely strive to produce what they intend. They value acting competently. Their self-esteem is intimately tied up with behaving consistently and performing effectively. Companies can use these universal human tendencies to teach people how to reason in a new way—in effect, to change the master programs in their heads and thus reshape their behavior.

People can be taught how to recognize the reasoning they use when they design and implement their actions. They can begin to identify the inconsistencies between their espoused and actual theories of action. They can face up to the fact that they unconsciously design and implement actions that they do not intend. Finally, people can learn how to identify what individuals and groups do to create organizational defenses and how these defenses contribute to an organization's problems.

Until senior managers become aware of the ways they reason defensively, any change activity is likely to be just a fad.

Once companies embark on this learning process, they will discover that the kind of reasoning necessary to reduce and overcome organizational defenses is the same kind of ''tough reasoning'' that underlies the effective use of ideas in strategy, finance, marketing, manufacturing, and other management disciplines. Any sophisticated strategic analysis, for example, depends on collecting valid data, analyzing it carefully, and constantly testing the inferences drawn from the data. The toughest tests are reserved for the conclusions. Good strategists make sure that their conclusions can withstand all kinds of critical questioning.

So too with productive reasoning about human behavior. The standard of analysis is just as high. Human resource programs no longer need to be based on ''soft'' reasoning but should be as analytical and as data-driven as any other management discipline.

Of course, that is not the kind of reasoning the consultants used when they encountered problems that were embarrassing or threatening. The data they collected was hardly objective. The inferences they made rarely became explicit. The conclusions they reached were largely self-serving, impossible for others to test, and as a result, ''self-sealing,'' impervious to change.

How can an organization begin to turn this situation around, to teach its members how to reason productively? The first step is for managers at the top to examine critically and change their own theories-in-use. Until senior managers become aware of how they reason defensively and the counterproductive consequences that result, there will be little real progress. Any change activity is likely to be just a fad.

Change has to start at the top because otherwise defensive senior managers are likely to disown any transformation in reasoning patterns coming from below. If professionals or middle managers begin to change the way they reason and act, such changes are likely to appear strange—if not actually dangerous—to those at the top. The result is an unstable situation where senior managers still believe that it is a sign of caring and sensitivity to bypass and cover up difficult issues, while their subordinates see the very same actions as defensive.

The key to any educational experience designed to teach senior managers how to reason productively is to connect the program to real business problems. The best demonstration of the usefulness of productive reasoning is for busy managers to see how it can make a direct difference in their own performance and in that of the organization. This will not happen overnight. Managers need plenty of opportunity to practice the new skills. But once they grasp the powerful impact that productive reasoning can have on actual performance, they will have a strong incentive to reason productively not just in a training session but in all their work relationships.

One simple approach I have used to get this process started is to have participants produce a kind of rudimentary case study. The subject is a real business problem that the manager either wants to deal with or has tried unsuccessfully to address in the past. Writing the actual case usually takes less than an hour. But then the case becomes the focal point of an extended analysis.

For example, a CEO at a large organizational-development consulting company was preoccupied with the problems caused by the intense competition among the various

business functions represented by his four direct reports. Not only was he tired of having the problems dumped in his lap, but he was also worried about the impact the interfunctional conflicts were having on the organization's flexibility. He had even calculated that the money being spent to iron out disagreements amounted to hundreds of thousands of dollars every year. And the more fights there were, the more defensive people became, which only increased the costs to the organization.

In a paragraph or so, the CEO described a meeting he intended to have with his direct reports to address the problem. Next, he divided the paper in half, and on the right-hand side of the page, he wrote a scenario for the meeting—much like the script for a movie or play—describing what he would say and how his subordinates would likely respond. On the left-hand side of the page, he wrote down any thoughts and feelings that he would be likely to have during the meeting but that he wouldn't express for fear they would derail the discussion.

But instead of holding the meeting, the CEO analyzed this scenario *with* his direct reports. The case became the catalyst for a discussion in which the CEO learned several things about the way he acted with his management team.

He discovered that his four direct reports often perceived his conversations as counterproductive. In the guise of being ''diplomatic,'' he would pretend that a consensus about the problem existed, when in fact none existed The unintended result: instead of feeling reassured, his subordinates felt wary and tried to figure out ''what is he *really* getting at.''

The CEO also realized that the way he dealt with the competitiveness among department heads was completely contradictory. On the one hand, he kept urging them to ''think of the organization as a whole.'' On the other, he kept calling for actions—department budget cuts, for example—that placed them directly in competition with each other.

Finally, the CEO discovered that many of the tacit evaluations and attributions he had listed turned out to be wrong. Since he had never expressed these assumptions, he had never found out just how wrong they were. What's more, he learned that much of what he thought he was hiding came through to his subordinates anyway—but with the added message that the boss was covering up.

The CEO's colleagues also learned about their own ineffective behavior. They learned by examining their own behavior as they tried to help the CEO analyze his case. They also learned by writing and analyzing cases of their own. They began to see that they too tended to bypass and cover up the real issues and that the CEO was often aware of it but did not say so. They too made inaccurate attributions and evaluations that they did not express. Moreover, the belief that they had to hide important ideas and feelings from the CEO and from each other in order not to upset anyone turned out to be mistaken. In the context of the case discussions, the entire senior management team was quite willing to discuss what had always been undiscussable.

In effect, the case study exercise legitimizes talking about issues that people have never been able to address before. Such a discussion can be emotional—even painful. But for managers with the courage to persist, the payoff is great: management teams and entire organizations work more openly and more effectively and have greater options for behaving flexibly and adapting to particular situations.

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When senior managers are trained in new reasoning skills, they can have a big impact on the performance of the entire organization—even when other employees are still reasoning defensively. The CEO who led the meetings on the performance-evaluation procedure was able to defuse dissatisfaction because he didn't respond to professionals' criticisms in kind but instead gave a clear presentation of relevant data. Indeed, most participants took the CEO's behavior to be a sign that the company really acted on the values of participation and employee involvement that it espoused.

Of course, the ideal is for all the members of an organization to learn how to reason productively. This has happened at the company where the case team meeting took place. Consultants and their managers are now able

to confront some of the most difficult issues of the consultant-client relationship. To get a sense of the difference productive reasoning can make, imagine how the original conversation between the manager and case team might have gone had everyone engaged in effective reasoning. (The following dialogue is based on actual sessions I have attended with other case teams at the same company since the training has been completed.)

First, the consultants would have demonstrated their commitment to continuous improvement by being willing to examine their own role in the difficulties that arose during the consulting project. No doubt they would have identified their managers and the clients as part of the problem, but they would have gone on to admit that they had contributed to it as well. More important, they would have agreed with the manager that as they explored the various roles of clients, managers, and professionals, they would make sure to test any evaluations or attributions they might make against the data. Each individual would have encouraged the others to question his or her reasoning. Indeed, they would have insisted on it. And in turn, everyone would have understood that act of questioning not as a sign of mistrust or an invasion of privacy but as a valuable opportunity for learning.

The conversation about the manager's unwillingness to say no might look something like this:

Professional #1: ''One of the biggest problems I had with the way you managed this case was that you seemed to be unable to say no when either the client or your superior made unfair demands.'' [Gives an example.]

Professional #2: ''I have another example to add. [Describes a second example.] But I'd also like to say that we never really told you how we felt about this. Behind your back we were bad-mouthing you—you know, 'he's being such a wimp'—but we never came right out and said it.''

Manager: ''It certainly would have been helpful if you had said something. Was there anything I said or did that gave you the idea that you had better not raise this with me?''

Professional #3: ''Not really. I think we didn't want to sound like we were whining.''

Manager: ''Well, I certainly don't think you sound like you're whining. But two thoughts come to mind. If I understand you correctly, you *were* complaining, but the complaining about me and my inability to say no was covered up. Second, if we had discussed this, I might have gotten the data I needed to be able to say no.''

Notice that when the second professional describes how the consultants had covered up their complaints, the manager doesn't criticize her. Rather, he rewards her for being open by responding in kind. He focuses on the ways that he too may have contributed to the cover-up. Reflecting undefensively about his own role in the problem then makes it possible for the professionals to talk about their fears of appearing to be whining. The manager then agrees with the professionals that they shouldn't become complainers. At the same time, he points out the counterproductive consequences of covering up their complaints.

Another unresolved issue in the case team meeting concerned the supposed arrogance of the clients. A more productive conversation about that problem might go like this:

Manager: ''You said that the clients were arrogant and uncooperative. What did they say and do?''

Professional #1: ''One asked me if I had ever met a payroll. Another asked how long I've been out of school.''

Professional #2: ''One even asked me how old I was!''

Professional #3: ''That's nothing. The worst is when they say that all we do is interview people, write a report based on what they tell us, and then collect our fees.''

Manager: ''The fact that we tend to be so young is a real problem for many of our clients. They get very defensive about it. But I'd like to explore whether there is a way for them to freely express their views without our getting defensive.

''What troubled me about your original responses was that you assumed you were right in calling the clients stupid. One thing I've noticed about consultants—in this company and others—is that we tend to defend ourselves by bad-mouthing the client.''

Professional #1: ''Right. After all, if they are genuinely stupid, then it's obviously not our fault that they aren't getting it!''

Professional #2: ''Of course, that stance is antilearning and overprotective. By assuming that they can't learn, we absolve ourselves from having to.''

Professional #3: ''And the more we all go along with the bad-mouthing, the more we reinforce each other's defensiveness.''

Manager: ''So what's the alternative? How can we encourage our clients to express their defensiveness and at the same time constructively build on it?''

Professional #1: ''We all know that the real issue isn't our age; it's whether or not we are able to add value to the client's organization. They should judge us by what we produce. And if we aren't adding value, they should get rid of us—no matter how young or old we happen to be.''

Manager: ''Perhaps that is exactly what we should tell them.''

In both these examples, the consultants and their manager are doing real work. They are learning about their own group dynamics and addressing some generic problems in client-consultant relationships. The insights they gain will allow them to act more effectively in the future—both as individuals and as a team. They are not just solving problems but developing a far deeper and more textured understanding of their role as members of the organization. They are laying the groundwork for continuous improvement that is truly continuous. They are learning how to learn.

Commentary

by Chris Argyris

We are inundated with examples of the defensive reasoning and organizational defensive routines that this article describes. There is Enron, Arthur Andersen, the CIA, the FBI, the Catholic hierarchy, and the administration of school systems.

Several questions come to mind that I think are relevant. Enron and Andersen have received awards for leadership and enlightened human resource programs. In both organizations, the top management genuinely championed these programs. Yet the same top executives violated the tenets of the old programs. Do we have theories that will not only explain the flip-flops, but predict when they will occur and how to prevent them?

How is it that the church hierarchies, which espouse trust and honesty, skillfully produce cover-ups and cover-up of the cover-ups? How do we explain that educational leaders cover up teacher incompetence by giving answers to students so that they can pass proficiency tests?

Finally, how do we explain that the "local" levels of the FBI feel free to assign responsibility for problems, when later they admit that they create the same problems at the local level and covered up that this is the case?

Another question focuses on the fact that most organizational change programs are based on emulating best practices. The Achilles heel of this strategy is that what creates the best practices can also harbor processes that eventually bring them down. For example, 3M has for years been touted as an innovative company. We now learn that this is no longer the case. How did this happen? Could the deterioration have been avoided?

Finally, there is the question about our competence to produce the claims that we espouse. In a recent inquiry, I found that many professionals, when being challenged, respond with the same behaviors for which they criticized line managers. Moreover, many of the programs were not implementable, and their creators appeared skillfully unaware of the inconsistencies (Argyris, 2000).

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Commentary

by Haridimos Tsoukas

Vulnerability, Moral Responsibility, and Reflexive Thinking

When Chris Argyris published his now classic article, the terms "knowledge work" and the "knowledge-based organization" had not yet fully entered public discourse to the extent that they have today. Argyris, however, was prescient enough to realize that the kind of "smart people" he was writing about were not the exception: in the advanced economies, they were becoming the

norm. Knowledge workers, or symbolic analysts, have been the fastest growing group of employees (at least, in the US; Barley, 1996).

Argyris's argument about the inherent difficulty smart people have in engaging in double-loop (or reflexive) learning is particularly relevant today, as we are moving from the classic Weberian bureaucracy to post-bureaucratic forms of organization or, to use a different language, from the modern to the post-modern firm (Heckscher and Donnellon, 1994). Here is, I think, how Argyris's insights enrich those of other organizational psychologists, such as Larry Hirschhorn (1997), and of sociologists, such as Shoshana Zuboff (1988) and Anthony Giddens (1991). For Hirschhorn, what is particularly distinctive in the shift to the post-modern organization is a change in the very concept of personhood: individuals increasingly rely less on internalizing organizational authority as represented by the boss; instead, they rely more on internalized images of themselves, on their own personal authority.

What this means is that, in the post-modern organization, individuals bring more of themselves (their ideas, their feelings) to their work. In Hirschhorn's (1997: 9) terms, "they are more psychologically present." A post-modern firm—a firm that is rich in information and relies heavily on the daily choices of its knowledgeable employees—is a place that, unlike the modern firm, thrives on doubt and challenge. As organizational ethnographers, such as Julian Orr (1996) and Etienne Wenger (1998), have shown, daily work in information-rich companies is more *decision intensive*—more loci for decision making by employees are created. The more "informated" (to use Zuboff's term) a workplace is, the more decisions employees will have to make. Or, to put it differently, the more informated a workplace is, the more reflexive the organization is capable of becoming (what Giddens calls "institutional reflexivity"); it has the opportunity to feed back, and reflect on, the information about its modus operandi and the outcomes it brings about.

In such organizations, individuals need to be able to ask critical questions of others and of themselves if they are to be effective in fully reaping the potential benefits reflexivity brings about. Individuals, therefore, no longer need to uphold the "masculine ideal"—that is, to suppress doubt and ambivalence. On the contrary, doubt, debate, and reflexivity are the very qualities needed to promote learning. A knowledge-intensive workplace thrives on the exchange of ideas and experiences in the interest of enhancing the collective pool of knowledge and of generating new ideas. But, as we know from academic life, for ideas to flourish, debate is needed; hence, the importance of criticism, learning, and reflexivity.

Throughout his work, Argyris has pointed out the difficulties practitioners have in engaging in reflexive thinking—in his terms, in "double-loop thinking." This is particularly so in the case of knowledge workers because, to the extent they are more psychologically present at work, they expose more of themselves to others; hence, they are more vulnerable. Argyris documents this vulnerability in his article, showing the defensive reasoning it brings out in knowledge workers. More than that, however, he shows what individuals need to do in order to stop being defensive when the spotlight is turned on themselves—how to engage in productive reasoning. The message Argyris is getting across, it seems to me, is not only how productive reasoning may be achieved but, also, the importance of constantly challenging yourself, of expanding your horizons, of "knowing thyself."

In other words, Argyris invites knowledge workers to undertake a primarily *moral,* not just technical, task: to be open to criticism, to be willing to test their claims publicly against evidence, to accept that they too are partly responsible for the problems they are confronted with. The client may or may not be "stupid," but the real question, if a consultant is really keen on learning, is "what can *I* do to improve the relationship with the client (or my boss, or anyone else)?" It all comes down to individual responsibility, and this is, essentially, a moral issue. In that sense, as well as being an influential organizational psychologist and an implicit moral philosopher, Argyris is a systemic theorist, not too different from his own hero Gregory Bateson (1979): we partly create the problems we face, he says, and we have a responsibility for this. An excellent point.

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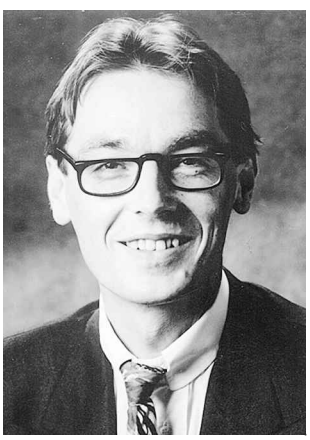
FEATURE

Leadership Is about Setting the Tone: An Interview with Jürgen Dormann

C. Otto Scharmer

Jürgen Dormann
Chairman
Aventis



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In the spring of 1994, Jürgen Dormann became CEO of Hoechst, a Frankfurt-based multinational company with 172,000 employees working in 120 countries across diverse businesses ranging from cosmetics to dyes, fibers, and pharmaceuticals. Today, the former Hoechst campus near Frankfurt hosts 40 separate spun-off companies. The pharmaceutical divisions have been transformed with a European partner into a new French legal entity, Aventis SA, headquartered in Strasbourg, France. With a market capitalization of some 70 billion euros, Aventis ranks as the second most valuable company on the German DAX.

On July 12, 2001, C. Otto Scharmer interviewed Jürgen Dormann in his office of the new Aventis headquarters in Strasbourg, France. The conversation began with Dormann taking Otto Scharmer to the roof of the new Aventis headquarters in Strasbourg, pointing out the mountains, villages, and buildings around this beautiful part of Alsace.

C.O. Scharmer (COS): A few weeks after you took over as CEO of Hoechst, you called for unprecedented change throughout the entire company. What happened in the weeks before that *Aufbruch* speech?

Jürgen Dormann (JD): To really answer that question, we would have to talk about the history of the company, but we can't do that in the short time we have. We wouldn't even be able to limit ourselves to the postwar period. Hoechst was founded in 1863. I joined the company in 1963 when I was 23. Over the decades, I went through what you could call ''socialization'' or ''getting to know'' the company from many aspects, including the international ones. Above all, I came to know and understand many key people. I got to know the company from various perspectives—commercial, regional, functional areas, and staff positions—by having business responsibility for many departments. This is important for how you approach the problems and issues as we did then. You have to have some idea about what you want to do and how to bring it about. The idea didn't just arise in the preceding weeks and months, but rather has developed gradually over time.

I recognized in 1987 that I had a real option to become CEO. The CEO then, in agreement with the chairman of the supervisory board, asked me whether I was ready to move beyond the experiences I so far had had and become CFO, which would include finance and accounting and everything associated with this functional area in a classical German industrial conglomerate. I really didn't think I was prepared, as I had no training or education in this area. But I saw the unusual step of handing me this position as a hidden sign that it could be a sensible move for me in order to round out my background. So you see, one can't talk about 1994 without seeing 1963 as a starting point, and without recognizing the various steps up to that point, for example, that I had integrated the large American company Celanese into the Hoechst organization.

From then on, I began slowly and cautiously to talk about the changes that were necessary in order to rise to the challenges Hoechst faced. I did this first within a small

circle of people, which turned into a ring, which began to radiate outward slowly at first, then faster to the worldwide organization. Later when I put my team together, I took people from Brazil, America, and elsewhere, but predominantly Hoechst people who had broad experience in other cultures. In their management positions overseas, they had experienced the entrepreneurial freedom to make decisions, more than they would have had in Frankfurt.

COS: You said that this circle developed gradually. Exactly how did this come about?

JD: In retrospect, for too long I worked in the central coordination unit of the company as the head of the corporate staff department and its predecessor organizations. The people I'm talking about are still active and in a variety of interesting positions; they had been working closely with me since the beginning of the 1980s. Then, a new element arrived with the Celanese acquisition. From there, I was able to build up my management or talent pool. I had to do so through external growth, because among the team members, the American or Anglo-Saxon element was not sufficiently represented in our team.

For the feasibility of the approach and its progression, many factors have to come together. It's more than just the team, the people, and the common philosophy or the targeted technical and cultural direction. There also needs to be a sound feeling for what is feasible, for timing and execution, including a feeling for what has to be done, when, and in what order. This doesn't mean doing things in a dogmatic fashion by intellectually sorting them, one, two, and three. It means keeping your eyes open for a possible opportunity, which may throw off your planning. You have to have the courage to move out of the planned sequence and leapfrog from step two to step five. The Clariant transaction is an example: we took the chance to divest our specialty chemicals business to Clariant, which had just been spun off by Sandoz.

If you want to bring about change, and you also have the support for it, then there are unavoidable moments when you have to resolve conflicts. This has to happen when the conflicts, if left unresolved, threaten the achievement of the goal. The introduction of new structures at Hoechst led to some pretty strong reactions. For example, when we changed the pharmaceutical R&D structure at the Hoechst site, there were several thousand people—Hoechst employees but also politicians and people from the neighborhood—marching by the corporate center with banners and signs, protesting and chanting, claiming that we were endangering our strong academic tradition. The consequence was that politicians, the media, and all types of functionaries said, ''Hey, that's not right what that guy is doing. It's just not acceptable. He's going against the principles of the consensus model.''

You have to have the courage to move out of the planned sequence and leapfrog from step two to step five.

Of course, you can't start such changes every two weeks or so, but where it is decisive, you have to take clear actions. We're deluding ourselves if we think that until then, we'd been doing a good job here. The products that we have today are the result of changes. Otherwise, we would have stayed on the academic track with new titles, lectures, and new molecules. We also changed the name from ''research and development'' to ''drug innovation and approval'' to express that we moved our focus from mainly academic interests toward bringing excellent and useful products to patients and doctors. This was an important shift.

In 1994, I had to make some key personnel decisions. As a rule, these were made together with the people affected; they moved into new positions, left the company, or took early retirement. In this early phase, the team members weren't supposed to just handle the abstract portfolio. They also had to play a part in the implementation of change at decisive points. Having people able to foster change was, of course, very important at this decisive phase. This decision can be carried out in a socially sustainable way, but it has to be carried out.

COS: In the case study [see ''Internal Outsiders Transform Tradition-Bound Organizations'' on page 23 of this issue], the authors point out that one quality that differentiates you from others is that you have an ''eye'' for these people, that you have the ability to

sense their capabilities. What is it that you're looking for and what do you see when you're considering people for your ''dream team''?

JD: This process can't be understood in only rational terms. I'll make the connection back to 1963 when I joined this hierarchical, internally oriented, and very German organization to the development within it and the outside world. I've always had an extremely strong external orientation, and I've never been satisfied unless I've had an eye or an ear outside of the company. This has nothing to do with loyalty, but rather with the necessary external orientation with regard to culture, science, technology, sociology, societal development, political development, and so on.

You develop an eye for people in their diversity, but probably more with regard to their values and the consistency in their basic stands on certain issues. You can see their willingness to acknowledge change, but also the ability to hold the line where it counts and show character, whatever that is. The ability to see these things becomes more acute over time. I have rarely brought people into top positions whom I didn't know well. In the end, I really don't know what the ''eye'' is. But it has resulted in a low error rate measured against how well we did in achieving our common goals. Of course, you make mistakes; of course, you can misread people, but overall I believe that I have picked up some experience along the way.

COS: So it's not just rational ''seeing'' alone, but basically more of a feeling, sensing, and intuition?

JD: Many people like to think of me as coolly calculating or a strategist. Yes, that's what I am, but no, that's not what I am! I control my emotions, but if someone thinks that I have no emotions, then they're seriously misjudging me. Whether it's appropriate or reasonable to show your emotions or preferences is a completely different question. Talking about personnel decisions, you need the right mixture; there are different levels to consider. First, you assess who can help you here. Then, there are the natural instincts or the emotions, where only this or that person comes into consideration. Different types of people bring different influences. For example, a person who has lived for 20 years in Brazil has been shaped differently from someone who has lived in Asia for 10 years. You may have two or three people in mind, and you ask, is there a significant difference in the rational, in the learnable, in the skills? No? Then you choose the person who is closest to you emotionally. I'm not so moved by the emotional side that I would bring just anybody into a position without considering: Can this person help us to reach our goals? Does he or she have the right skills? It is the right combination of the emotional and the rational. Here I've rarely been completely off the mark.

When I did go wrong, I needed one or two years to notice it or admit that I had made the wrong decision. Then I was fairly clear and quick in correcting the situation. Then the rational or the primary goal was very much in the forefront. The personal relationship doesn't have to suffer as a result, but it invariably does.

COS: In our first discussion in the company's old brick headquarters building in Frankfurt, in 1996, you said, ''Actually I'm not the CEO here, but rather the *Generaldirektor*. That's how the people see me.''

JD: In the negative sense of someone who comes in and ''gives the orders''?

COS: Yes. Back then you said that one of the main challenges you were facing was how to transform the then quite hostile atmosphere among the various groups within the company. Was there a time when you saw that something had changed in the atmosphere, that the *Herr Generaldirektor* had changed into someone different?

JD: This position, this function, has such a strong effect on you and makes such an impression that even if the new CEO is a different type of person from his predecessor, he's still in the system, in history, with that ''walled in'' feeling. Not because of the bricks in the building, but because of the walls in people's heads. You also have to consider the different groups of people. There are, of course, different layers in a company, like the rings of an onion. Should you peel it from the inside out or from the outside in? In such

large structures, which have grown with success over decades, there are attitudes and successfully practiced behavioral patterns such as, ''We've made it through so much; we'll make it through this as well; we won't bump our heads on anything.''

Success came fastest, though, when I quickly established a competitive, market-driven orientation. Those closest to the market reacted more quickly and were in sympathy with this direction. There were those far from the marketplace—central departments for R&D, engineering, purchasing, and so forth—far from the business side until their functional structures were affected by the ''shining beacon'' of the market economy. These people reported to the board of management, and their overhead costs were dished out to those on the business side, accompanied by the attitude of, ''You're the businessmen. Show us your profits.'' The poor business managers who reported to the board—there was one board member responsible for each department—had to deal with these cost structures.

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An introduction to values is an introduction to principles, with the competitive system testing alternatives, internally and externally, offering no pardon. I would say the first visible signs probably came after 12 to 24 months. After that, though, they came increasingly faster. This happened after the first walls began falling, and the probability grew that our productivity wouldn't disappear or the team wouldn't disappear. You have to wait during the initial phase for visible success in terms of change, but then, all of a sudden, it happens like the ''domino effect.'' If you went back today to the Hoechst campus or the Hoechst industrial site, there are around 40 or so companies that have moved there because they saw business opportunities among the other companies. Once the system began to show signs of improvement and resistance to change began to weaken, the process of change started to become self-enforcing and accelerating. It shouldn't be underestimated that all I did was just add the spirit of competition to our ways of doing things. The spirit was added to ideas and people.

I brought many people back into the leading inner circle—people who had belonged to the company for a long time but hadn't grown up in the ''inner realm'' because they managed country businesses far away from the German headquarters. I put them into key positions at the corporate level. The introduction of competition and the disbanding of functional areas have influenced other German companies, regardless of whether they'll admit it. If you look around at the structures found in Germany today, the basic concept is for the most part identical with or based on what we have done.

COS: And in the process, there was the one factor of bringing in the experience and key players from the periphery. The other element that stands out is that you are just as aware of the things you don't do as you are of those that you do. Can you comment on this? What does leadership have to do with the things one does not do?

JD: Oh, quite a bit. Again, this can't be removed from the historical context. If, in a company of this strength and dynamism, the chairman of the board insists that the approval for every new computer that is purchased has to go across his desk, how motivated are his service people?

What am I not doing? I'm not doing a thing, and maybe that's the point. I have consciously shown you the mountains and the landscape. My job is—besides setting the tone—to impart the principle of competition, bring in values, and exert an influence on important personnel and strategy decisions. Beyond this, I try to keep out of the business. For most issues, there is someone in the company who can do what has to be done better than I can. When in doubt, when someone thinks they're going beyond their competence,

they invite themselves to have a cup of tea with me, and the person says, here's where we stand; this is the question facing us. They may also have operational questions, but important ones. It's an incredible education for an organization to allow people to do this.

In the meantime, I have developed a certain respect and consistency for this, something I didn't have 20 years ago. If someone comes to me for the third or fourth time expecting me to give a decision, I tell them they can drop by again any time, but I ask if they've thought about this or about that and talked with this or that person.

There used to be the corporate staff department to which all investment proposals over $200,000 were sent for approval. My intimate knowledge of the company comes from my time serving there as the gatekeeper for this whole bureaucratic process. Why on earth should I be dealing with decisions about whether to spend one or two million? This is a corporation with a market capitalization of some 60 billion euros!

So back to my point: doing nothing is an excellent decision—declining to make decisions, acting as a discussion partner who is always available and willing to talk with anyone who wants to see him. But it is also part of the system, the educational process, and the belief in the system. At the beginning, we had a system in which the managers, starting with engineering, purchasing, and accounting, or the scientists and research management would have to first agree before the managers in the marketplace were free to do what they wanted. As the director of the corporate planning department, the interface of all these conflicting interests, with direct access to the CEO, I had no real power.

There were more internal issues. There was the change in research, and the line-up of new key people like Frank Douglas, for example, who is one of several Americans on our senior executive management team. We're in the position we are today because Hoechst was always very good in scientific research. In the past, our approach was based on arrogance, assuming that we had these great products that sold themselves. We didn't think we needed marketing or an organization in America. The changes we made in research were based on changes in people. When I brought these people in, for example, Frank Douglas and Dick Markham, there was resistance from all sides, including employees and the supervisory board.

COS: What made you so sure of what you were doing then?

JD: My ''eye,'' which we were talking about earlier. I said that I'm not budging one inch. If you want to dismiss me from this position, you can do so, but right now this is my job, not yours. With these people and the organizational changes we made, we brought ourselves and our technologies into the international scientific network. Today we are highly valued partners, whether our people are on the East Coast, in San Francisco, in England, or here in France or Germany. We are reliable, we respect our partners, we seek mutually beneficial arrangements, and we are fully part of the give and take of the network.

We no longer think we know everything or see Frankfurt as the center of the universe. I put a lot of emphasis on distinguishing between individual actions that had an impact and the systemic aspects, such as introducing competition and opening to the outside.

Look at the people we're getting now! During the past two years, Frank Douglas has been able to bring on board top people from the competition. He's also getting young people, fresh out of college, regardless of whether they're from here or abroad. We never would have gotten these people before. Bringing about this integration into the larger network has been part of my influence. I see and match people with challenges and opportunities. I cast what you called my ''magic eye'' on the people I am interacting with in order to sense whether he or she is the right person for the respective constellation of challenges and opportunities.

But I'm not calling the shots on how to run a particular business. How could I? There is definitely a difference between whether you have been prepared and trained to work in our core business—pharmaceuticals—and whether you are able to lead a large company, as I am. The skills, the abilities, and the traits, including the negative ones, and all the things that I can't do but have tried to compensate for with my team, are not the same management criteria that you would need to run a pharmaceutical company.

COS: You said that one of your main functions is to set the tone in the company.

JD: Defining the values, setting the tone, and finding the right people.

COS: How do you set the tone?

JD: First, you live out your values in your immediate environment. Second, you locate and eradicate any areas that are in permanent conflict with the tone and values you want to set. This is the point I mentioned earlier. If you've made a mistake, you've got to correct it right away. A top manager can be as efficient as he or she wants to be in the short term, but if he doesn't align himself with the values, he doesn't have a chance in the long term. So, the process of setting the tone and living the values is never complete. It's a long, never-ending process and a continuous striving for improvement.

COS: When you look at the overall transformation process, what happened to Hoechst? Did the old Hoechst end? Or is it living on here in some other form?

JD: No, it is something completely new. We know our roots, the learning processes that we're talking about, and the change processes that I've just tried to describe. We encountered so many things along the way, which makes questions about legal entities or new corporate bodies of much less importance. It was a huge undertaking to structure all the legal issues and control everything. I was only in it here with ideas and during the negotiations. I was able to make a contribution that others might not have been able to make. But the team carried it out and dealt with the legal structures and the necessary steps that had to be taken.

About a year or 18 months before the Celanese divestiture, I told Claudio Sonder that this was something we should do. I told him to get himself ready to lead this thing without telling the others. He wasn't even responsible for that business at the time, but in my view—and here we're back to the ''eye''—I knew he had the potential, the personality, and the ability to be the CEO of this kind of company. The spin-off was carried out in close coordination between him and the CFO and a number of other people. But here, as elsewhere, I always had a ''champion'' in place. When something didn't work out, the champion had to be replaced.

The process of setting the tone and living the values . . . is a long, never-ending process and a continuous striving for improvement.

Can you imagine, though, what kind of energy and power is set free in someone when he or she knows, ''This is my turf; I can shape it and mold it, and when it's done, I'm the one who can take responsibility''? Incredible emotional, intellectual, and psychic powers are released, and people act like a power source radiating out to the immediate circle around them.

COS: What have you learned over the years about what makes up the company as a whole?

JD: I learned that success is the beginning of failure if you don't stay open and able to change. Since large corporations like Hoechst or others have stood so well for so long without being forced to gradually adapt themselves to changing conditions, a more dramatic acceleration process becomes necessary. So, this inability to adapt was conditioned to some degree by the company's past success. When I look at where we are now, and I see our initial successes, I have to say that I'm still very aware that they are only ''initial'' successes. This is because the world around us is changing, particularly in our area of focus. The health sector is experiencing rapid change, which underscores our need to integrate into our environment. A company has to adapt to its social context and to the wider world in which it operates. We exist as part of social and political systems, and we have to adapt to their structures. This is especially true of the subject of health, which affects all of us. It shapes health care systems, societies, and overall political systems and is a field in which Hoechst faces major challenges.

The other side of the story is the continuing process of opening to the outside. We've come a long way in 10 years. We're witnessing the accelerated application of new technologies and knowledge, whose interrelationships and linkages are becoming incredibly

complex. The shift in the relationship between the ''inside'' and the ''outside'' is resulting in the ever greater importance of information technology. I'm trying to reach out, beyond where we are now, to bring into the present the networking and the research structures of 10 years in the future. We have to be able to see things from a wider, larger perspective.

But with regard to your question about what makes up a company and the issues related to introducing the market orientation and linkages with social issues, I would say that there are no fixed points or fixed cost areas that are untouched. Everything is alterable; it's all a function of time and place. Take the example of research and production. What used to be the most important things on our balance sheet were the fixed assets or tangible things. Most important now is goodwill and the people we have to motivate. In other words, they are our real capital assets, and they can get up and walk away if we don't set the right tone and the right values.

We try to anticipate the future by understanding that you can't regard as certainties things that appear to be ''givens.'' You have to operate with this knowledge when setting priorities and selecting product areas to enter into. The health sector involves many therapeutic areas, so we have to decide where we want to be and whether we want to fight or seek the path of least resistance. While certain things may look secure and promising for the future from today's perspective, they may look completely different 10 years from now. You have to maintain an openness to the outside within the context of social, political, and scientific systems, and you have to have the courage to carry out the necessary changes quicker than the others.

COS: When I visited you last time in Frankfurt I was struck by that Greek phrase over the entrance to the main lobby, *panta rhei:* ''Everything is in flux.'' Do you still believe in that view of the world?

JD: Absolutely. Everything is in flux. That is the reality we live in and have to cope with.

COS: What does it take to operate in this kind of environment?

JD: You must learn to organize using ''tents'' rather than ''palaces.'' With tents, you are much more likely to organize around emerging opportunities. With palaces, you are confident and comfortable. But when you find yourself out of sync with your social and business context, the palace walls will start to crumble, regardless of how thick they may have been.

COS: And the leader in this kind of environment is the one who ''isn't doing a thing,'' as you said.

JD: Right. But I was using my ''eye,'' seeing what was going on, and sensing which people had the potential to rise to the occasion.

COS: Maybe that's what leadership is about.

JD: Maybe, yes.

FEATURE

Internal Outsiders Transform Tradition-Bound Organizations

Ariane Berthoin Antal and Camilla Krebsbach-Gnath

The people at the casting agency must have made a mistake! Are they really serious? How could they have selected such a quiet guy, a German who joined the company as a trainee straight from the university, to play the lead in this production? He has never even been posted abroad! How can such a person credibly fill the role of a CEO who will transform a diversified, bureaucratic, tradition-bound German company into a global player in biotechnology with a small head office located in France?

A proper director would surely have explained to the casting agency that it would have to find someone who could step onto the stage as a visionary leader, an expert, and a charismatic communicator. At the very least, he or she would have to be a chemist with a track record in the lab; it is inconceivable that someone with no scientific expertise could head a major German chemical-pharmaceutical company. All the previous leaders had doctorates and brought the authority that comes with the title *professor*. ''Just a Mr.'' is clearly not enough for this role.[1]

A proper director would never have permitted the leader to move the stage around even before taking the job. The corporate center is in Frankfurt, so the designated leader in the play certainly can't shift a significant part of the action to the US. But this is precisely what the man did, to the consternation of many.

A longstanding member of the German top team described the shift as a huge cultural change: ''The traditional way of doing business at Hoechst was that Frankfurt is the central power, we are satellites around the world, and we have to take good care of the satellites. The businesspeople were used to going to their area of responsibility twice a year, first-class, to visit their empires. . . . After the merger, things completely changed because people were, I think, forbidden from going to the US to check out the US operations. There was a huge cultural change. . . . The center of gravity, the center of power, was no longer in Frankfurt for these activities, but in Dallas or Charlotte. . . . German managers had to report to Americans residing across the Atlantic in the US.''

Who is crazy enough to transfer power from the head office to a company acquired abroad? And this person is supposed to play the role of CEO?

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A German company that had operated internationally for more than 100 years was crazy enough to disregard the commonly accepted approach to achieving radical change. Instead of replacing its top management with people from the outside and engaging the support of armies of consultants in order to bring fresh perspectives and revamp the organization, ''internal outsiders'' conceived of and implemented the transformation of Hoechst. This tradition-bound company, often characterized as rigid, was nevertheless home to a sufficient number of *querdenker* (nonmainstream thinkers or, more precisely, across-the-grain thinkers) to change significantly the culture, structure, and focus of the company within a mere six years. How did the company find these people? How did they work

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together to make such a transformation possible? What can we learn about the design and realization of dramatic organizational change from the Hoechst experience?[2]

How to Find "Internal Outsiders"

In 1993, the supervisory board of Hoechst AG selected Jürgen Dormann to succeed Professor Wolfgang Hilger as chairman of the management board in 1994. At the time, Dormann was the member of the management board responsible for finance. At first glance, he was no outsider. To the contrary, he had always been based at headquarters, where he had moved up the ranks. He had, however, gained experience in the US market while masterminding the acquisition of Celanese, and the business press reported that the success of that process was widely attributed to him (*Der Spiegel,* 1993: 105). He was nevertheless an unusual choice for the position of Hoechst CEO. Unlike all his predecessors, he was not a chemist, but an economist with international financial expertise. So why did the board choose such a ''very different kind of insider,'' as a long-standing observer characterized him? It is likely that members of the supervisory board shared Dormann's sense that the tradition-bound company, which he described as ''German-rooted, strongly science-based, not very market-oriented, very introverted, very academic,'' needed to be shaken up. The catchy German phrase that Dormann coined to convey his intentions, ''*entfrosten und entrosten*'' (unfreeze and unfetter), was soon heard from Hoechst managers around the world. (See the interview with Dormann on page 16 of this issue.)

The choice of a CEO with totally different qualifications from those of his predecessors was only the beginning of leadership changes at Hoechst. No top manager can single-handedly transform an organization. Dormann needed help, but where would he find the people to bring fresh ideas and perspectives to such a traditional company? Its culture was ''very chemical-driven, centralist; when you wanted to make a career, you had to stay in the center,'' a senior German manager noted. The role of an internal outsider is not a comfortable one, and it is likely that *querdenker* are repressed in such an organization. As Warren Bennis points out:

> The fact that the organizational deviant, the individual who sees things differently, may be the institution's vital and only link with some new, more apt paradigm does not make the organization value that person any more. Most organizations would rather risk obsolescence than make room for the nonconformists in their midst (1989: 124).

Dormann immediately looked for allies and sought them first on the periphery. He looked in the international subsidiaries and among the foreign managers that Hoechst had brought in with its acquisitions abroad. Just before taking office in 1994, for example, he asked Claudio Sonder, who was responsible for Hoechst do Brazil, to join the new task force that he charged with developing the company's new structure and strategic orientation. The two men had met in 1974 at the central office. Sonder, like several other managers, had consciously chosen to pursue a career outside headquarters. Dormann had reached him by phone in Mexico saying, ''Look, I am going to form a task force. Do you want to be part of this? It's going to be eight guys. You will have to be flexible; we need half of your time during half the year. And you can think and do what you want.'' That prospect excited Sonder, so he agreed to come on board.

Other managers drawn from the periphery were Ernie Drew and Bill Harris from the US. Drew had been group vice president of Celanese when Dormann was negotiating the acquisition of the company, and the two men had worked closely together during that process. Drew then became president and chief operating officer of the new company, Hoechst Celanese. He recalled how Dormann had invited him to chair the new task force: ''He said, 'I need you, Ernie. I need you over here to help with change.''' Drew smiled wryly, ''Dormann 'conned' me into it.'' The other task force members recruited from the periphery were Germans, such as Thomas Hofstaetter, who was running the pharmaceutical division in Japan at the time. Dormann also found some allies for his transformation process inside corporate headquarters, people such as Rainer Handte and Bernd Sassenrad, who knew the internal procedures and could find the right levers and channels in the company to communicate ideas and generate change.

All the internal outsiders on the task force came from second- and third-level management. Dormann wanted to get the ideas and support generated at this level of the organization rather than limiting the strategic thinking to the very top. As diverse as the members were, they had one characteristic in common; as one of them remarked, ''None of these people were narrow.'' This combination of insiders from the periphery and insiders from the center stimulated the development of ideas and plans and proved very effective for the implementation process. Dormann chose only one real outsider to work with the team, Wilhelm Rall from McKinsey Germany. Everyone involved emphasized that this was a personal invitation: ''It was not a McKinsey project. . . . Rall was a member of the team whom we could use as a sounding board . . . and he helped us understand some of the other German companies that had gone through change.'' Asked about what had driven his selection, Dormann responded simply, ''I looked for complementarities.''

Gradually, Dormann achieved a change of leadership at the very top of the organization too. Little by little, he placed internal outsiders on the Hoechst management board. For example, Horst Waesche, who had sworn to himself that he would never work in headquarters again, let himself be talked into returning from Japan. Klaus Schmieder, who had been exposed to the financial analysts of Wall Street earlier than his German colleagues, was also brought on board. Drew became the first non-German member of the management board, although he spoke very little German and felt that many ways of doing things in Germany were ''crazy.'' Two years after Dormann took office, the management board had been completely revamped, partly due to the openings created when several older members retired.

This combination of insiders from the periphery and insiders from the center stimulated the development of ideas and plans and proved very effective for the implementation process.

The business press also credits Dormann with engineering a significant shift in the leadership at yet another level of Hoechst, the supervisory board. Traditionally, the former chairman of the management board had moved into the chair of the supervisory board. However, when Dormann became CEO, it was not his predecessor, Professor Hilger, but Eberhard Bouillon, a former management board member with many years of experience in human resources and industrial relations at Hoechst, who became the chairman of the supervisory board. The strategic changes Dormann and his management team were to introduce in the coming years would require that the chairman of the supervisory board be able to negotiate with multiple stakeholders. The fact that Bouillon was not a chemist like Hilger also made it easier for the supervisory board to envisage a future for Hoechst in which chemicals would no longer be central.

What did Dormann and the managers he brought together have in common? They looked at the company and at market developments from a perspective that was different from the one that had dominated Hoechst; this made them very concerned about the company's future. They were the kind of internal outsiders that Art Kleiner aptly describes as heretics:

> Someone who sees a truth that contradicts the conventional wisdom of the institution—and remains loyal to both entities, to the institution and the new truth. Heretics are not apostates; they do not want to leave the ''church.'' Instead they want the church to change, to meet the truths they have seen halfway (1996: x).

Dormann and his colleagues questioned old truths because they believed the company was endangered, and they were willing to take risks together to encourage change. Dick Markham, another American manager Dormann had brought into Hoechst through an acquisition, described their approach quite simply, without the hubris characteristic of many top managers at the helm of major change processes: ''It wasn't some stroke of brilliance on our part; it was the way we grew up. We couldn't understand why you would do it any other way.''

As important as internal outsiders were, bringing them on board is not enough to actually achieve change. What did the *querdenker* do to transform Hoechst in such a short time?

How Do Internal Outsiders Transform an Organization?

1. Name the Problem and Create a Sense of Urgency

Dormann did not outline a brand new vision when he became CEO. Instead, he convinced people that the company faced problems and needed to radically transform. Such change processes are usually initiated only after a crisis has already hit. But Dormann intended to avoid the crisis that he saw looming on the horizon. He gave a speech that shook up the company and introduced a new German term to the Hoechst managers around the world: *Aufbruch 94,* meaning ''new beginnings.'' Rall commented, ''There was a huge feeling in the organization that they had to catch up again. Hoechst had been quite high-flying in the 1960s and 1970s, and then it went down. Somehow, change was overdue in the mid-1990s.'' Dormann warned, ''We have little time to lose. The opportunity can slip away too fast, and high expectations for change can rapidly turn into an even deeper feeling of disappointment.'' When he outlined the key issues that he intended to tackle, the clear and high goals were invigorating. ''It was the first time that anybody in Hoechst had said that we had to be among the top three in whatever business we pursued,'' reported a manager who had heard Dormann's speech.

Dormann signaled that he intended to achieve a radical change in norms, which one manager characterized as moving ''away from optimizing the existing business toward the development of something completely new.'' His message sent shock waves throughout Hoechst. A Japanese manager captured the feeling well: ''Since I entered Hoechst in Japan, for more than 30 years I have been told that general chemicals is the key to competitiveness. . . . When Mr. Dormann became president, he proclaimed that precisely the fact we were a general chemicals company was the symbol of weakness. . . . To be honest, that was a shock. This change in values took a long time for me to understand.''

2. Give Querdenker *Space to Work on Key Strategic Issues*

Dormann's creation of a task force to review the structure and strategy of the company was in itself not a particularly original step. However, the composition of the group and the broad scope of its task were unusual. ''This group had lots of space to analyze Hoechst and to develop a vision for the company,'' recalled a member. The task force soon became known as the ''dream team,'' probably because it had the freedom to dream of a different, better Hoechst. A member of the supervisory board speculated later that this openness would not have been possible earlier because ''the other CEOs had all been chemists, and chemists don't dream, do they?''

Unlike jesters, who challenge the traditional ways of seeing and doing by playing at court, the dream team members fulfilled their role by traveling around the world. They broke a longstanding Hoechst norm by looking beyond the two large German chemical-pharmaceutical companies with which Hoechst had always compared itself, BASF and Bayer. Instead, they started benchmarking Hoechst against highly respected multinationals such as General Electric, ABB, Royal Dutch/Shell, Dow, and Ciba Geigy. They explored the structures and processes to find what Hoechst could learn from them.

This leadership style left it up to the team members to work out their own ideas and be responsible for making them happen.

Usually, strategic task forces are quite closely monitored to ensure that they do not come up with undesirable results. But the dream team did not have to report on its work until the end of its six-month assignment. The communication style was very informal. ''There was no reporting requirement,'' said Dormann. ''I am always available, and some people feel that this is the more effective way of exchanging ideas.'' It was typical of Dormann that he had not clearly indicated to the team what he wanted, other than to seek models for change. This leadership style left it up to the team members to work out their own ideas and be responsible for making them happen. A close associate notes, ''What you will notice when you talk with Dormann is that he leaves a lot of space for initiative. He does not tell people what to do.''

3. *Make* Querdenker *Deliver*

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Two things were clear to the task force from the beginning: they would have to deliver their recommendations within six months, and they would then be responsible for delivering the changes. ''For lifelong Hoechst employees, this was very exciting,'' said a member of the team. ''If we have ideas, they are going to be implemented. And so it was a new start. A new CEO, new opportunities, and the support of senior management in implementing changes.'' But it was no easy task, and the responsibility for delivering on their recommendations entailed some uncomfortable situations. For example, the new structure, based on the work of the dream team, meant that some managers heading subsidiaries around the world would lose a great deal of their power. Sonder remembered how painful the job had been: ''I was in charge of informing all the European subsidiaries of Hoechst that the country heads would essentially be administrative functions. You can imagine what this meant, because I was considered the traitor, the guy who came from outside, and I was changing and diluting the power of the country kings.''

As the only non-German on the management board of the German-based multinational company that Hoechst was at the time, Drew's role as an internal outsider required a tricky balancing act. He had to learn about the Hoechst culture while maintaining enough distance to change it. To contribute to policy making and decision making, he had come to understand the German system of corporate governance, something he found very difficult. At the same time, his responsibility was to challenge the traditional ways in order to instigate changes in the corporate culture.

By drawing on his industry experience in the pace-setting US market, Drew was supposed to help transform Hoechst management thinking and processes from the German-based culture to that of global players. A colleague commented: ''Drew became the bull in the china shop. Dormann flew him down to Frankfurt and had him wander everywhere in Hoechst with his elbows out, breaking things. Which is what he did. He questioned why things were done in a particular way. He insisted that people be held accountable for performance. He insisted that when they said that they were going to do something, it was later checked to see whether they had done it or not. And Dormann, rather than being as demanding a boss as I am sure he is capable of being, was able to be more statesmanlike because Drew was breaking all the china for him.'' Dormann's role was to provide space and support so Drew could work against the grain of the corporate culture and bring in his ideas and techniques to focus on the market, strategy, and speed.

4. *Change the Parameters for Decisions*

Dormann had observed an effective assessment procedure at Celanese that he wanted Drew to introduce to Hoechst as a way to implement the recommendations of the task force and achieve the thorough transformation of Hoechst management processes. He established a committee to introduce the strategic management process under the shared leadership of Drew and Günter Metz. Metz was a long-standing Hoechst manager with extensive experience at the head office, a German who could handle the delicate task of building a bridge between the cultures and the generations during the transformation. The results of the first round of reviews with the strategic management process were even worse than expected. One senior manager recalled, ''We went through the whole analysis. We discovered that a lot of the businesses were not up to speed, were too small, did not

have enough technology or critical mass, and the cost base was too high. We had stretched ourselves too much in the past, so we were mediocre in a lot of things but not good or top in even a few things.''

The process was painful because the Hoechst managers realized that they had to make some tough decisions. It would not be possible to invest in all the businesses in order to bring them up to the desired level, so some would have to be sold. ''In the process, we essentially defined which were the core businesses and which were more on the periphery,'' Schmieder explained. Managers with experience in the US advised, ''Focus, focus, focus!'' It was not too difficult to give up the cosmetics businesses because they were relatively new and peripheral to Hoechst. The decision not to pursue the fibers business was much more painful, because some senior managers had dedicated much of their professional lives to developing successful products such as Trevira. The most dramatic decision was to sell the bulk chemicals business, because dyes had been the company's first product in 1863, and several generations of employees' families identified with it. This decision had a huge impact. When the Swiss company, Clariant, bought the fibers business, it took with it a quarter of the Hoechst employees in Germany.

5. Create a New Knowledge Base

A new strategy cannot be based solely on the identification of core activities and the separation from those designated as ''noncore.'' An organization has to build the competencies and especially the knowledge base required for leadership in its chosen field. Hoechst needed new outsiders to help do this and decided, in 1995, to acquire Marion Merrell Dow in order not only to strengthen its position in the US but also to bring in new skills that Hoechst lacked. Dormann had set his sights on two senior managers in that company, Dick Markham and Frank Douglas, whom he saw as a strong tandem to develop a new knowledge base and working methods in the pharmaceutical division of Hoechst. He asked Markham to head the pharmaceuticals business, and he put Douglas in charge of corporate research and development.

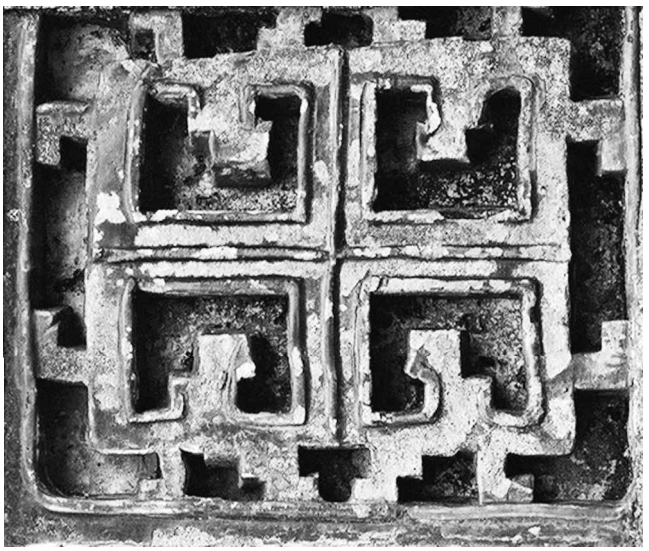
An organization has to build the competencies and especially the knowledge base required for leadership in its chosen field.

The two men introduced significant structural and cultural changes in order to generate new knowledge and skills. They established an interdisciplinary project structure in research, doing away with the old functional silos separating chemists from biologists and toxicologists. ''The role of function is to supply the best technologies, the best people, the best expertise to support teams,'' Douglas explained. And they shifted from a regional to a global structure, assigning a significantly larger role to the labs in Bridgewater, New Jersey, where a competence in biotech research had been established. Both Markham and Douglas sought to introduce a strong market sense into the business, even in the research labs.

When the two American managers arrived in Frankfurt, they found that, ''People were very focused on science. They were focused on doing experiments. But they were not focused on asking the question, 'Will this experiment tell me whether this compound or this project is likely to lead to a drug?''' Douglas renamed the research and development function ''drug innovation and approval'' to reflect the orientation he sought to instill. He explained, ''I wanted people to understand that they should operate differently. We are in research to innovate drugs.'' He also wanted to provoke the researchers ''to start the dialogue.'' Douglas recognized that knowledge creation is more a matter of dialogue than of technology: ''If indeed the competitive advantage is being able to share knowledge rapidly and sensibly integrate new technologies, where better to do that but in a team that has a clear problem, a clear project, or a clear focus and a community of practice? . . . We want them to talk together and to get the tacit knowledge out.''

Douglas encountered enormous resistance at the outset. The researchers even demonstrated publicly in front of the Hoechst gates. But Douglas did not break off the dialogue. Several factors contributed to the success of his approach. Support from top management was key: ''If Mr. Dormann and Mr. Waesche did not support what I was trying to do, did not believe in what I was trying to do, this was not going to be possible.'' A second crucial

factor in achieving change was Douglas's leadership style, including his ability to walk the talk about change itself. He realized, ''I was going to be asking my colleagues to change the way they did things, to do things differently, and to do some things that were difficult for them. Therefore, I needed to show them that I was prepared to do something that is normally considered difficult for Americans. So I said, 'I am going to learn German, and I'll do it very publicly and openly. Perhaps I will succeed, perhaps not, but you will see me trying.' We had a lot of laughs along the way. After a few months, I went to a two-week intensive, in-depth course, and suddenly it clicked. In about nine months, I was fluent.''



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Douglas chose a surprising metaphor to explain a further key concept in his leadership philosophy, namely, the ability to maintain his sense of direction while listening to others. ''When you are trying to implement change,'' he explained, ''you are going to hear a lot of noise, a lot of complaints. What a leader has to do is to be calm enough and still enough to hear the birds chirping. . . . When the birds are no longer chirping, it's like in the coal mines, there's danger. And you are dead. So listen to the birds chirping. They are the ones who will lead you to the success.'' Douglas leads as an internal outsider by placing himself on the sidelines: He provides a sense of direction and then enables others to establish self-managed processes in their project teams.

6. Treat Change as Constant

Change processes in organizations rarely have a clear beginning or end. The Hoechst employees had only just digested the integration of Marion Merrell Dow when they started hearing new rumors about further changes. The business press reported weekly about new international mergers and acquisitions. In order to remain a key player in the industry, companies had to keep growing rapidly. No company could grow fast enough on its own, so Hoechst, too, had to look around. In an environment dominated by the fear of ''eat or be eaten,'' Hoechst faced the options of being gobbled up or of slipping down the ranks to the status of a medium-sized company.

In December 1998, Hoechst announced its decision to pursue a ''merger of equals'' with the French multinational pharmaceutical company, Rhône Poulenc. The new company was to be headquartered in the European city of Strasbourg and would take on a new name, Aventis. The merger would create a powerful life-science company and position it at the top of pharmaceutical companies worldwide and second in agriculture. (Just a few months later, the merger of GlaxoSmithKline moved it to the top of the rankings.)

Dormann had made his approach to change explicit in 1993. He warned people not to build palaces but instead to set up tents because tents can easily be taken down and put up somewhere else. True to this metaphor, Hoechst was almost completely dismantled in 1999, and the new Aventis tent was set up quickly in Strasbourg. Then, in early 2001, the company announced another major organizational and strategic change: agriculture would be moving out of the tent, and Aventis would focus on the pharmaceutical business. Transformation is ongoing.

Who Can Learn from the Transformation of Hoechst to Aventis?

Many global companies have to undergo cultural and structural change in order to maintain their competitiveness. Many, like Hoechst, have extensive international experience but have to reconfigure themselves significantly to operate as truly global players. Possibly the most positive message from the Hoechst experience for these companies is that the potential pool of heretics capable of conceiving and leading change among their ranks is tremendous. If a tradition-bound company such as Hoechst can find enough internal outsiders to achieve a comprehensive transformation of its culture and structure, then almost

every other company will also be able to discover an equivalent potential among its managers. They are located in diverse functions, units, and levels. They may be in subsidiaries, headquarters, and recent acquisitions. It is just a matter of seeking them out and giving them the space and responsibility to envision and achieve change. Decision makers must dare to deviate from traditional profiles when filling positions, starting with those at the top.

The Hoechst transformation confirms Jim Collins's findings: ''People generally assume that transforming companies from good to great requires larger-than-life leaders—big personalities like Iacocca, Dunlap, Welch, and Gault, who make headlines and become celebrities'' (2001: 68). Dormann and many of the internal outsiders he chose to lead the transformation in Hoechst shared the paradoxical combination of features of ''humility and fierce resolve'' that Collins observed in his US sample.

Internal outsiders are necessary but insufficient for effective transformation. A culture of cooperation is crucial because loners cannot put enough in motion to achieve truly significant change. A wide, diverse network provides the possibility for identifying allies and drawing them together cooperatively. Every company must therefore enable networks to develop across functional and business unit boundaries. Rotation programs, international postings, project teams, and management development seminars with a diverse mix of participants are all ways to give employees opportunities to get to know and appreciate each other. Such activities also permit employees to examine their organization critically from different perspectives and to discover useful connections and possible dysfunctions (Berthoin Antal, 1991). Ideally, they can thereby identify problems early and act on them in a timely manner.

The Hoechst example illustrates the importance of a combination of perspectives. Managers from headquarters and those from the periphery bring together different ways of seeing and addressing the organization's problems. The intimate knowledge of the organization and its often bureaucratic systems that managers from the center have is essential to achieving change effectively. Dormann stressed that he did not shy away from using his ability to ''play on the traditional keyboard'' of Hoechst in order to create space for his new ideas. The inclusion of managers from the periphery is also simply a matter of clever power politics. When structural and cultural changes entail a loss of power in parts of the organization that have been relatively autonomous, it makes sense to draw some people in from the periphery to take new responsibilities for implementing the changes that they might otherwise use their power base to resist.

Decision makers must dare to deviate from traditional profiles when filling positions, starting with those at the top.

An inclusive strategy that seeks to turn potential resistance fighters into allies can work only on the basis of trust and if all the participants believe that they are acting in the interest of the organization. Few people are willing to support a self-serving *querdenker*. Many may, however, be willing to sacrifice their short-term interests if they see a significant positive effect for the community with which they identify. In order for *querdenker* to attract allies, people must perceive that a deep-seated commitment to the good of the organization is the central value and driving force for change.

The credibility of leaders purporting to act in the interests of the community rather than for their own good depends largely on how they are seen to generate and distribute power. The central functions of Hoechst were dramatically reduced, and their power was shared across the organization. Not only Dormann, but also members of his leadership team, consistently initiated processes and opened spaces for others to implement ideas. The common buzzwords of ''empowerment'' and ''delegation'' do not adequately capture the essence of this process. Both terms are associated with a hierarchical view of power and organization: bosses delegate downward, they may—and in modern management should—allow ''their'' employees to share in ''their'' power. Rather than conceiving of power as something that is ''given'' or ''taken'' in more or less explicit hierarchical processes, an alternative view is based on the assumption that power is something that can grow in different places across the organization. The possibilities and limits of such an approach to power have not been thoroughly tried in practice or investigated by research, but seeds of it are to be found in Aventis and probably in other organizations.

Possibly the most important lesson to be drawn from the transformation of Hoechst to Aventis relates to the role of visions. Dormann did not have a clear, precise vision of the company's future when he became CEO, or later. He did have a certain sense of direction and some consistent goals, but he had yet to work out the route and altered it several times in the transformation process. This contradicts the dominant view that managers should have a clear, long-term vision to which they can gain the enthusiastic commitment of their employees. Piers Ibbotson, of the Royal Shakespeare Company, comes closer than management scholars to capturing the nature of Dormann's approach. He speaks of the importance of ''misty vision,'' which must be clarified and worked out collaboratively over time, rather than being the outcome of one or a few top minds. Such a management approach requires many people in the organization to participate in interpreting the future and formulating ways to get there. Perhaps there is a greater similarity between what goes on in companies and what happens on stage than is generally assumed.

Acknowledgment

This article is based on a longer chapter in German by the authors entitled, ''Auf der Suche nach 'internen Außenseitern,''' in *Wo wären wir ohne die Verrückten? Zur Rolle von Außenseitern in Wissenschaft, Politik und Wirtschaft,* eds. Ariane Berthoin Antal and Camilla Krebsbach-Gnath (Berlin: edition sigma, 2001): 165–203.

Notes

1. Quotations are drawn from the research interviews, unless otherwise indicated.
2. The research project on the transformation of Hoechst to Aventis was conducted by Ariane Berthoin Antal, Meinolf Dierkes (project leader), Camilla Krebsbach-Gnath, and Ikujiro Nonaka. Kate Nattrass, Casey Teele, and Sari Yli-Kuahaluoma helped with desk research and data analysis. Patrick Reinmoeller and Ryoko Toyama assisted in conducting interviews in Japan. The research has been published as a two-part business school case study with full teaching notes and a video. These can be obtained from the European Case Clearing House (order numbers 302–031–1; 302–031–3; 302–031–8; and 302–032–1).

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Commentary

by Marla Kameny

Ariane Berthoin Antal and Camilla Krebsbach-Gnath outline six steps for how internal outsiders transform an organization that can be almost ubiquitously applied to some degree in organizations seeking to bring about major change. However, one step in particular deserves a more critical look and further justification. Establishing teams and reorganizing the research and development department is only one aspect of "creating a new knowledge base." It is one thing to create a culture and structural shift in order to improve a company's products, but at the same time, products are not a company's sole source of competitive advantage. What about the knowledge base of those who sell the products? And that of those who support these individuals? Knowing more about how the company's overall knowledge base is affected, through its people and infrastructure, would be helpful, especially for those organizations not necessarily in the pharmaceutical business.

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The authors alluded to the subjects of power and politics, which caused me to cringe. Undoubtedly, power and politics exist and are most likely unavoidable, but in keeping with the more positive lessons to be learned in this context, they could write another whole article on this subject and its complicated realities.

The path taken by Dormann and his team in creating Aventis was ultimately successful. In his interview, when posed with a question regarding leadership and what he does or does not do, Dormann commented that his response can't be removed from the historical context. Berthoin Antal and Krebsbach-Gnath provide a wonderful, rich description of what Hoechst did right that can serve as a model for other organizations, but such a story could have been helped further by providing more of a "before" picture, rather than only a "during" and "after" perspective. Such a glimpse could have addressed issues relating to exactly *why* Hoechst had to change its traditional way of doing business by asking just where, within the current structure, did problems lie? In decision making? In innovation? There were several allusions to certain reasons, but hearing repeatedly that the way of doing things in Germany essentially was "crazy" was not convincing.

With continuing globalization, companies and their CEOs can repeatedly learn from the ambitious transformation efforts of organizations such as Hoechst. The supervisory board at Hoechst ultimately selected Dormann as the new chairman of the management board. Can Hoechst then be considered lucky? If Dormann had not been chosen, would someone else have brought about such change? Wouldn't it have been fascinating to be a fly on the wall during the supervisory board's selection process?

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Commentary

by Tom Durel

The story of Hoechst's transformation brings home three important lessons. The first is that a combination of related actions are needed to create change. Ariane Berthoin Antal and Camilla Krebsbach-Gnath point out that, as important as internal outsiders were, bringing them on board was not enough to actually achieve change. Dormann and Hoechst had to create an environment in which change could occur. In forming his task force, Dormann sought the power gained through diversity of experience from the periphery—from Brazil, Japan, and the US. But he also sought people with broad thinking and a common purpose aligned with his own. He found inside outsiders who naturally not only thought out of the box, but executed plans and produced results.

Dormann was masterful in creating an environment of urgency coexisting with reflection. The members of the task force had to converge their thinking within six months, design what was to be done, and execute the changes. The insider-outsiders at Hoechst had the discipline to not allow the urgency of the situation to rush them to execution and the haziness of their direction to trap them in their reflections. They created a harmony allowing for creativity and bottom-line production. They took what, in many companies, are considered opposing behaviors and integrated them into a powerful force of generative change. It brings to mind a little wisdom from my mother as I struggled to succeed in my early school years: "The more you slow down, the faster you'll catch up."

The second lesson is the impact of structure on enabling change or, for that matter, on stifling it. The lesson is that it is not only what you say, how it is said, and what you do that drives change but also, and more powerfully, the structure within the organization that enables the change. All are important and all must be aligned, or change indeed will occur, but not the change that was desired.

Alignment is the third lesson. It is intriguing how change in a community fosters the opportunity for growth and change in individuals, and vice versa. Many organizational learning sessions end up becoming more about individual learning. Our desire for alignment and integration moves us to consider not only the organization but also ourselves as we embrace or resist change. At any given moment, we humans exist in multiple, intertwining spheres. We are individuals; we are members of communities; we are members of communities of societies. In all our spheres, there are forces that center us, such as purpose and values. There are also forces that shape, such as policies, habits, and language. And there are forces that create, such as knowledge and skills. We seek consistency and alignment through these forces within ourselves, within communities, and within societies.

As Berthoin Antal and Krebsbach-Gnath found, in order for the *querdenker* to attract allies, people must perceive that a deep-seated commitment to the good of the organization is the central value and driving force for change. People must perceive an alignment between their centering forces and those of the organization. Likewise, Frank Douglas, in learning to speak German, gained alignment with the community. He did not ask the community to adopt his language. In so doing, he showed how change within community requires change within self, to create the alignment for performance. Dormann and Hoechst did not depend on clear vision but did begin with common purpose and broad thinking, while providing an environment in which not only change but also alignment would work out over time.

Response

by Ariane Berthoin Antal and Camilla Krebsbach-Gnath

Marla Kameny's reminder that knowledge resides in so many different people is certainly important for the readers to keep in mind, and we are glad that she emphasized the importance of looking at the period before Dormann became CEO. We have already written a case about the transformation from Hoechst to Aventis, in which we specifically covered the history that led up to the situation Dormann faced when he took over. We are currently working on an article about the power and politics issues in change processes, particularly because the topic is so neglected in organizational learning theory.

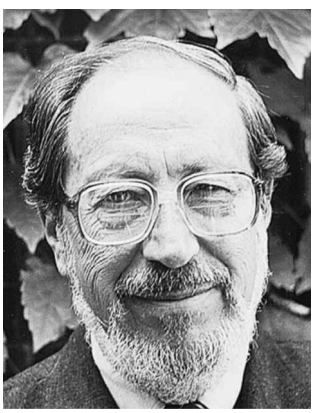
Kameny's image of being a fly on the wall during decision-making processes is one we can identify with. When one conducts as many interviews as we had the good fortune to be able to do for this study, one is always tempted to keep going and discover ever more.

We enjoyed Tom Durel's comments, sensing that we share a similar wavelength. The way he brought out certain points from our study and supplemented them with his experience and reflections helps communicate our messages that much more powerfully.

FEATURE

Models and Tools for Stability and Change in Human Systems

Edgar H. Schein



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In this article, I will first differentiate types of change that occur in human systems and will then provide a model that makes it possible to understand not only the nature of change but, equally important, the nature of stability. Change and stability are two sides of the same coin. Hence, consultants and managers have to be concerned about the management of both processes. Within the framework of stability and change, I will then examine what we mean by learning, especially as we apply that term to groups, organizations, and larger social systems. As we will see, learning is a perpetual process and one of many types of change that occur in human systems all the time. If such learning did not occur, such systems would not survive. But the learning that creates stability and culture is different from the learning that enables organizations to innovate as they encounter changing conditions in both their external and internal environments.

Types of Change

As managers and consultants, we need to distinguish three basic types of change that occur in all human groups and organizations:

1. Natural evolutionary changes
2. Planned and managed changes
3. Unplanned revolutionary changes

The phrase ''natural evolutionary changes'' refers to all the myriad learning processes that occur throughout any given organization as its various parts adapt to its various environmental conditions. Every employee is learning all the time and is making changes to adjust to his or her local conditions. Some of those changes benefit the organization and would be called part of the organization's capacity to learn. But as we have learned all too often, under many circumstances what the individual employees learn is not how to enhance what the organization is trying to do but, rather, to use ingenuity to make their own lot easier at the expense of the organization. Informal systems of ''a fair day's work for a fair day's pay'' evolve, or, if management is sufficiently repressive, more elaborate creative systems to sabotage or undermine management's intentions evolve. In other words, as has been noted, evolution is not necessarily progress from the organization's point of view.

It is managers' discovery that natural evolution is not necessarily progressive or benign that leads them to think about planning and managing change, the second main category. Whether we think of that as steering the evolutionary processes or as more actively controlling the direction of change and learning, what is implied is the assumption that one can control to some degree what is learned and the direction that change will take. At the same time, it is implied that managers can stabilize those processes that need

to be preserved because they are working adequately. When managers speak of ''changing the culture of their organization,'' they typically mean they want to make some changes in what is currently going on, but then they want to *stabilize the new ways of working* if they produce better results for the organization. In this scenario, organizations experience ''change programs'' between periods of ''stability.''

Human Systems as Quasi-Stationary Equilibria of Multiple Forces

In order to understand any kind of change, we must first have a model of a ''system'' in a steady state, what Kurt Lewin so aptly called a ''quasi-stationary equilibrium'' (Lewin, 1952; Schein, 1985, 1987). A ''system'' can be an individual, a group, or an entire organization, and any given system is usually composed of a number of subsystems. When any kind of change is being contemplated, it is helpful at the outset to decide what system we are focusing on. *Who* is to be changed?

Any living system is always in a state of some change (growth, metamorphosis, or decline), but all systems are homeostatic in that they always tend toward some kind of equilibrium, and all systems have some subsystems that change more slowly than other subsystems. We tend to call those that change at the slowest rate the ''structure'' of the system, such as the skeleton or the organization chart reflecting authority channels. But even those subsystems change, and they are subject to the same homeostatic forces. The tendency toward equilibrium is achieved by a balance of forces pushing in different directions. But, if some of these forces are altered and if no compensating forces arise, the equilibrium will move to a new level. In this sense, the equilibrium is only ''quasi-stationary.''

Because all systems are always in some state of change, the change agent should locate those forces that are already acting to produce change.

Because all systems are always in some state of change, the change agent should locate those forces that are already acting to produce change. If those forces are not acting fast enough or are acting in a direction other than what the change agent desires, the first stage in the change process is to alter the force field, or what Lewin (1952) called ''unfreezing.'' Before we can unfreeze the system, we must first identify, with respect to our change goal, what the relevant forces are that are acting *on the target system*. This process, called ''force-field analysis,'' is then a first step in any managed change program. If the analysis reveals that the unit being changed is composed of a number of interconnected subsystems, then we have to analyze each subsystem. We cannot assume that the same forces apply across all the subsystems.

Analysis as Intervention

Though it is important to analyze and decipher the state of the system, it is even more important to recognize that if the change agent asks questions, observes, gives questionnaires, or in any other way engages members of the system, he or she is *intervening*. There is no such thing as pure diagnosis, but the change agent can do the diagnosis in a manner consistent with the change goals and with the full involvement of the target/client system. Change models that separate the diagnostic from the intervention stage are ignoring the powerful impact that different forms of diagnosis have on the system being diagnosed. Ignoring this step in the presumed interests of getting ''valid'' data by minimizing the ''influencing'' of the data is clearly unethical and borders on unprofessional when working with human systems.

Everything we do when we interact with any part of the target/client system is an intervention and must be guided by principles and ethics of intervention. Hence, the analytical tools I will suggest can be thought of as ''diagnostic interventions,'' unless they are done by the change agent alone as part of a planning process. However, as the philosophy of process consultation argues, it is more likely that the change goals will be reached if the target system becomes a client and begins to own the diagnostic interventions as well (Schein, 1999a).

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Stages of the Change Process

Any change process can be conceptualized as consisting of three stages or phases, based on the model of quasi-stationary equilibria—a stage of unfreezing, a stage of changing, and a stage of refreezing. No change will occur unless the system is unfrozen, and no change will last unless the system is refrozen. Most change theories tend to focus only on the middle stage and then cannot account for inability to produce change in the first place, or inability to maintain the changes that have been achieved. The stages and the underlying processes that have to occur in each stage are outlined in table 1.

Unfreezing

By far the most difficult and important stage is that of unfreezing, the creation of a motivation to change. This is accomplished by changing the forces acting on the system such that: (1) the present state is somehow disconfirmed; (2) some anxiety or guilt is aroused because some goals will not be met or standards or ideals will not be maintained; (3) enough ''psychological safety'' is provided to make it unnecessary for the target individuals or groups to psychologically defend themselves because the disconfirming information is too threatening or the anxiety or guilt is too high.

The essence of an effective unfreezing process is a balancing of enough disconfirmation to arouse an optimal level of anxiety or guilt, without arousing so much learning anxiety as to cause denial, repression, projection, or some other defense mechanism. Most analyses of unfreezing limit themselves to disconfirmation and the creation of pain, and fail to note that unless the pain is connected to something the members of the system care about, and unless they feel safe enough to do something about it, they have not really been unfrozen at all.

How the unfreezing occurs will vary with the circumstances. Often we find change easy to manage because we encounter a system that is already unfrozen. For example, the turnaround manager who takes over a company that knows it is in great economic difficulty unless it changes has a much easier time making changes than the farsighted company president who tries to initiate change in a successful company.

Systems can exist in a partially unfrozen state because they received disconfirming information at some earlier time in their history, but they will not have changed because there was not enough psychological safety to allow the individual or group to consciously

Table 1 Stages of the change process

Stage 1. Unfreezing: Creating the motivation to change
Disconfirmation
Creation of survival anxiety or guilt
Creation of psychological safety to overcome learning anxiety
Stage 2. Changing: Learning new concepts, new meanings, and new standards
Imitation of and identification with role models
Scanning for solutions and trial-and-error learning
Stage 3. Refreezing: Internalizing new concepts, meanings, and standards
Incorporating into self-concept and identity
Incorporating into ongoing relationships and groups

accept the necessity of change at that time. We see this most clearly in individual psychodynamics where, in adulthood, we ''finally'' deal with criticisms or feedback that we may have received from parents or peers as children but have repressed until we felt secure enough to change. The observer may be surprised at what seems to be a change without unfreezing, because he or she may be unaware of the prior disconfirmation that had taken place. When we speak of systems as being ''ready to change,'' we often mean that they have had strong disconfirmation in the past but have not felt secure enough to do something about their situation.

Managers as ''Unfreezers''

If the system is not already unfrozen, the manager as change agent has to develop a way to surface disconfirming information, a process that is sometimes difficult and time consuming. And then the information has to be developed in a way that is not too threatening. The role of the change agent in unfreezing systems is, therefore, one of the most important and also one of the most difficult. When strong disconfirmation is needed, the person in authority is often in the best position to provide it but is often also the person most likely to be too threatening and thus arouse defensiveness. In such situations, managers often use outside consultants to provide the strong disconfirmation, on the theory that it is easier to accept negative information from a presumably objective outsider. But such outside information is often easy to discount on the grounds that the consultant ''did not really understand our situation.''

Paradoxically, in the process of unfreezing the system, we must often take a very open, inquiring role so as not to produce premature threat.

What the effective manager acting as a change agent must try to convey *simultaneously* is: (1) your present behavior or attitude is unacceptable (disconfirmation); (2) it is violating some of our standards or is causing us to fail in getting the job done (induction of guilt and/or anxiety); but (3) I understand that learning something new is itself anxiety producing, so I will help you to change and make you feel safe while you learn a new behavior or attitude (creation of psychological safety).

One reason it is important for people who become targets of change to be involved early in the change process is that we cannot assess whether and how they might be threatened by the disconfirmation or what problems they will have in making the change unless we explore what help they will need to make the change. Thus, paradoxically, in the process of unfreezing the system, we must often take a very open, inquiring role so as not to produce premature threat. Genuine inquiry in the service of helping the change target to accept and make the change is the most crucial aspect of creating psychological safety, and probably the most difficult to manage interpersonally (Schein, 1988, 1999a, 1999b). The manager as change agent can be quite open and blunt in the disconfirming information if he or she manages steps two and three adequately and sensitively.

An Information Technology (IT) Example

In a study of 76 CEOs, we found that a number concluded that executive workstations operated by the manager (not the secretary or staff assistant) could be a useful executive tool for e-mail, word processing, management information and control, and various kinds of spreadsheet analysis and modeling. The problem they faced was how to get their various subordinates to accept the workstations and learn to use them.

The disconfirmation typically came when the CEO announced to his subordinates that he would start to monitor some of their division or unit performance in terms of regular reports that appeared directly on the CEO's terminal and would ask them questions about it. Past systems of reporting and monitoring would no longer be acceptable. Or he might say that he would start to communicate with them by means of e-mail *only* and would put important messages into the system by this means. The subordinates found out that their routine behavior would no longer work, and they clearly felt anxious about their boss either finding out things they did not themselves know or providing critical information that they might otherwise miss. We can also assume that many felt guilty about not using ''modern'' technologies and highly touted executive support systems.

How was psychological support handled? The most important message was to give the subordinates some freedom to determine how they wanted to learn the new system. They could not participate in setting the goal, but they could participate in controlling their own learning. So the effective CEOs not only provided the necessary terminals but, more important, created a variety of training programs and provided coaches to make it easy for the subordinates to learn and to help them overcome their insecurities. The CEOs set realistic time targets and supported what often turned out to be a very slow learning process. They were sympathetic to resistance but did not change the target of learning to use the system.

If the degree of threat or basis of the insecurity was more fundamental, which would have been revealed in a force-field analysis, then additional unfreezing would have to occur. For example, some managers were afraid that if they were forced to use the terminal themselves, the fact that they could not spell or used bad grammar would be revealed. The sensitive CEO in that instance would accept the rationalization that it was more ''efficient'' for the subordinate to dictate messages to a secretary as before and have the secretary enter it on the terminal. The trick is *simultaneously* to be supportive and to be inflexible on the change targets.

Changing through Cognitive Redefinition

What unfreezing does is to motivate the change target to look for new solutions that will bring things back into equilibrium and that will once again produce confirming information that things are ''okay.'' Once someone is unfrozen, he or she is more likely to pay attention to information, ideas, suggestions, or even orders that were previously ignored. Once unfrozen, people become active problem solvers because they are uncomfortable. They become motivated to change.

If the change is a simple behavioral one, people make the change. However, with complex attitudinal change or changes in shared basic assumptions (culture), there is the additional problem that the change targets may initially not even understand the *new* attitude or assumption. They know ''something'' is wrong with the way they are thinking, but they cannot conceive of any alternative way of thinking. For this kind of situation, either or both of two change mechanisms have to be considered:

1. *Scanning* the environment until a new formulation is found and trying out various kinds of new behavior until something that works is found.
2. Finding a role model and learning a new viewpoint through *psychological ''identification''*—learning by seeing the world through the eyes of the role model.

In either case, the new information causes change by allowing ''cognitive redefinition'' to occur. For example, when PCs are introduced into the executive suite, some people will simply learn a new skill that will not require any cognitive redefinition. But for some managers, the dilemma will be that they see themselves as working primarily with and through people, that they gather complex multifaceted information through face-to-face contacts, that they rely on their gut feelings and intuition to process information, and that they trust their ability to be persuasive in interpersonal encounters only when they can see the other person's immediate reactions. Working on a PC simply will not make sense unless they can redefine in their own heads the nature of managerial work. Some managers will have developed the assumption that numerical data of the sort processed in information systems are not good enough to act on in the first place, and that communicating via e-mail makes it impossible to determine what the other person is really thinking. It is therefore inconceivable to them that IT can be an executive tool.

Such managers may be partially unfrozen in that they have been strongly disconfirmed by their own bosses and feel ready to change, but they truly do not know what to do and feel very threatened because the assumptions on which they have built their self-image of effectiveness are being challenged. If the CEO presses hard enough, they may scan the environment for various kinds of partial solutions, looking for PCs and software that might be more versatile or user friendly, until they find something that seems to work.

Or, more likely, they will find a fellow executive who is enough like them to be a role model and who has learned to use the IT tools. They will identify with that person and try to learn to see the world through his or her eyes. As they do this, they will *cognitively redefine* the managerial job, gradually changing some of their assumptions about their own intuitive style and learning some of the new assumptions underlying the IT solutions.

Most likely, this will involve cognitive *broadening* in the sense that they will learn how to use IT to *enhance* their intuitive style and how to use e-mail to *supplement* their face-to-face encounters. The nature of managerial work will be gradually redefined and broadened in their heads. Cognitive redefinition will also involve a change in the scale on which things are evaluated and the standards or anchors that define the scale. For example, the executive who thought that working on the computer was ''beneath'' him or her and not executive work at all may find that not only does such work fit into the executive-work category, but that it is of higher value than he or she may have thought.

When a learner chooses a role model, there are several possible choices with different consequences. A ''parent figure'' is someone much older and more advanced occupationally or in status. An ''older sibling'' has more recently gone through what the learner is about to go through. The parent figure may provide more accurate data on what ultimately is to be learned but may be too removed to identify with; the older sibling figure may be less accurate but more accessible and easier to learn from. Change managers should consider this issue when they provide role models for the learners and not simply choose the most expert person as teacher or coach.

Refreezing

Once the person or group has achieved a new set of cognitions and attitudes, and has begun to express these in new daily behavior, there remains the stage of refreezing. For the new behaviors to last, they must first fit into the personality of the individual or the culture of the group that is being changed. Otherwise, the behavior will be only a temporary adaptation to the pressures of the change situation and will erode once the change agent has ceased to disconfirm the old behavior. Refreezing at this level can be thought of as ''personal integration.''

Even if such personal integration has taken place, new behaviors may not remain stable unless they also fit into the ongoing relationships and the work context of the person

Change Management Process

1. **Why change?**
   Is there really a need?
   Is change really possible? Do we have a choice? Do we see insurmountable constraints?
   What is our *motivation* for wanting a change?
   What is the system's *need* for change: What problems or goals require change?
   What is the system's *readiness* for change—degree of unfrozenness, amount of energy available for change, location of energy for change?
   How can we gather information through "diagnostic" interventions so as to support our change goals? How can we gather information without arousing resistance?
2. **What is the desired future state?**
   What new way of working do we envision?
   What values are needed for the new way of working?
   Do we need analytical tools to specify a desired future state?
   · Scenario analysis
   · Open systems planning
   · Future search
3. **What is the present state? How do we determine it?**
   What is the present way of working?
   What values does the present way rest on?
   What cultural assumptions support the present state and what cultural assumptions would facilitate or support the desired future state?
   Given what we have learned about the present state, is the desired future state feasible? What kind of change program will be needed to achieve it? Do we need to reexamine the original change goals?
4. **Gap analysis**
   What is the gap between the present state and the desired future state?
   What kind of change program would begin to close that gap?

or group that has changed. We see this most clearly when changes that have occurred during ''off-site'' training programs do not last once the trainees are back in their work context. The trainees come back full of enthusiasm only to find that their reference group culture does not support the new attitudes and behavior. They are now being disconfirmed all over again and thus will start a new change process that may well lead back to the original behavior.

For the new behaviors to last, they must first fit into the personality of the individual or the culture of the group that is being changed.

One reason for on-site training and for change programs that involve the entire system, such as ''team building,'' is that whatever changes occur will be acceptable to the whole system and are thus more likely to last. In other words, for change to stick, it has to be integrated into the total psychic framework or personality and has to be supported by others whose opinions and perceptions the person cares about.

In the example of the CEO and his subordinates, if a given manager learns to use the terminal and finds himself transferred to a new group that disdains such use, he will likely unlearn and revert to his old attitude. Or, if he finds that his thinking style is genuinely incompatible with what the IT systems require of him, he will make a surface adaptation that will last only as long as the boss coerces him. In the extreme, he may leave the group rather than make the change. Early-user involvement is so critical in the introduction of IT systems because it insures that only behaviors that are personally and culturally acceptable will be learned and thus will remain stable, once learned.

Scanning versus Identification

For any change to be managed effectively, the change agent must plan for all three stages and must insure that each stage is successfully traversed. Of particular relevance is the choice of change strategy, once the target has been unfrozen. If we provide role models and thereby increase the likelihood of rapid new learning through imitation and identifi-

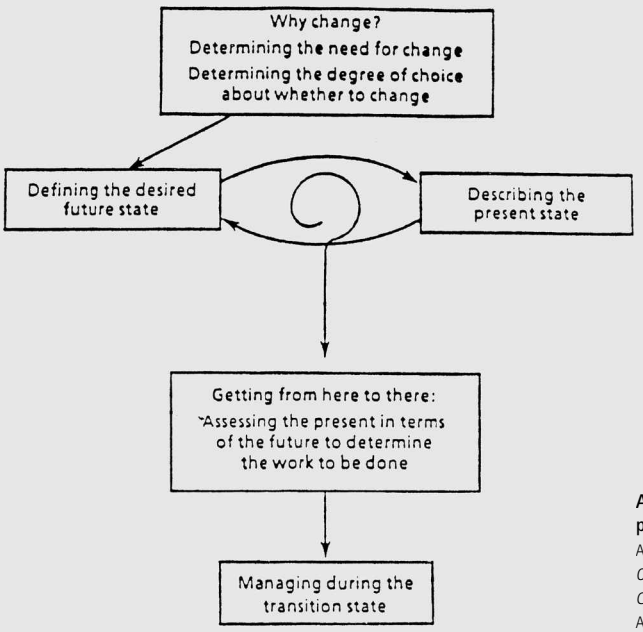
5. Making the transition plan

Who will manage what?

How will we assess progress? Establish timetable and criteria for progress.

Who will take what action, bearing in mind that diagnostic inquiry is itself an intervention? Therefore, such inquiry should be viewed as part of the implementation plan, not the diagnostic phase.

How often will the team meet to check signals, share information, and retool the plan?



A map of the change management process

Adapted from R. Beckhard and R.T. Harris. *Organizational Transitions: Managing Complex Change*, 2nd ed. (Reading, MA: Addison-Wesley, 1987).

cation, we also risk that people will learn things that do not really fit their personality and will give them up once the role models are no longer available. In other words, imitation and identification provide a quick but not necessarily lasting solution.

Scanning that leads to trial and error is a much slower method of learning that can be stimulated by the change agent's deliberate withholding of advice, suggestion, role models, or other cues of what to do. But by forcing the learners to develop their own solutions, the change agent insures that whatever is learned will, by definition, fit into the personality and the group. Scanning is thus a slower and possibly more painful way to learn, but it increases the probability of successful refreezing.

The choice of whether or not to ''model'' behavior is especially relevant in situations where the boss is the change agent, because there are already predispositions operating to identify with him or her. Superiors who want lasting learning must, therefore, learn how to force the learners to develop their own solutions to the change dilemma and must make themselves relatively unavailable as role models.

Change as a Perpetual Process

I have depicted the change process as a set of stages that imply a kind of orderly chronological progression. In reality, we are constantly bombarded by various kinds of unfreezing forces, are scanning and imitating in areas where we are already unfrozen, and are experiencing the new confirmations or disconfirmations that will determine what gets refrozen. This is a perpetual process and can be analyzed into discrete stages only for purposes of planning a change program. Once into the change process, the change agent finds himself or herself working simultaneously on all the stages, reconceptualizing what is going on as new data surface, discovering areas that are not unfrozen, and so on. The analytical tools provided in this article thus should be used to sort out what is going on, but they are not an accurate model of what is happening in real time, moment to moment.

Role Set (Stakeholder) Analysis

The purpose of role set analysis is not only to better understand the target system and its interconnections but also to develop insight and empathy for the people who are your change targets. This exercise should help you figure out their world so that you do not make premature assumptions about what is or is not possible for them to change.

1. **Select the person or system that will be your change target**. This person may not eventually be your target, but for analytical purposes, start where you think the key change has to occur. Put this person or system in the center of a flipchart page.
2. **Brainstorm about who has expectations of this target system.** You can think of these as stakeholders or as "role senders" who have expectations of what this person or system will do in the future.

   As you think of various role senders such as superiors, subordinates, family, peers, and so on, draw each on the flipchart page with an arrow between the role sender and the target. The size or thickness of the arrow can represent how strong you think the expectations are.

   In identifying stakeholders or role senders, think broadly in terms of (1) members of the organization, (2) family, (3) community, and (4) self (we have expectations of ourselves in a given role). The chart is likely to become quite complicated as you try to fit in all the role senders, but try to be as complete as possible.
3. **Identify the relevant role dynamics.** As you examine the role map, you will realize several things. Most of us deal with multiple expectations, forcing us to set priorities and deal with potential conflicts. Such "role dynamics" can be broken down into three main categories:
   · **Role ambiguity**—with respect to some of the arrows, you may conclude that what the target expects is not clear. In other words, some stakeholders may have clear expectations of the target but what those expectations actually are may be unclear or ambiguous. You will be unable to infer this without gathering some data, but it is important to recognize that you will sometimes not know exactly what is expected of you.
   · **Role overload**—it will become obvious to you that everyone suffers from role overload. The sum total of the expectations of all the stakeholders and role senders exceeds what anyone in the target position could possibly do. That leads to the question of how role recipients handle their overload: Whose expectations do they respond to?
   · **Role conflict**—it will also become obvious to you that what one set of role senders expects may differ from what another set expects. The most common version of such conflict is between some stakeholder expectations and what the role occupant expects of him- or herself. How does the target person/system then respond?
4. **Identify linkages between the stakeholders or role senders to get even more insight into the dynamics of the whole role system in which you will have to work.** Analyze what you think might be some of the interconnections between role senders. For example, a given professor might be expected to do certain things by her department chair and dean. What might be the connection between the chair and the dean, and how might this influence expectations? The dean might be a close friend of the target's spouse. How might this influence expectations?

   The importance of analyzing all the linkages in the total system is to reassess whether or not the target you chose is, in fact, the best target to work on. Once you see the linkages, you may identify other possible targets that are more accessible, more amenable to change, and yet linked to your original target in such a way that change will occur there. The linkage analysis tool helps you to analyze the different criteria for choosing an initial change target and, in the process, also alerts you to the complexity of the choices that change agents have to make in planning their change.

Planning the Change Process

The most useful model for planning any change process is the ''map'' provided by Beckhard and Harris (1987). Before the change agent intervenes in any way, the change team should go through as many of the steps outlined in the figure and sidebar, ''Change Management Process,'' as feasible, and identify what additional information is needed and how to get it. It is especially important to have credible answers to the various questions in step one, even if one has to guess at the answer because gathering information is premature.

Planning the Diagnostic Interventions

The answer to many of the questions in the process map will require getting information from the target/client system. Therefore, before launching a major change intervention, you can often interview or survey members of the target system in order to gather infor-

Linkage Analysis

The purpose of this analysis is to determine which of a number of possible change targets/clients will give you the best chance of making a connection that would lead to the kind of change you ultimately desire. This analysis builds directly on the stakeholder/role sender analysis you have just done. It highlights the fact that there are many possible targets for launching the change project, not just the one you initially chose as your target for the role analysis. The essence of this analysis is to weigh various criteria against each other so that you make a wise choice of where to begin and how to proceed with your change project.

Criteria for Analyzing Whom to Target

1. **Accessibility.** You will want to develop a relationship with your change target, so you must initially pick someone in the role set to whom you have access or to whom you can gain access. For example, in an academic setting, you, as a student change team, might decide to create some changes in some portion of the curriculum. You might have easy access to the current professor teaching it but might not have access to the department chair or head of the curriculum committee.
2. **Leverage.** You will want to pick as a target someone or some system where you believe you have some leverage in the sense that they will at least pay attention to you initially. That often means starting with someone who is lower in the hierarchy or in status or who is motivated to listen to you. In the curriculum example, you might decide to start by influencing student attitudes toward the curriculum because you believe you have more leverage with the students. Or you might go to the accessible professor if you think he or she would listen to you, but avoid the curriculum committee chair because you believe you would have less leverage there.
3. **Linkage.** You will want to make a change in some part of the system that is well linked to other parts of the system so that any change you succeed in making is likely to proliferate. Note that this criterion is, in a sense, the opposite of the "leverage" and "accessibility" criteria because the people to whom you have most access and who are lower in status are often less well linked than people higher in the hierarchy or more powerful by virtue of their status. It then becomes a complex planning issue of whether it is better to aim for an accessible target with whom you have leverage but is less well linked or to try to gain access to a better linked target.

   In the curriculum change example, you would have to weigh whether it is better to change student attitudes, knowing this might have less ultimate impact on the larger system, or to change the attitude of the curriculum committee, where you have less access, but if you succeeded their linkage would automatically make the change more stable.
4. **Vulnerability.** You will want to consider how vulnerable a given target is to being influenced and changed. You may have identified a target that is accessible, with whom you have leverage, and who is well linked in the system, but that person or system may be known for resistance to change. That resistance may, in fact, be the result of the placement of that system in relation to other systems, so you may need to draw another role map for each possible target system to examine how vulnerable to change it might be.

   For example, in the curriculum change case, you might identify the department chair as someone accessible, well linked, and with whom you have some leverage, only to discover when you map that role that his or her connection to the dean's office and his or her position on the critical curriculum committee would make the person unable to change. You would then have to rethink possible targets to find some potential vulnerability to change.
5. **Appropriateness.** You have to examine from both a practical and an ethical point of view to determine whether the change you want to make in a given target is ultimately appropriate. Suppose you had the power and influence to change the department chair's attitude toward the curriculum, but you also knew that the faculty in that department would oppose it vehemently, causing the chair to lose credibility and power. Not only would this undermine the longer range success of your change program, but it might cause some unnecessary damage to the change target that you initially selected.

These five criteria need to be considered at many stages in a change program. In the preceding example, I have focused on the "ultimate" change target, but it is equally important to apply these criteria to the initial targets you select at the start. Everything you do is an intervention, so when you start making inquiries, getting connected with someone in the target system, choose that person carefully to build relationships and connections that will help you in the long run in achieving your goals.

mation critical to the planning of the later ''major'' interventions. It is critical that the change agent be aware that this process of inquiry is itself already an intervention and should be conducted to enhance the change goals (Schein, 1987, 1988, 1999a).

For example, whom you choose to interview and what questions you ask should be determined both by your diagnostic needs and by considering who should become

Force-Field Analysis

The essence of this diagnostic technique is to analyze, for any given system, what forces are keeping that system in its quasi-stationary equilibrium. The assumption is that all human systems tend toward equilibrium, but that it is achieved only through the multiple actions of many forces, some of which push toward change and some of which constrain or resist change. And these forces are not linear or aligned in terms of any given direction of change. As the role map should have revealed to you, any given person or system is subject to expectations (forces) from many role senders, and these may push in many different directions.

Once you have identified through the Beckhard-Harris change map the direction of your change effort, you can use force-field analysis to help you understand the forces that would help or hinder your change effort. Using a blank piece of paper or a flipchart page, follow these steps (see the figure for a sample):

1. Draw a vertical line down the center of the page representing the present state of the system.
2. On the top of the upper right-hand side, describe the desired state.
3. On the left-hand side of the line, using brainstorming, begin to identify the *driving forces,* those forces that are already pushing the system in the direction you desire. Think about all kinds of forces—economic, technological, organizational, political, interpersonal, structural, cultural, social, psychological, and so on. For each force you identify, draw an arrow that hits the center line, and make the arrow as thick or as thin as you want to represent your view of how strong this force is. Above the arrow, write what the force is. You may end up with a long list of such forces that are already working in your favor.
4. Now, on the right-hand side, begin to identify forces that oppose the direction of change you desire, the *restraining forces.* In some cases, these will be directly related to the *driving forces.* For example, if a driving force is "supervisory pressure to increase production," that might immediately be countered by a *restraining force,* "group norms against rate busting." Use the same categories for identifying various types of restraining forces as you used in identifying the driving forces.
5. Now examine the force field and ask yourself which forces can be altered to "unfreeze" the system—to cause a disequilibrium that will create motivation to change. You will discover that you have three basic options:
   - Increase one or more of the driving forces.
   - Decrease one or more of the restraining forces.
   - Do both.

Increasing driving forces is generally easier because you are likely to have more access to them than to the restraining forces. However, if increasing the driving forces also increases comparable restraining forces, all you have accomplished is to increase the total tension in the system. For example, if management tries to increase production just by increasing supervisory pressure, which causes

involved in thinking about the change issues at the earliest stages. Diagnostic interventions are the best way to involve members of the target system in the change program. By asking them relevant questions about the present state of the system, you not only learn relevant facts about possible resistance to change, but you also begin to influence their thinking and get them involved in the planning.

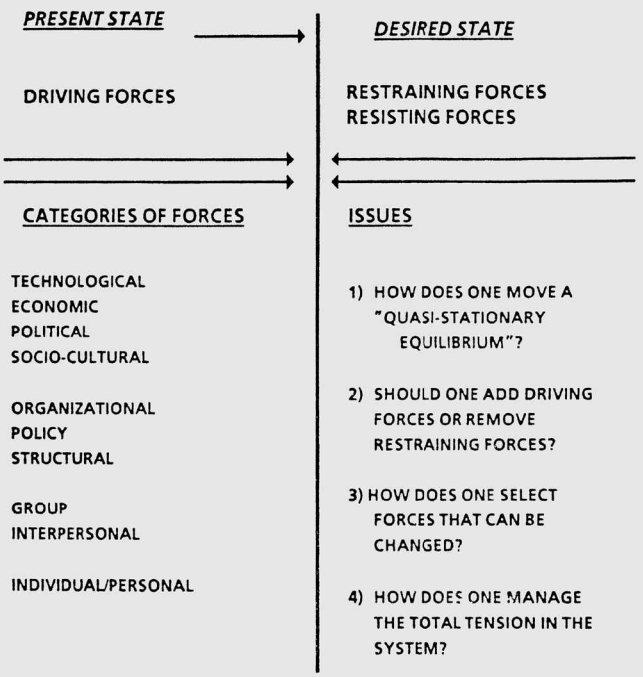
Diagnostic interventions should focus on ''inquiry''—on finding out what is really going on—and should deemphasize confrontation, making suggestions, discussing possible solutions, or in other ways putting pressure on the target. At the same time, the change agent must recognize that no matter how neutral and innocent the questions may be, they will influence the thinking of the target and will, therefore, be an intervention whose consequences must be considered. You cannot launch a survey to decide whether or not to start a change program. Once you are conducting the survey, you have launched the program because you have influenced the thinking and expectations of the people you are surveying.

Analytical Tools for Planning

The several planning tools presented here are designed to help the change team analyze the components of complex human systems (see the sidebars on role set analysis, linkage analysis, and force-field analysis). Each introduction explains when and how to use the tool. The first diagnostic dilemma is to sense how the target system is embedded in other systems. Before we can diagnose the forces acting on the target system, we need to know

more group resistance, one ultimate outcome of the increasing tension may be a strike. Decreasing restraining forces is more likely to work because there are already driving forces in the system, but such forces are often more difficult to manage. For example, you may realize that productivity will increase if you can change the group norm of a fair day's work for a fair day's pay but realize how hard it is to change such norms. Analysis of the force field makes you aware of the complexity of change dynamics and of the many choices for proceeding.

The most likely outcome of this analysis will be some further diagnostic interventions that will reveal the strength of some of the forces. A second outcome may be the discovery that there are one or more critical forces that require a new analysis. For example, if group norms are the key restraining force, draw a new force-field diagram with the present state of those norms as your center line and the direction of change on the right-hand side, and identify all the driving and restraining forces pertaining to those group norms.



A sample force-field analysis

what other systems connect to the target system and how they in turn are interconnected. For this purpose, an adaptation of open systems planning called ''role set'' or ''stakeholder analysis'' is essential.

None of the tools described will by themselves answer all the change questions. Once the change group has identified its broad change goals and targets, it is highly desirable to do each analysis quickly to identify broad insights and then recycle through them with more refined questions and goals. Alternatively, any one of the tools may reveal the need for diagnostic interventions, which will then lead to further analysis by the change team.

These tools in combination also help a team in getting ''unstuck.'' Inevitably, the change team will find itself not knowing what to do next in relation to some change goal. At that point, doing another role-map, force-field, or linkage analysis often clarifies how to proceed.

The Change Process in Perspective

All the processes and tools described are to be used in a given project, most of them simultaneously. It is desirable at the beginning of the change project to take the time to diagnose as much as possible without involving the client, so that you can make the initial interventions in the most helpful way; but often the change agent must involve the client in order to get the most basic diagnostic information.

Again, Lewin, in his wisdom, had it right. He said, ''In order to understand a system, you should try to change it.'' The implication is that you cannot fully understand all the

forces acting until you elicit some of them through diagnostic interventions. What you then learn should encourage you to reask the fundamental questions: Why change? How appropriate is this change? Am I approaching it in the right way? What do I need to do differently based on what I learned in the last round?

Even if the change is being induced from a position of power, it is essential for the change agent to learn the even greater power of being helpful and supportive. People must be unfrozen to change; they must hurt somewhere. But that is not enough. Equally important is their sense of psychological safety that it is okay to try something new and to give up something old and familiar. The smart change agent will make targets feel secure by finding a way to turn them into clients. Only then will their resistance genuinely give way.

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FEATURE

Community Knowledge Sharing in Practice: The Eureka Story

Daniel G. Bobrow and Jack Whalen

An organization's most valuable knowledge—its essential intellectual capital—is not limited to the information in official document repositories and databases, such as scientific formulae, ''hard'' research data, computer codes, codified procedures, financial figures, customer records, and the like. It also includes the largely undocumented ideas, insights, and know-how of its members (see, for example, Nonaka and Takeuchi, 1995; Stewart, 1997; Davenport and Prusak, 1997; Senge et al., 1999).

This informal (often tacit) knowledge is deeply rooted in individuals' experiences and the culture of their work communities. It commonly originates as practical solutions—through everyday inventions and discoveries—to the problems they must solve and thus serves as the critical resource for ordinary work practice (see, especially, Brown and Duguid, 1991, 2000). Much of this knowledge often remains embedded in practice. Small circles of colleagues and work groups commonly share crucial steps in a new practice and fresh solutions to recalcitrant problems through conversations and stories, with members filling in the background and gaps from their own experience. These groups and communities use the local vernacular to express these instructions and stories.

Organizations face the challenge of somehow converting this valuable but mainly local knowledge into forms that other members of the organization can understand and, perhaps most important, act on. Here we present a detailed account of one organization's effort to encourage inventiveness, capture new ideas, and use technology to then share the best of this knowledge beyond a local work group.

Our account is based on our experiences during seven years with the design, development, deployment, and evaluation of the Eureka system at Xerox Corporation. Xerox uses Eureka to support the customer service engineers (CSEs) who repair the copiers and printers installed at customer sites. In four iterations, the system went from an experiment that researchers at the Xerox Palo Alto Research Center (PARC) designed to measure the value of codified field experience to a system deployed to 20,000 CSEs worldwide. By focusing on communities and how they share knowledge in ordinary practice, we developed a set of questions and a methodology that we hope will enable others to build similar community knowledge-sharing systems. However, deploying any knowledge system involves pushing changes within a corporate culture; understanding the Eureka experience and the problems facing all knowledge systems to be deployed in the real world requires equal focus on these challenges.

Our narrative covers the history of this project, carefully detailing the fundamental interrelationships between the social and the technical. We include a framework for building these kinds of community systems (see the sidebar) and our reflections on the barriers to organizational change that their proponents confront.

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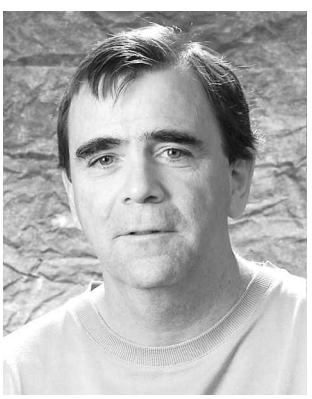

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Breaking the Frame

Xerox has more than 20,000 technicians worldwide who help to ensure that Xerox machines are performing as customers expect. As Orr (1996) pointed out, this is a triangular

Building Community Knowledge Systems

How much of the Eureka story can be generalized to other organizations that want a similar, socio-technical system for knowledge creation and sharing? Answering these questions can help build such a system.

Community: Who and Where

- **Who are the members of the work community?** Shared identity and practices define "community." Because members share practices, communication between them can draw on background understanding or knowledge that doesn't have to be explicitly stated. It is easier to build a knowledge-sharing system based in community life that stays within the community than one that crosses distinct boundaries. Moreover, community membership is the basis for trust, and effective knowledge sharing depends on trusted information. In the case of Eureka, technicians write tips for other technicians, so the information is not only understandable in context but also trustworthy.
- **Do members work in close proximity to each other?** Working shoulder to shoulder supports continuous apprenticeship learning in which people can share knowledge that has not yet been articulated and documented. For people working primarily in separate locations, documents are especially important for sharing and learning. Moreover, when a community is large, documents help scale knowledge more rapidly across numbers, time, and distance. For example, Xerox service technicians spend most of their time alone in the field at customer sites. Extensive community knowledge sharing requires digital documents that they can read on a laptop.

Knowledge: What and Why

- **What constitutes valuable knowledge for the community?** Observation of how people do their work will reveal what kind of information they most often share because they value it. For example, we saw that technicians valued not only diagnostic tips but also hints about making certain tasks easier and corrections or improvements to documentation.
- **Why do members share particular kinds of knowledge?** Understanding the motivations for sharing is important for grasping the natural incentives within the community. Successful knowledge-sharing systems should build on this structure. External rewards can encourage sharing,

relationship among the technician, the customer, and the machine. On many service calls, the technician needs to repair or adjust the machine; on some, the technician needs to help the customer adjust his or her expectations, procedures, or knowledge of the machine. In the early 1980s, because technicians trained by the armed services to debug complex equipment became increasingly unavailable, Xerox decided to use less skilled, less experienced service people. It moved away from the documentation and training that described the principles of product operation, which required skilled technicians to determine the appropriate repairs. It moved toward ''directive'' repair and adjustment procedures or documented instructions in a decision tree. Each decision step was in the form of ''do the following setup and test; make the following measurement (or observation); if the result is A, do X; or else do Y.'' The intuition embodied in this form of documentation is that technicians need only be trained how to use the documentation correctly to diagnose and repair any machine failure.

The Rapper Project

Our group at Xerox PARC has a background in artificial intelligence and in modeling electromechanical systems. In particular, we have expertise in building programs that diagnose machine faults given an abnormal symptom and the ability to observe or get measurements from the machine (de Kleer and Williams, 1987). As a test of our technology, we decided to build a model of one complex module of a particular photocopier and demonstrate how a program could guide a technician in diagnosing and repairing problems in this module. Our hypothesis was that if we were successful, a model-based expert system on a laptop that technicians carried in the field could replace the documentation and support a work process for isolating faults. In addition, this approach could improve Xerox's speed in bringing supported products to market, because the need to create documentation inhibited deployment. Models could be created in parallel with design. Moreover, newer machines often used the same or similar subassemblies, making models reusable.

but there may be a danger in assuming that financial payoff is a naturally effective way to get quality information and participation. The service technicians felt that getting their job done more effectively and building a reputation for competence was a significant incentive.

Sharing: How and When

- **How does sharing occur in the community every day?** An effective knowledge-sharing system should honor natural sharing practices and the style people follow to exchange information, seek and give advice, and otherwise support each other. Service technicians tell stories of particular machines and their problems to share their learning and experience. The style of the tips, although they are written documents, tends to follow this narrative structure.
- **In what different work contexts does sharing commonly occur?** When a technician finds a particularly recalcitrant problem, he or she will tell the story at the next work-group meeting. This volunteering is often "just in time," because when a problem crops up in one machine, it may come up in others. On the other hand, when people come to the group to help, they bring up old stories. Then they use the story to suggest possible unexpected linkages between symptom and cause.

Implementation: What and How

- **What constitutes effective technological support for work practice?** Our experience strongly suggests the value of bringing a prototype to a pilot group in a community for participatory design and rapid turnaround in response to suggestions. The initial prototype provides something to which community members can react, which can indicate how the technology should change. Inventive community members will use the technology fruitfully in unexpected ways.
- **How can people learn the new system?** Learning to share knowledge involves learning what is valued, how to express it, how to find the knowledge, as well as learning about the technology per se. It is also involves having the incentive in the right context for learning. Learning should become a common, everyday activity in using the system, rather than an initial training activity separated from the work.

We succeeded in building Rapper (Bell et al., 1991), an expert system that used a model of the recirculating document handler to guide in isolating faults in that module. The model captured all the faults found when using the standard documentation. We asked technicians if a complete model for the machine would be useful. ''Not really,'' they said, ''though it is amazing, rather like a bear dancing. It is surprising to see it do it at all.''

We probed further for the issues behind their negative response. First, to them, small improvements in the time required to isolate a fault were not worth much. Only a relatively small portion of their average two-hour call was actually devoted to diagnosis. Second, they usually knew the procedures for the common faults and so required no guidance. For many products (those produced by our Japanese partners), however, there were no full descriptions of operation. Additionally, the diagnostic documents were produced by inserting faults in the machines in a laboratory and then recording the symptoms. So the hardest problems were not those covered by the documentation; they were new problems.

A model-based expert system on a laptop that technicians carried in the field could replace the documentation and support a work process for isolating faults.

We decided to spend more time observing what technicians actually did day to day. We started with US technicians, accompanying them on their service calls. Most of the time, they would look at the machine, talk to the customer, and know exactly what to do to put it in good working order. Occasionally, they ran into a problem that they hadn't seen before and for which there was no documented answer. They would try to solve these problems based on their knowledge of the machine. This often worked, but sometimes they were stuck. They might call on a buddy for ideas, using their two-way radios, or turn to the experts—former technicians now serving as field engineers—who were part of the escalation process. When they solved unusual problems, they would often tell stories about these successes at meetings with their coworkers. The stories, now part of the community, could then be used at similar gatherings and further modified or elaborated (see Orr, 1996; Brown and Duguid, 1991).

This practice pointed to the importance of noncanonical knowledge generated and shared within the service community. It suggested to us that we could stand the artificial intelligence approach on its head, so to speak; the work community itself could become the expert system, and ideas could flow up from the people engaged in work on the organization's frontlines (cf. Doubler [1994: 58]); quoted in Ambrose [1997: 67]).

The Colombus Experiment

A member of our group, a French national who worked at PARC, spent time with French technicians to see if their practices were similar to those in the US. At the time we started this research, Xerox France was competing for the Malcolm Baldrige National Quality Award. According to local doctrine, quality service meant uniform service. When first asked, the CSEs all said they followed the manual religiously, but when they found out that the PARC researcher was not from management, they shared their notes on their own clever solutions (see Bell et al., 1997). For example, many technicians carried cheat sheets of solutions their work group had invented to solve hard, undocumented problems. Technicians working on a new machine often asked more experienced technicians for copies of the cheat sheets.

At a series of workshops in France, when we asked technicians whether they had valuable knowledge to share beyond their work group, they were not sure, though they shared some stories about how they repaired difficult ''problem'' machines. Another CSE, hearing the story, commented, ''If I had known that, I could have saved five hours last week.'' We asked the technicians what the issues were if they shared hard-won knowledge. Some feared that they would then lose their performance advantage in benchmark comparisons to other groups. Others wondered if it would be worth the time and effort to document the local knowledge just so it could travel beyond the confines of the local work group.

Would it be worth the time and effort to document the local knowledge just so it could travel beyond the confines of the local work group?

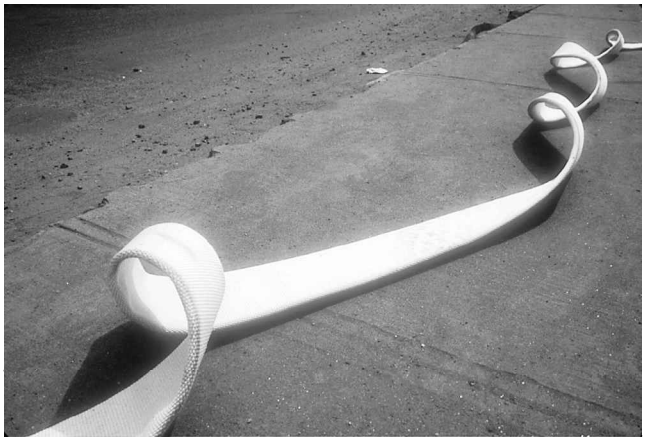
But they (and we) believed that this knowledge could have significant value. The French service organization, including management and the ''tigers'' (the expert field engineers who played a key role in the escalation process), gave us the backing to experiment. We required three things: an initial knowledge base of tips, a way to distribute this knowledge that would be easy for technicians to use, and an experimental design on which we could conduct a valid test.

We developed the initial case base by having the tigers edit and validate the stories that technicians had shared at the workshops, adding more tips that the tigers themselves used. The result was 100 to 200 tips, structured simply by *symptom, cause, test,* and *action.* We used a standard laptop running Colombus, a software package that our group wrote, to distribute the tips. A simple search using descriptive terms (such as copy quality or fault 10–200) would bring up, on an integrated ''dashboard'' interface, any material containing these terms, both from the tips database and from the standard documentation, which was also included on the laptop.

We worked interactively with the tigers in France to improve the software, often responding overnight; this transformed Colombus from our idea to their tool. This interaction became standard to our design methodology throughout the Eureka project: we codesigned everything with the user community, making necessary changes on a rapid, recurrent basis in response to suggestions and criticisms.

The experimental design for Colombus tried to account for the diverse technicians who serviced the target machine—whether they were dedicated to repairs of only this machine, whether they worked in rural or urban areas (city technicians drive less and take more calls per month), and how much experience they had in photocopier repair. We chose 40 technicians to participate in the experiment and gave them laptops and approximately three hours of training in the software. We chose another 40 as a control group, who were matched closely to the first group. We tracked all service calls made by both groups using the standard Xerox metrics, including cost of parts, service time, number of unscheduled maintenance calls, interrupted calls, and callbacks.

During the test, technicians responded positively. For example, those technicians not in the experimental group would borrow laptops to help them with difficult problems. Although this was encouraging, the metrics after two months were startling. The experimental group had an approximately 10% lower parts cost and 10% lower average service time than did the control group, without differing significantly in the other service metrics.



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However, the test did not last long enough to convince Xerox's Worldwide Customer Services (WCS)—responsible for service strategy and technology throughout the corporation—of the value of field knowledge and the need to invest resources in a Colombus-like system for the entire service force. The results convinced our team at PARC, however, and Xerox France service management. One field engineer commented, ''This is the first time people have truly paid attention to the field, to our knowledge.'' We decided to search for a way to extend the use of the knowledge base to all French technicians.

French Minitel Eureka

To offer the technician-invented solutions to the entire French service force, we faced two problems: a method of distribution that would support technicians' work practice and a social process by which the database would have continuing value. We worked with the technicians to understand how to promote their ongoing participation and ensure continual updating of the knowledge base.

We could not continue to use laptops for distribution because funding was limited and, at the time, laptops were unavailable in France. In addition, in 1994, communication via phone lines or the Internet was too expensive. A printed booklet of tips was deemed ineffective: it would make existing information available but would not be an ongoing, growing resource.

We chose the French Minitel system for distribution, which Xerox France technicians already used for call management. Minitel, nationally deployed by the French telephone company, consisted of a small keyboard connected to the phone line and to a local display monitor (initially a television). Minitel was a general service with easy connectivity to private databases for commercial use.

We worked with the CSEs, the tigers, and the technical support hot-line specialists to figure out how to encourage contributions to the tips database, without seeming to threaten people's jobs. The hot-line specialists, who could have seen our effort as an attempt to cut positions in their organization, instead saw it as a way to potentially ease their workload. They could then spend more time thinking about common issues and generating their own tips. The tigers could have viewed it as ''stealing'' their knowledge, but they felt there were so many new problems that it would be advantageous to quickly disseminate new solutions. The CSEs liked the idea that their hard-won knowledge could travel beyond their own work group. They worried about four things, however. If they submitted a tip, would it disappear into a black hole? Would they get credit? How would they know they could trust all the tips? And how would they get the right tips at the right time? In workshops and meetings with all the different community members, people came up with solutions to each problem:

1. **Quality.** To ensure quality, a validator known for expertise on the particular product line warrants each tip. At Xerox France, the validators are product specialists for each family of products in every district or ''customer business unit'' (CBU). The tigers oversee the process.
2. **Bottlenecks.** When a new tip is submitted on the Minitel, a message goes to the relevant group of validators, one of whom picks up the new tip within a few days. The validator converses with the submitter to ensure that the tip both captures the appropriate information and is written clearly. The CSE can edit and improve the tip, learning in the process.

3. **Incentives.** When we asked community members if they thought management should pay for each tip submitted, they said no. One tiger said, ''This would make us focus on counting the number of tips created, rather than on improving the quality of the database.'' The suggestion was to include the submitter's name on each tip to act as a positive reinforcement for good tips and a negative one for badly flawed ideas.
4. **Integration with work practice.** Because the tip database was on Minitel, we added new information pages to the call handling to allow CSEs, when they faced a difficult call, to search the database for key symptoms taken from the call record. They could search the database from a customer's site if they could have access to the local Minitel.

Implementation and Deployment

Because implementing this system was not in WCS's plans, and money for field service was limited, WCS declined to finance the countrywide experiment. A partnership of PARC and Xerox France paid for the system. The software was ready in about four months. A champion from the French tiger group and one of us talked with each group about service problems and how the CSEs could use the system. They met with more than 60 product leaders and helped train 1,300 French technicians. We carefully tracked participation by how many times the technicians referred to the database and how many new tips they entered. There were strong differences among workgroups. While one region might have high usage, another of the same size might have low usage rates. By revisiting the latter regions and training and reintroducing the purpose of the system, we encouraged broader participation. The strategy, then, can best be described as ''hands-on, participatory implementation,'' a marked contrast to a top-down, cascade model.

Experience with Use

The Minitel system began with databases for only three products. By the end of the first year, CSEs had opened more than 40 databases encompassing products from convenience copiers to high-end printers. Also by the end of the first year, more than one new tip was being added to the database each day. Participation was extraordinary; more than 20% of the CSEs had submitted a validated tip, and CSEs were consulting the tip database an average of two or more times a week.

What did the technicians get from these tip documents? What did they consider important to share? The tips included some crucial diagnostic information, but also much more varied content. For example:

> *Diagnosing unusual, costly failures*—Bimetallic corrosion builds up on A and causes intermittent failures that seem to be B. Replacing B makes the problem seem to go away because A is moved in installation. First clean A, and later replace by new gold-plated AA, available as Part #1234.
>
> *Workarounds*—Paper curl in a dry environment causes excessive jams on baffle Q. Putting Mylar tape from tool kit on edge will ease problem.
>
> *Easing the job*—To make it easier to adjust M, paint white-out on the back wall near M.

Xerox France, compared to the rest of Europe, went from being an average or below average performer in service to a benchmark performer. The French service metrics were soon better than the European average by 5% to 20%, depending on the product. On a more qualitative basis, we have seen many different ways in which Eureka has affected the service process in France. In preparing for a call, technicians have found Eureka helpful in ensuring that they pick up a part likely to be causing failure before going to the customer site. On site, Eureka accelerates and improves diagnoses. It also reduces the number of calls that have to go to the next level, reducing the load on the technical support hot-line for recurrent calls about the same problems. It also significantly reduces the learning curve for new-product introduction.

Spreading Eureka to Canada

In June 1996, we decided to bring Eureka to another community and to intersect directly with laptop introduction (only France had a system like Minitel to use as an alternative).

A senior manager who wanted to ensure the success of a new advanced color copier encouraged us to work in Canada. At that time, some 6,000 laptops had been deployed to Xerox CSEs, including all of the 1,200 in the Canadian service force—comparable in size to the French. We teamed up with a tiger from the Dorval Technical Support Center, near Montreal, who became a local champion for its development and deployment. The challenge was to adapt what we learned in France to the Canadian service environment. We initially confronted some critical, nontechnical issues:

- Those who had the laptops did not use them. Although Xerox was committed to using the computer to dispense technical information and manage work processes in the field, technicians depended on their traditional skills and practices and were skeptical about the new technology.
- CD-ROMs or floppies were used to distribute information to the laptop, so dissemination was sporadic and slow.

Separate applications were used for call management (dispatching and tracking all customer service requests), for the now electronically presented documentation, and for parts inventory and ordering management. Thus, there was no easy way to leverage these independent applications.

We couldn't directly solve the laptop acceptance problem, but we hoped that Eureka would prove to be so valuable that technicians would want to use the computers. Our local champion from Dorval took existing technical information databases that had been distributed in paper form and converted them to the Eureka tip format. The technicians already valued this information, but it was hard to use or even track in paper form.

To address the distribution problem, we built a local client system that afforded rapid access to tips. This laptop client would be able to update the local knowledge base any time the technician was able to dial in to a central server. We still had to decide what kind of communication and server to use. The common communication infrastructure for technicians at that time was a dial-in telephone connection to a bulletin board service (BBS). Some technicians used the BBS regularly to discuss problems and share ideas. This familiarity could work to our advantage as a platform for knowledge sharing in Eureka.

For accessing the knowledge base on the laptop, the technicians' work practices dictated that our search engine had to be extremely fast and easy to learn and use. A software engineer in Xerox's Printing Systems Group (PSG) had designed SearchLite, a program that had evolved through community feedback from a technical support group and now met all these requirements. Its integration with service applications on the laptop would have been both useful and technically possible. However, a central organization distributed and maintained the laptop software and documentation. Eureka was just an experiment operating on the periphery and had to remain a separate application. This peripheral status also meant that our Canadian champion had to perform his main job as a tiger, while simultaneously solving problems from technicians. Validators were also volunteers who were not relieved of their ordinary duties.

We had to adapt the tip authoring, submission, and validation methods developed in France to the Canadian context:

- Product specialists did all validation in France, with field engineering overseeing the process. Would this same division of responsibilities work well in Canada? Validation had turned out to be such an important aspect of the system's success and value in France that managing this process for each different community was essential.
- The French had rejected any financial incentives for authoring tips. In Canada, however, there was an existing financial incentive program for submitting service suggestions. Should this same system be applied to Eureka?
- Because French technicians were using Minitel, they always had the most recent information when they searched the knowledge base. The Canadian process would require technicians to explicitly download the latest information to update their database. How often would they want or need to do this to make the system effective?

Because the organizational structures were similar in Canada and France, with product specialists in each CBU, it was natural to make the Canadian product specialists the validators, just as in France. However, Canadian service management did not want to

give up the financial incentive program that they believed contributed to significant improvement in service performance. Consequently, technicians received the same small financial reward for tips as for any other service suggestion. Later, the reward procedure was changed to compensate technicians only for validated tips, rather than for all submitted tips.

Updating the laptop knowledge base proved to be a problem. Not all technicians used the BBS, and many found the process cumbersome. Moreover, the fact that Eureka was a separate application from call management created further complications and obstacles to frequent, easy use. As a result, when we checked after two months, many technicians—roughly 40%—rarely or never updated their knowledge base. To try to improve the situation, the Canadian champion visited each CBU to encourage updating and provide additional training.

Upgrading the software when we made changes was even more complex. We distributed floppy discs to everyone in the field and hoped that they were able to use them in a timely manner. This created so many problems that we eventually put a system in place for downloading the software components from the BBS.

Eureka was now an official, management-sponsored program, with certain expectations for improving service performance and with some financial support from a Xerox business division. Management had never dealt with a program in which the requirements emerged from experiments with pilot users, iterated until the users felt the program warranted large-scale deployment. Managers would try to set deadlines for us to get things done, independent of our process for rapid prototyping and debugging with extensive community involvement. The clash of these two different design and deployment methods had negative results. Some higher level managers lost some faith in the ability of the Eureka team to deliver.

Despite these conflicts, we successfully launched Eureka for 20 products in only six months, beginning in early 1997. The Canadian champion extensively trained product specialists, and the specialists then trained CSEs. We created a training video distributed on CD-ROM, reducing the need for more direct training. After six months, the Canadian Eureka really took hold and became the technicians' tool.

Eureka Moves to the US

While Eureka had proved successful in less populous countries such as France and Canada, it was not clear how it would work in the US where 10,000 technicians are spread out over a huge area. More important, the dynamics are quite different in the US organization, which is much more bureaucratic and hierarchical, because of its size and complexity.

The US and Canadian technicians shared a common laptop/BBS infrastructure, so the only issue was to adapt the process to a differently shaped organization and to the scale of the US service force. US service management decided that validation would take place locally, with local groups selecting a validator for each product family. As in Canada, the validators would need to take on the task without reducing the rest of their workload.

Eureka was launched in the US in 1997 with pilot programs in several locations. The pilot took hold, however, only where there were local champions in the service force, as was the case in both France and Canada. Beginning in June 1998, Xerox Worldwide Customer Service (WCS) distributed Eureka CD-ROMs to the field managers, who were then expected to distribute them to technicians in their work groups. The CD included a computer-based training module; no hands-on training or direct engagement with technicians around the program was planned. This cascade strategy had been designed for mass distribution of software or documentation, but it was less effective with a sociotechnical system like Eureka. In places where people became champions or where we engaged the local group, it was quickly adopted. In other places, it became just one of a dozen company-distributed programs that somehow had to be implemented over the next quarter, and adoption was correspondingly slow.

We had originally suggested to WCS management an alternative ''participatory deployment'' strategy in which the pilot champions, technicians, and managers most knowledgeable about Eureka would go to other locations in the US service community and talk about their experiences and ideas. Because these people were peers, the technicians would

trust them. This would have created more local champions and knowledgeable users, who could then have gone to still more locations to share information. During a relatively short time, Eureka would have spread across the entire country.

The up-front cost in time and travel for participatory deployment would have been greater than for the cascade distribution. But we believed that this cost would have been recouped because more technicians would have used the program quickly, resulting in a shorter learning curve and better performance. The results from France and Canada support this argument. But WCS management in the US did not understand the requirements of combining the social with the technical and did not approve this plan, so Eureka use spread slowly in the US.

Nevertheless, US technicians, once they learned about Eureka, were enthusiastic. One technician remarked, ''In all my years in Xerox, the two best things ever given to us are the radios and Eureka.'' In fact, although the original plan was to complete rollout in the US before moving to any other Xerox organizations in Europe, Latin America, or Asia, demand from technicians in these countries was so intense that the corporation had to begin distributing Eureka worldwide.

In 1999, US technicians authored approximately 2,000 tips. There were more than 9,000 ''solves'' using Eureka in the US and Canada in the fourth quarter of 1998 alone. The knowledge base for these problem resolutions included more than 30,000 records. By the first quarter of 2001, the size of the database had grown considerably as the number of countries using Eureka increased, with close to 50,000 technician-authored tips and more than 300,000 records.

Eureka in Practice

How have users responded to their experiences with Eureka? How have they adapted it to their work practice? What barriers to more effective use have they noticed?

After Eureka had been in the field in the US for six months, a member of our research group talked to technicians in San Francisco, concentrating on a particular work group. He and other members of our group also visited four CBUs around the country. We asked technicians if Eureka was worth using, and if so, how they used it and how we could make it better. When they learned that we had designed and launched Eureka, they made remarks such as:

> Best reason for having a laptop. I use it on probably 50% of the calls where I don't walk in the door and immediately go, ''Well, this sensor's broken,'' or something like that. Anytime something doesn't immediately jump out at me, it's the first thing I turn to. Most of the time before I get to a site, I look around in Eureka and see what's there so that I know what I'm gonna do.

When first designed, Eureka was conceived primarily as a tool to use when routine fixes fail to resolve a problem and past experience doesn't point to an answer or line of attack. Many technicians use Eureka only that way, whether with machines they are working on or for suggestions to give colleagues who ask for help. But some technicians use Eureka in other interesting ways. They use it as a tool of *first* rather than last resort. For example, one technician who works on high-volume copiers uses Eureka in combination with product documentation:

> Before I go on a call, I like to look at some possible fixes in Eureka. If I feel that there isn't anything in Eureka that jogs my memory, then I go to the documentation. Keeping that footprint of some of the fixes and then just going through the repair procedures in the documentation accelerates things.

Thus, even before seeing the machine, this technician tries to develop several solid leads about the source of the problem, the likely repair procedures necessary, and needed parts. Another technician reported similar patterns in using Eureka and the documentation:

> Eureka isn't so much an end, as a beginning. Someone will call over the radio with a fault code like, ''I'm having 12–142s,'' and I can look it up in Eureka and scroll through common causes. It's faster to find it in Eureka than it is to go in and fire up the documentation CD for the repair procedures there.

This technician also reported that he felt Eureka was useful even when the tip didn't provide the precise solution, because it allowed the team to rule out certain sources of trouble, thus narrowing the search.

Technicians also use Eureka as an informal *learning* tool. One who services mid-volume machines browses through the tips to see what has worked for others: ''Whenever I download new Eureka data, I like to see what guys are doing. I look through the tips and bulletins. It teaches me a lot.'' By reading the tips and service bulletins somewhat casually, divorced from an actual repair situation, this technician uses Eureka as an instructor who offers a new set of lessons each week.

We also identified some barriers to effective use. Laptops have a long boot-up time, limited battery life, and an unstable operating system, and they complicate the updating of the database. In addition, many technicians simply mistrusted, were unfamiliar with, and resented computers, so didn't use the laptop except when absolutely necessary. Other technicians felt the laptop added time and work to their daily routine. One technician remarked:

> Half my team is basically uncomfortable on a computer, no matter what's on it. They use the laptop as little as they can. They clear calls [using the call management function] and that's about it. The real problem is getting them to adopt the laptop generally, not Eureka.

Another barrier was that technicians had to do independent searches in the Eureka knowledge base and the documentation, which required them to enter information several times. The integration of all the tools and databases was the biggest request from our feedback meetings and was a primary design criterion for the next-generation laptop. Technicians wanted to move more easily between tasks.

Technicians not only used Eureka in creative ways, but regularly thought about making it more effective. This is exactly the kind of inventiveness that Eureka was meant to capture, and it stands as further evidence of the pervasive importance of working with users to make a system fit their needs—to artfully integrate the technology with their enhanced practice.

Eureka II

The advent of cost-effective communication on the Internet allowed us to implement a new web-based Eureka—Eureka II—worldwide. To bring together everything that technicians need to do when connected, Xerox deployed a global service network with multiple servers. As technicians log on to the call management system to get their next service call, the Eureka web server downloads any updates to the knowledge base. This same mechanism updates the documentation and, if necessary, updates the software on the laptop.

All the information sources are accessible through a single search mechanism based on SearchLite. So when technicians have a problem, they can see where they may find helpful information in their ''hit list'' references to tips and to multiple places in the formal documentation. In addition, they can make annotations on already existing documentation, keeping such ''post-its'' in a private knowledge base or, if desired, submitting them as tips. When validated and shared, an annotation appears not only in the hit list directly, but as a link on the page where the annotation was made.

Eureka II was so successful that it became a mainline program, and requirements poured in from many places. We constantly tried to balance our belief in simplicity with corporate managers' beliefs that if Eureka were the answer, they wanted to generate the question. For example, one manager felt that a big cost of the system was in training technicians. He wanted to simplify the training by embedding the Eureka application in a standard Internet browser (in this case, Internet Explorer). We thought this would complicate the implementation significantly because the software would then be dependent on each computer's version of the browser, operating system, and service packs. The manager felt this was less important than the simplicity of the training. Unfortunately, there were far more implementation and deployment complications than even we had imagined, and the delay in deploying Eureka II was significant. Our point here is not that the manager was wrong, but rather that decisions made in a standard software-development process contrasted with the bottom-up approach with which we had started.

In addition, because the project now had top management's attention, we sometimes had to set schedules based on managers' desires for certain goals, rather than on the necessary work to achieve a final state. Although we understood the pressures on the managers, their schedules often could not be realized, leading to internal battles and slipped schedules. We became very aware of the difference between singing in the spotlight and singing in the shower.

Organizational Barriers to Change

After seven years, the Eureka story is a tale of how the development and deployment of a system for sharing knowledge from the front lines became a vehicle for organizational change. However, our story also reveals that this change was not without conflict and challenges. These messy details are rarely included in writings on knowledge management or organizational learning, so it is worthwhile to expand on their larger meaning for knowledge sharing.

In the initial stages of the project in France, few people in Xerox management believed that there was much value in what the technicians learned on their own in the field. In addition, they could not see how a tip system was much different from previous suggestion systems, all of which were highly centralized and controlled. And although technicians' tips quickly proved valuable, people in different parts of the company felt that it was more important to supply the technicians with centrally produced documentation than to support them in creating new knowledge. This different way of doing business made them nervous, for example, when a single flawed tip eventually slipped through.

Getting support for the project in the form of organizational resources naturally proved difficult. Time and again, as the Eureka story makes clear, we ended up relying on local champions who somehow managed to cobble enough resources together to do the job. Moreover, in the initial stages, we sometimes had to operate like a guerrilla group because opposition was enough to kill the project if we openly challenged deeply entrenched convictions. We conducted our first experiment in France partly because it was out of sight of the central Xerox organization. After the French experiment, only by convincing one product manager in a business division to give us the funds for the Canadian experiment were we able to gather data that would convince the nonbelievers. (Later, WCS awarded one of our research group members, who had led the French effort, a plaque that read, ''Despite the resistance of Worldwide Customer Service.'')

We recognized at the start that the service organization would not accept informal responses to the collection of tips or the users' informal assessments. We knew we had to show hard bottom-line data. In some ways, resistance to making a wide-scale change like Eureka in just one step allowed us to gather better data. For example, we could put out a product with only minimal diagnostic documentation and then use the field force to help us understand where and how it needed improvement, that is, to construct the diagnostic documentation in the field.

Once Eureka became a major corporate program, the project ran into a different sort of problem, perhaps resulting from its success. Why was this a problem? In France and Canada, because we had been conducting guerrilla experiments, we could involve the users in the decisions on adapting Eureka to local needs and practices. Moving to the central WCS organization, however, engendered a change of philosophy, and WCS mandated a uniform, worldwide solution. Management had a policy of distributing corporate programs in a cascading fashion. Eureka works better when peers mentor each other on the uses of the system. Unfortunately, the rollout in the US was not done this way. While the US deployment was eventually successful, the problems that developed because technicians weren't closely involved in the process hindered the project's achievements.

WCS and Xerox Corporation emphasize cost savings in field service and view the service organization as a cost center. As a result, they discourage significant investment in service, unless it is matched with equivalent cost reductions. This had consequences for Eureka deployment and how the program now operates. Although the president of Xerox saw Eureka as a key program, we could not get sufficient support from operating organizations for building the kind of process infrastructure—such as training resources and time—to make it more successful. Xerox expected technicians to author tips and

validators to provide rapid turnaround and validation of submitted tips without any relief from their current workloads.

Did Xerox become a better learning organization as a result of the Eureka project? One answer would be the impact on field service performance and the degree to which most technicians use the program regularly, especially for learning new ideas and approaches to machine repair. The whole service organization has also been transformed to some degree by the bottom-up Eureka approach, which has had an impact on operational philosophy.

Despite these significant achievements, the corporation has not yet taken full advantage of the possibilities of a knowledge-sharing program like Eureka. For example, although many organizations use the Eureka knowledge bases informally, no formal process incorporates Eureka's information back into the documentation. Engineering could, but doesn't regularly, mine the Eureka knowledge base for ideas on continuous improvement. And manufacturing could use Eureka to augment the information flow needed to adjust rapidly at the initial launch of a new product.

The current Eureka process, which is dedicated to technicians authoring tips for fellow technicians, obviously cannot address all these areas or solve the interorganizational knowledge-transfer problem. It does point the way, however, to the need for collecting knowledge on the corporation's frontlines for use throughout the corporation.

At the same time, the ''spirit'' of Eureka has had some interesting effects on Xerox as a whole. We have many requests to help create a ''Eureka-like'' knowledge system for other operational units. Currently, we have deployed LinkLite, a simpler infrastructure, to support the Eureka process in a Xerox sales organization. Salespeople share knowledge about ''customer solutions'' (special configurations of machines and services that help customers solve important business problems), their successes, and other sales material. Perhaps the belief in and spread of this ''spirit'' has become the most important legacy of Eureka at Xerox.

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Commentary

by Marleen Huysman

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There probably is no living organizational learning researcher who hasn't read or at least heard of the article on communities of practice by John Seely Brown and Paul Duguid (1991). They refer to Julian Orr's study in which he analyzed the day-to-day learning, working, innovating activities of photocopier repairmen at Ranx Xerox. The story is so inspiring because it offers a refreshing look at normal daily activities: social learning in communities of practice.

Since this seminal article was published, I hadn't heard much about the Xerox repair people, which I had begun to interpret negatively. I was thus happily surprised to read Daniel Bobrow and Jack Whalen's article. The authors tell yet another story of the lives of Xerox copier and printer repair people. What was missing in Brown and Duguid's article, namely, the consequences of IT support, is now explicitly addressed. The authors give an excellent account of the life of a socio-technical system used by the reps to support their learning and working processes. Because of the detail and time frame covered, the story offers a multidimensional collection of do's and don'ts for introducing sociotechnical tools for knowledge sharing. For example, the authors illustrate the necessity of a bottom-up approach and the use of local champions. They show us how cultural differences can completely alter previous lessons learned and why top management approval has its downsides. They tell us about the process of appropriation and the new meanings attached to the tool the moment it is used in various local practices.

In addition to these and other requirements of sociotechnical systems, the story gives a nice example of the conditions for successful computer-supported knowledge sharing. Especially interesting is the possibility that Eureka offers in authoring, submitting, and validating tips and the absence of a need (at least in France) to financially reward tips. I agree (again) with Brown who sees this authoring and tipping process as contributing to the social capital of the organization: "The author attaches his or her name to the resulting story or tip, thus creating both intellectual and social capital, the latter because tech reps who create really great stories become local heroes and hence more central members of their community of practice" (Brown, 2000: 17).

The story provides insight into how to challenge the general lessons from the first generation of knowledge management, which often fail because the technology doesn't match the informal bottom-up collective knowledge-sharing needs and practices. The story also shows that there is no need to fall into the opposite trap of approaching all knowledge-sharing technologies as negative. In fact, when we are able to create a sociotechnical match between technology and the opportunities, abilities, and motivations (or degree of social capital) to share knowledge within communities, there are many possibilities. With this, the authors provide a valuable example of Boland and Tenkasi's (1995) claim: "Information systems aimed at knowledge management need to maintain the integrity of the social communities in which knowledge is embedded."

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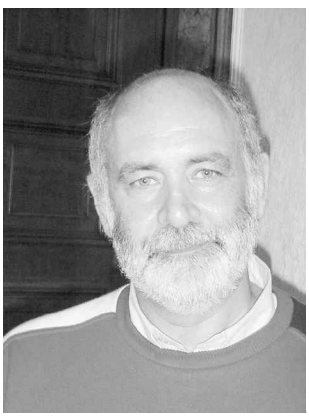
FEATURE

New World Wine in Old World Bottles?

Adrian McLean and Marsha George McLean



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In the middle of a dinner party, the host invited his guests to sample a new wine. In turn, they inspected its color, swirled the dark liquid, and inhaled its ''nose'' before tasting it, allowing it to linger on their taste buds. ''Well, what's the verdict?'' inquired the host. ''Where is it from?'' asked one guest, a self-styled wine buff. ''It's from the new vineyard in the village, just across the lake,'' offered the host. ''Hmm,'' said the guest, ''doesn't travel well, does it?''

As a European-based consulting company with strong North American links, we find ourselves intrigued by debates concerning the culture-bound nature of appreciative inquiry (AI). Is AI's evident popularity in North America as an approach to organization change and growth attributable to its North American origins? In this article, we describe the introduction and use of AI in a UK organization, the Inner London Magistrates' Courts Service (ILMCS). The magistrates' courts are local courts that are primarily concerned with misdemeanors. They also refer criminal cases to the higher courts. The courts service provides administrative and legal support to the individual courts that are located throughout London. We describe the challenges and dilemmas associated with introducing the New World wine of AI into a setting that embodies the Old World.

The Courts Service

The ILMCS, populated predominantly by lawyers, places a premium on rationality, logic, and precedent and, at the time of this case, demonstrated an open suspicion amounting to hostility toward ''soft, touchy-feely'' approaches. Legislative changes had drastically reduced workloads, resulting in closures and consolidations of courts and a swath of layoffs. Many staff people felt that those who performed the worst were rewarded the most. All in all, an inauspicious venue for our introduction of AI.

The central government's drastic pruning of budgets ensured that the courts service would no longer be able to improve continuously. For a service with a close-knit, closed culture, making the required changes was the real challenge. People frequently used the term ''family'' to describe the comradeship among the staff in the courts. Once people were established within the service, they felt they had few transferable skills to other industries. This all resulted in a traumatized, demoralized work force with high average levels of service and little experience in other organizations and cultures.

To try to mitigate the damaging effects of the changes, the director of human resources instigated an initiative called the New Ways program for staff members. The term ''New Ways'' perfectly described the situation facing the staff. How could they create, discover, or design new ways of managing and running the service that would enable it to operate within stringent budget restrictions and demanding new service standards? The director's brief specified that the program be delivered in three segments of two days each. In this article, we concentrate on the early stages of the program.[1]

AI in a Demoralized System?

We felt the challenge of introducing AI into a system in which controversial changes were continuing. We were mindful of the often-asserted belief within the AI community that

the first steps of an intervention are fateful. How could we invite people to inquire into the life-giving, generative experiences of their careers within the service when everyone faced unprecedented levels of uncertainty, insecurity, and anxiety?

Coupled with these feelings was the fact that the cutbacks and layoffs had significantly increased staff workloads, so people were feeling stressed and stretched. We concluded that it was necessary to create a climate in which the people in such circumstances would be prepared to engage in an AI process. We had first to acknowledge and validate the nature of their current perceptions of the service.

Within this broad framework, we needed to answer key questions:

- How would the spirit of appreciative inquiry fit in a demoralized, cynical system?
- How could we engage the senior managers of the service in the process, getting the whole system involved?

In many ways, the initiative was inspired and timely, because the service was under such strong pressure to change. From a systems perspective, however, we were concerned that many important stakeholders were not part of our target population. This included the corporate management team (CMT) composed of the justice's chief clerks, the directors of human resources and finance, the justice's chief executive (JCE), and the magistrates' courts committee (MCC). The MCC ratified policy decisions and was the overall manager of the service.

How could we involve the senior managers in the process of renewal and change? Their active support of both the process and the outcome was essential for specific operational innovations. We felt that any changes that would transform the service would include changes in the belief system, the epistemology of the service. If people were to shift their perceptions of themselves, each other, and the service as a whole, then the senior managers would need to participate.

First Challenge

Our first steps were particularly fateful. We saw the purpose of the initial two-day workshop as the need to build a sense of a group or community of inquirers who saw themselves as active participants in the necessary changes. We also wanted to introduce the participants to AI so they would be able to interview others during the period between the first and second workshops.

To achieve rapport with the participants as individuals and as a group, we followed a four-stage process: describing reality, pacing and leading, issuing the invitation, and redefining relationships.

1. Describing Reality

We invited each of the 14 participants to list on a sheet of flip-chart paper all the changes within the service of which they were aware or that they had experienced. We asked groups of three or four to write the changes on the left-hand side of the paper and the consequences of the changes, as they saw them, on the right. We then asked them to use a different color marker and write down words that described their feelings about these changes. Invariably, they chose red markers. We then invited them to lay their charts on the floor in a circle and review all the charts, ask questions for clarification, and comment on what they noticed, such as similarities, themes, surprises, and so on. We gently encouraged the process, permitting and encouraging people to speak. We were mindful to ensure that their views and especially their feelings were heard and received as legitimate. We refrained from commenting ourselves, except to seek clarification or themes and connections between comments. We noticed participants were tentative; we later discovered they were uncertain how far they could go in speaking their opinions. Could they trust us and each other?

Next we asked them, as small groups, to imagine themselves as journalists writing a feature story on change in the magistrates' service. What would be the headline and the story line with subheads? What photo or illustration would they include? This playful device further encouraged them to express their feelings. A buzz of conversation during

the coffee break followed this exercise. At some level, we had energized the group, and we felt confident to proceed to the next stage.

From an AI perspective, this exercise validated our observation on the use of neutral questions to invoke negative, critical responses. The vast majority of comments and expressions revealed the participants' strong feelings of anger, powerlessness, uncertainty, and unfulfilled promises. The newspaper headlines typically revealed their fears for the future of the service and themselves and portrayed senior managers in an unflattering light. In fairness, all was not unremittingly critical; there was also acknowledgment of some changes that had been favorable.

2. Pacing and Leading

We were curious about how participants saw their own involvement in the changes. We invited them to reflect on their part in the change process, rather than thinking of change as a series of events. A simple exercise intended to help them was based on a continuum of involvement in change (see the sidebar). The continuum sets out five levels of involvement: victims, consumers, interpreters, participants/shapers, and cocreators.

We asked them to decide which description most closely resembled their experience. We then placed five sheets of paper on the floor, each representing a level in the continuum and asked people to stand in the position that they had recorded on their own sheet. In this way, everyone could see the whole of the information. The majority had placed themselves as either victims or consumers, one or two considered themselves interpreters, and one participant, from the head office, saw himself as somewhere between participant/shaper and cocreator.

We asked why they had placed themselves in their chosen positions and what it felt like. People spontaneously responded, and a natural dialogue developed. We asked what the overall pattern said about the service and recent changes in particular. The conver-

Assumptions about Change

Victims

I have no control or any say. My fate is in the hands of others. I could end up worse off as a result of this change.

Consumers

My job is to do as I am directed by more senior members of the organization. They have explained the nature and benefits of the changes and given me appropriate training. It is not up to me to question their thinking.

Interpreters

I am clear about the direction and spirit of the changes and recognize the constraints within which I need to operate in the new scheme of things. I feel as though I have some freedom in terms of precisely how I satisfy the overall requirements.

Participants/Shapers

I have been consulted and involved in thinking through what changes are needed and how they need to be introduced. My views are encouraged and taken seriously. I can point to specific ways in which I have influenced the change process.

Cocreators

I have been fully involved in all aspects of the change. I am closely identified with both the need for change and how the organization has chosen to respond. The process has meant working closely with people from all levels and sections of the organization over a sustained period. We have found a new way forward together.

Questions

Where would you place yourself in this continuum right now?
Where would you like to be?
What can you do that might help you move closer to your desired position? Give three suggestions.

sation revealed feelings of powerlessness, exclusion, and of things being imposed without consultation. A distinction emerged between how people felt about changes that occurred to the service as a whole and their feelings of involvement in change locally. The consensus was that they felt more involved at the local level. The position of the participant from the head office—a senior member of the finance department—attracted both interest and wry comment and prompted a discussion about levels of consultation between the head office and the courts.

Until now, all the exercises might be considered pacing activities, through which we patiently encouraged participants to describe and express their reality using various descriptive and expressive methods. We had gradually shifted the focus from discussing changes in the service in a generalized, distanced way to encourage them to see themselves as personally subject to and involved in changes. Increasingly, rapport developed between ourselves and the group and within the group. At this point, we moved from pacing to leading. We asked participants to think about where they would most like to be on the continuum and, when ready, to move to that place, paying attention to the experience of moving positions. With the exception of the representative from the head office, they all moved and generally clustered between the levels of interpreters and participants/shapers. No one moved to the cocreator position; a small number hovered between the consumers and interpreters positions.

The conversation revealed feelings of powerlessness, exclusion, and of things being imposed without consultation.

Once again, we asked why they had chosen their new position and what it felt like to have moved. Again, the level of energy and attention within the group was high. A discussion developed about the extent to which they were partly responsible for feeling powerless. They speculated on how their senior managers would position themselves on the continuum; they were at first shocked to discover that the senior managers had distributed themselves in similar fashion at their briefing before the program had started. This led to a conversation about how the service as a whole was subject to a number of externally driven changes. The exercise helped them to entertain the possibility that things could be different. We closed by asking each person to process his or her thoughts with another member of the group and to reflect on what to do to move closer to the desired position.

3. Issuing the Invitation

We had invited three senior managers to join the group for an informal working lunch. Our intent was to give participants direct contact with those whom they considered the organization's leaders (the CMT). We suggested a broad topic for conversation—the future of the service. How did people see the challenges to the service? What were their aspirations? We had briefed participants about the lunch at the beginning of the day, and we had given them time to prepare for the conversations, clarifying what they might want to discuss with the managers.

Lunch was an informal buffet; three separate tables were arranged. During an hour and a half, we encouraged participants to spend time at each table to hear different perspectives. The director of human resources, the finance director, and one of the justice's clerks—the legal and administrative head of one of the courts—attended. Our intention was to create an opportunity for natural conversation and dialogue and for participants to hear their senior managers directly. In this way, we hoped both groups would be part of the change efforts within the service.

The conversations were lively, and once visitors and participants moved into a discussion of the broader issues, the conversations seemed to gain in energy and momentum.

4. Redefining Relationships

After lunch, we were anxious to hear participants' reactions. How did they interpret the views of the managers? We were in for a shock. Participants were critical of the managers, particularly the director of human resources and the finance director, who were newcomers. They saw them as centralist bureaucrats, outsiders who were more interested

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in numbers than in the organization, who couldn't provide much desired certainty about the future. The group expressed appreciation for the justice's clerk who, they felt, seemed to be doing his best in difficult circumstances. Once again, alarm bells sounded. Far from engaging in dialogue with the managers, it seemed that participants had engaged in collective scapegoating. The deficit discourse we had observed informally was demonstrated in full-blown Technicolor. We allowed the discussion to develop. Someone pointed out that participants were placing the managers in a double bind. On the one hand, they criticized them for being too directive and autocratic, while, on the other, they were admonishing them for weak leadership.

One major message that participants had heard was that the managers were looking to them to generate ideas and possibilities for how the service might cope with diminishing resources and increased expectations. While many were indignant, some began to express the opinion that perhaps senior managers were asking for help. How could they ask for help if they already know the answers? People began to use the terminology from the earlier exercise, looking at forms of involvement in change. A junior administrative staff person suggested that, by blaming senior managers for not coming up with satisfactory solutions, they were maintaining a position as victims. She argued forcibly that both by committing to the New Ways program and by participating candidly in the lunchtime conversation, the senior managers were in effect inviting them and, by implication, all staff to more actively participate in the change process. Hadn't they all agreed that this was what they preferred? Her comments proved to be a turning point. Some grudgingly, and others more enthusiastically, acknowledged that she had a point. We called a tea break.

We realize now how critical this dialogue was to the success of the process. In effect, in the course of the dialogue, participants were constructing a new meaning. Prompted by the earlier exercises, they were not only able to articulate their feelings about current and past changes but also had an image and vocabulary to describe a preferred alternative. And they also began to question their expectation that even the most senior managers should have all the answers. They expected managers to lead but also acknowledged the double bind in which they had placed them. Naming this double bind allowed for a redefinition of relations between staff and senior managers.

The dialogue over lunch and the post-lunch discussion addressed an issue at the heart of the dynamics within the service. In transaction analysis terms, there was a chance to shift from a parent-child pattern toward an adult-adult transaction. The luncheon became an invitation from senior managers to participants to take part more fully in the changes required in the service. Were they prepared to accept this invitation? While many were now openly enthusiastic, it was clear that a significant minority were prepared to go along with it for the time being. They were prepared to test whether behavior matched rhetoric. The real test would be whether they saw senior managers sustaining the newly redefined pattern of relationships in their behavior. Would the enactment match the redefinition?

At this point, we felt it was time to introduce them to the philosophy and methods of AI. We sensed the group's feelings of relief as we talked about now focusing on those times when the service had been doing its best work. In our view, we had achieved our first goal. The group was ready to engage in both the AI philosophy and its practical implications.

Second Challenge

We saw that getting the whole system into the process would be the second major challenge to the success of our initiative. If the program did indeed succeed, there would need

to be broad-based systemwide support for any changes that would have an impact on the wider organization. How could we achieve this when the senior managers and key stakeholders were not formally involved in the program and did not see themselves as its consumers? We needed to involve them naturally in the course of the three workshops. This happened in different ways, some an intentional part of our design and some that emerged spontaneously.

Intentional Efforts

Before launching the first workshop, we invited corporate management team members to a briefing to set out the program objectives, review the overall design, and explain what we would ask their staff to do. We wanted to set their expectations and introduce them to the philosophy underpinning AI. While we intended this mostly as a courtesy, they expressed interest in the design and wanted to participate in the ''involvement in change'' exercise. The results were illuminating. They clustered mostly around the positions of interpreters and consumers. The ensuing discussion revealed their feelings that they were on the receiving end of many government-initiated changes and found it hard to cope with successive changes while conducting business as usual in their courts. For the most part, they saw themselves as victims of events beyond their control.

The intention of the luncheon dialogue, which we've already described in some detail, was to compare perceptions between senior managers and staff. In our experience, significant differences in perception can invite all kinds of projections and speculations by both parties. We wanted to create a forum that encouraged dialogue and required everyone to hear each other's views. The buffet lunch was intended to foster an informal atmosphere. We prepared all parties before the encounter, emphasizing the need to set personal agendas aside and concentrate on the broader challenges facing the whole service. We were only partially successful, although ultimately we believe that the encounter played a crucial part in the parties' redefinition of their relationship.

Between the first and second workshops, we had asked participants to interview colleagues from other courthouses within the service (there were 12 courthouses that served inner London). In addition, they interviewed people in other organizations that had innovative practices and high standards. These visits proved useful, not only in terms of practical ideas and possibilities for new ways of organizing and managing but also at the more fundamental level of assumptions and values. Family and community values were reaffirmed during the visits, but aspirations to new values such as transparency and teamwork also emerged. New links across the courts and relationships across hierarchical levels emerged.

At the last of the three workshops, participants had a sense of the innovations that they wanted and that their colleagues would support. Here, we invited key stakeholders—members of the CMT and MCC—to hear the group's discoveries and suggestions. We intended to foster a climate of discussion and dialogue. We used a marketplace format at the request of participants because it generated good dialogue and made the encounter with senior managers less daunting.[2]

Participants had become adept at creatively representing their ideas and patently enjoyed the opportunity to be both innovative and playful. Some presented ideas in the form of an interactive quiz, while others adapted the format of a Monopoly game. A third group took the senior managers on a fantasy tour of the future service and gave them small gifts as symbols of their messages: a clear balloon to symbolize transparency, a miniature chocolate bar to embody a culture of recognition, and a toy car to indicate working from home.

The response of the senior managers was encouraging. They welcomed not just the ideas but also the spirit of possibility and innovation. They especially enjoyed the opportunity to debate and share their views. They commented on the participants' creativity and enthusiasm and accepted the fact that participants were not expecting them to take responsibility for the implementation of the ideas. One member of the MCC commented, ''It is so refreshing to come to an event where we are not having more problems dumped on us.'' This encounter proved highly enlightening in other ways. The managers discovered that the staff did not want to be protected from the adverse effects of changes. Their practice had been to shield the staff from information regarding such developments until

the changes were unavoidable. The managers were surprised to hear that participants emphatically preferred to be informed of unpleasant news as early as possible.

Spontaneous Inclusion

As the initiative gathered momentum, the most senior managers were drawn into the process in natural and unplanned ways. Program participants often chose to interview the heads of court (JCs), which stimulated the JCs' curiosity and interest and left them intrigued and wanting to learn more. Who had been interviewed and who hadn't became a favorite topic of informal conversation in management team meetings. A number of servicewide initiatives emerged. Members of the CMT offered to be organizational sponsors and champions of the initiatives. And, participants reported that the JCs had expressed interest in what was happening in the course of everyday business. In these ways, senior members became part of the program. As their interest gradually grew, their attitudes toward the program became more positive and enthusiastic.

The Verdict

Many change initiatives came about as a result of the New Ways program. Perhaps most important was a change in the mind-sets of people in this traditional service organization. They had opened their boundaries to discovering difference, had started to acknowledge the tremendous amount of innovative practice within the courts, began to move away from the ''protective parent'' culture to a more inclusive adult-adult culture, and were growing positive relationships up and across the organization. Senior managers described a sense of renewed energy within the service and commented on significant changes in the attitudes of staff previously regarded as hardened cynics.

The launch of a new IT system represented not only a dramatic manifestation of a key element in all the course participants' dreams for the service, but its introduction, with increased staff involvement, was a significant shift in style, attributed in large measure to the New Ways program. Of equal significance was the attitude toward the dramatic news, halfway through the series of workshops, that the service was to be combined with the Outer London Service. The clear message from New Ways participants to the CMT and the MCC was, ''How can we position ourselves at the heart of the change process and influence it, rather than opposing it and marginalizing ourselves?'' This alone illustrated a major shift of mind-sets.

Among the many practical initiatives coming from the program directly and indirectly were:

- An employee-recognition scheme set up in individual courthouses.
- A totally new IT system linking courthouses by e-mail.
- A new ideas forum.
- Reintroduction of a performance-appraisal system.
- Reconsideration of a long-term service award.
- Team-development initiatives.
- Introduction of ''Magnet,'' a cross-service staff newsletter.

There were five iterations of the New Ways program. Interest and support continued to develop, and the representatives of the program held regular meetings to inform each other of progress and developments.

Reflection

We realize that systemic involvement of major groups and individuals can occur in a natural or organic fashion. It is not necessary to have all stakeholders participate at the front end of the process. The natural energy and enthusiasm generated by appreciative processes seem to have a contagious quality that senior managers welcome, and that draws them into the process.

We believe that this case offers a resoundingly affirmative response to the question we posed at the beginning. The Old World bottles of the ILMCS proved to be surprisingly receptive vessels to the New World wine of AI. However, the time we spent at the beginning of the program was essential to creating the climate of readiness for engaging in such a process. Once participants had expressed and acknowledged feelings of suspicion and cynicism and accepted the invitation to participate, the staff of the ILMCS demonstrated an unlimited capacity for innovation and change. The cork was truly out of the bottle.

Notes

1. For a description of the full design of the program, please contact the authors at mclgeo@dircon.co.uk.
2. The marketplace format is a device to encourage rich conversations. Groups set up a ''market stall'' where they invite visitors to review their displays and engage in dialogue. Visitors can move freely between stalls in a way that simulates marketplaces in European villages.

Commentary

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The power of dialogue as a profound change intervention of its own is being increasingly recognized around the world. The creation of shared meaning through conversation and the resulting shift in identity from individual to contributing member of the whole has significant impact on organizational performance.

Adrian McLean and Marsha George McLean's case demonstrates the power of dialogue through the appreciative inquiry (AI) process. Their central question, "how to invite people to inquire into life-giving, generative experiences when faced with unprecedented levels of uncertainty, insecurity, and anxiety," is relevant in many organizations. The case shows that the success or failure of AI is not bound by national culture or by the degree of negativity and cynicism present. As long as adequate work is done in advance to create the conditions necessary for AI, this dialogic approach delivers results.

In addition to the climate-related conditions McLean and George McLean address, it is important to recognize that strategic context is also essential for AI to be effective in the long term. Frequently, in a demoralized system, the most sustainable solution is to shift people's focus to a common adaptive challenge. An adaptive challenge is one that requires completely different ways of operating from the past (Heifetz, 1994). In this context, AI is viewed as a critical tool for addressing the challenge. The adaptive challenge serves as an essential attractor in the system to sustain the energy, momentum, and dialogue over time. In the absence of a significant business challenge, AI can come dangerously close to becoming a "process for process's sake." As consultants and practitioners, it is essential we spend our energy helping our clients frame and commit to an adaptive business challenge and resist the temptation to become overly focused on process. Noticing and understanding the shifts in conversation that take place around the business context are as important as the shifts in relationship that occur.

Clearly, dialogic approaches to change hold significant promise, especially when used in the context of an unprecedented business challenge. As Margaret Wheatley says, "There is no more powerful way to initiate a significant change than to convene a conversation" (2002: 22). As our understanding of the world continues to evolve, AI and other approaches to inquiry and dialogue need to be a significant part of our collective toolbox for change.

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Go to the people
Learn from them
Live with them
Love them
Start with what they know
Build with what they have.

But of the best leaders,
when the job is done,
when the task is accomplished,
The people will all say,
"We have done it ourselves."
—Lao Tzu, 604 B.C.

Commentary

by Deborah Reidy

At the heart of this article is the premise that people desire to play a more active role in shaping their organizational life and that, given such an opportunity, exciting new developments will emerge. This result is well documented in every discipline relating to human behavior. Most often, the challenge has been to bring about conditions within organizations that enable people to play such roles.

A second proposition the authors address is that the most senior people in an organization do not have to be actively engaged in the change process from the outset but, instead, can be swept along by the enthusiasm and energy of their constituents. This proposition seems to have been borne out by the results of the initiative described. The authors write about creating a chance to shift from "a parent-child pattern toward an adult-adult transaction" and describe a number of instances where senior managers were drawn into the process naturally and organically.

Engaging in such a change process without the complete investment of those most senior is a real test of the first premise. Instead of structuring a linear, hierarchically driven intervention, the authors have put their faith in the power of constituent-driven change and in the energizing potential of appreciative inquiry.

When I first read the article, I had strong misgivings about the senior managers' lack of formal involvement. I feared that it signaled a weak mandate for the initiative and would have a modest chance of producing the kinds of results desired. I was gratified to read about the emergence of grassroots leadership, such as the junior administrative staff person who suggested that participants could and should be more actively involved in the change process. At first, I thought the emergence of such leadership was an accident, unrelated to the lack of direct involvement of the senior managers. But perhaps the two *were* related: An opening was created for grassroots leadership to fill. And I also realized that I had initially made the mistake of equating "leadership" with "position" in this story, a mistake I teach others to avoid.

As we craft organizational change efforts, perhaps a first step—even before the selection and design of the methodology—is to identify the real organizational leaders, regardless of the positions they occupy. I define leadership as "*the activity of mobilizing people to work toward a desired future that not only meets people's needs but elevates them.*" With the focus on leadership as an activity rather than as a title or set of personal traits, a very different sort of leadership can emerge. Thus, in addition to the "New World wine of AI," the authors also helped to create a space for the emergence of new leadership. Perhaps it was the combination of the two that produced the results described.

Much of my work over the past quarter century has focused on creating opportunities for people who are oppressed and stigmatized to play valued roles within their communities. By its very nature, this work has necessitated the identification and development of grassroots leaders. I have seen parents of children with disabilities grow to play strong leadership roles in large government agencies, in their school systems, and in other places in the community. Such people did not seek out leadership roles; instead, the issues sought them out. Supporting the leadership journeys of such people has convinced me that focusing on leadership as activity rather than as position or personality is the only way to sustain significant change.

Years ago, I had the honor to spend a week with Myles Horton, founder of the legendary Highlander Center, an adult education center in Tennessee founded in 1932. Highlander Center has served as a powerful resource for education and leadership development used by virtually every social movement since its founding. During my visit, I shared some wonderful meals with Horton and his colleagues, and grilled them on their experiences developing grassroots leaders for more than 60 years. Horton was warm, wry, and exceedingly generous with his time and wisdom. At the end of my visit, he handed me a tattered piece of paper with the Lao Tzu quote typed on it. It has served as my touchstone ever since, in whatever arenas I have worked. The results described in this article provide yet another example of what can happen when you go to the people, start with what they know, and build with what they have.

FEATURE

Accelerating the Organization Design Process

William O. Lytle

With the demands and opportunities in the business environment changing at an ever increasing pace, senior managers are seeking ways to rapidly reconfigure their company's strategies and structure. The search for faster and more effective ways of organizing and functioning has become imperative. One critical need is for an organization design process in which the rapid reconfiguration of key elements enables the achievement of exceptional business and human results.

Senior managers are well aware that the fast expansion of internal capabilities can give their organization a true competitive advantage in the marketplace. At the same time, they know that to achieve this, they must avoid the difficulties that have diminished and delayed previous change efforts, such as the use of inappropriate design concepts, the limited scope of piecemeal designs, the opposition of employees, and worst of all, the drawn-out—even haphazard—implementation of sound design features. In addition, senior managers realize that the internal resources of time, people, and funds are becoming less available for prolonged change efforts. What these leaders want is an accelerated design approach that averts the problems of past design processes, copes with limited resources, and produces rapid and superior business results.

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Organization Design and Its Phases

Organization design, as I use the term here, is a deliberately planned process that concurrently reconfigures key elements of an organization's work processes, structure, people, and culture. A successful design must satisfy the disparate requirements of the business environment, work processes, and human systems. The new organization must be able to shape the work of employees so they produce the results that meet the objectives of the business strategy.

The process of organization change occurs in five phases, with the first four of limited duration and the fifth of indeterminate length. These phases are exploration, planning and preparation, analysis and design, implementation, and renewal (Lytle, 1998). Accelerated organization design reduces the aggregate time for planning, design, and implementation, with no sacrifice of quality.

In this article, I describe four approaches to accelerated organization design and include a case example to clarify each. I also present the factors that determine which approach to use and the implications of accelerated design for the organization's leadership.

Four Options for Accelerating the Design Process

Organizations are using four accelerated design approaches:

1. The *modified design-team approach* relies on a traditional steering committee to oversee the change effort and a design team to create the new organization, but it uses a variety of techniques to speed up the conventional design process.

2. In the *cascading, macro-design approach,* a steering committee assumes, in addition to its normal planning responsibilities, the role of a design team and determines the broad, macro-features of the organization, such as unit boundaries, team structure, and information systems. It cascades or passes these specifications down to the individual units that then develop both their micro-design and the plan for its implementation in their respective areas.
3. In the *sequenced, multiple-conference approach,* large cross-sections of people from the organization develop the vision, design the new organization, and plan its implementation in a series of short conferences in a compressed time period.
4. The *hybrid approach* combines features from the other three. For example, a design team may hold conferences to collect data and test alternatives for a macro-design, with individual units then responsible for the micro-designs.

These four accelerated design approaches can speed up the organization design process in various ways. Each approach produces one or more of the following process outcomes:

- Increases the number of people who support the need for rapid change.
- Enlarges the scope of the design effort.
- Focuses the design work on the most essential tasks.
- Expands the number of high-quality design ideas.
- Tests design options against the requirements of multiple stakeholders.
- Develops broad support for the implementation of the new design through employees' direct participation.
- Shifts the culture in a direction that supports the new design.
- Uses the resources of people, time, and funds prudently.

An organization must understand the outcomes associated with each option and choose the approach that best fits the requirements of its design effort. In the next section, I describe these four approaches in more detail, along with case examples that illustrate their application. I was one of two external consultants who worked with the organizations described.

1. Modified Design-Team Approach

To appreciate the modified design-team approach, it is first necessary to understand the traditional design-team method; this clarifies what is being modified and why.

In the traditional approach, two temporary groups—a steering committee and a design team—play key roles in the effort. Sometimes an additional high-level group sponsors and promotes the change. The steering committee is a group of senior leaders—management and union (where present)—that addresses key planning issues, commissions the design effort, provides necessary resources, develops support among stakeholders, approves proposals, and oversees the change process from start to finish (Lytle, 1993; Kotter, 1996). The design team, typically six to ten people representing a cross-section of the organization, meets for four to six months to analyze the current organization (its business environment, work processes, and people), create a blueprint for the new one, and develop a plan for implementing the proposed features. When the steering committee approves the proposal, the organization implements the design, and the new organization begins to operate, with fine-tuning as necessary.

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For many years, this approach has produced examples of improved processes, structures, and relationships, which, in turn, have contributed to superior business and human results. However, certain problems tend to slow the change process and diminish the quality of the results. For example, design teams are often overwhelmed by the complex tasks and lose their sense of direction. Some get

caught up in excessive detail and miss their deadline. Team members often find it difficult to stay well connected to the steering committee, their peers, and other key persons. Frequently, other employees don't fully understand what the design team is doing and feel that it has become isolated, elite, and unable to represent their interests. To overcome these difficulties, organizations have developed the modified design-team approach.

In the modified approach, the organization uses various methods to alter the traditional approach in order to speed up the change process and build support for the new design. In the composite case that follows, I describe some typical modifications that several companies made, customized to fit their particular situations. Some companies built on practices already in place, for example, employee involvement.

The Case: A Composite of Companies

In one company, the steering committee saved the design team time by prescribing certain proven organization features, including self-managing work teams and a pay-for-skill system. The steering committee in another organization commissioned the simultaneous design of two units whose work was closely linked.

The design team in one company divided itself into three subgroups, with each assigned to analyze concurrently the business environment, the work processes, and the employees. A design team in another organization commissioned task groups to work out specific changes, for example, new training needs and alterations to facilities. Other teams held large group meetings to collect information from their peers about how the current organization was working; they found this method more efficient than individual or group interviews.

In another company, the steering committee commissioned activities that supported anticipated changes before the design was completed. For example, the company taught employees to understand and use business information and trained them both in needed technical skills and in new ways of working together. In addition, managers at all levels began preparing for their new roles. Several other organizations implemented certain features that everyone agreed were appropriate before final design approval.

Often, organizations starting their first design effort use this modified design-team approach. It gives leaders a great degree of control over the change process and the resources committed. In addition, this approach allows groups with a history of disagreement to proceed cautiously while finding common ground.

2. Cascading, Macro-Design Approach

In the cascading, macro-design approach, the steering committee is responsible for the usual planning activities, but also assumes the task of designing the broad features of the total organization. This macro-design establishes the higher level structure and systems that may include, for example, new unit boundaries, the team structure, information systems, human resources systems, and the like. This macro-design is then ''cascaded'' or handed down to individual units within the larger organization, with each responsible for deciding how to implement the prescribed features in its respective area (the micro-design).

In the macro-design approach, the steering committee is responsible for the usual planning activities and the task of designing the broad features of the total organization.

For this approach to succeed, the steering committee must be able to meet for extensive periods of time, and its members must be able to hand off their normal day-to-day responsibilities to others. Employees must see the steering committee as the legitimate body for establishing the broad design parameters. In addition, the steering committee must focus only on the essential organizational issues and design features, a true application of the minimum critical specifications principle (Cherns, 1976).

The Case: Miller Brewing

Miller Brewing Company is one of the largest producers of beer in the US. In response to a highly competitive environment, the company has focused on driving down its production

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costs while introducing new brands of beer to the market. Five years before this case began, Miller had opened a new team-based facility in Ohio, which, because of its low costs, was allocated more of the production from other Miller plants, especially the one in Milwaukee. At the time of this case, the Milwaukee brewery, the largest and oldest of the company's production facilities, employed approximately 1,200 people; six different unions represented the production workers and skilled trades. Union-management relations were cordial, but there was no significant history of employee involvement or special union-management cooperation. The plant was divided into three interdependent production departments—brewing, packaging, and shipping—and included engineering, maintenance, finance, and human resources functions.

Senior plant managers in Milwaukee negotiated an agreement with corporate management and the unions that authorized them to establish a team-based organization. They set aside a substantial budget to support the change effort, and a committee of senior management and union leaders, including the plant manager, agreed to devote significant time to the planning. With the addition of several new members, the steering committee was composed of the plant manager and his five department heads, leaders of the six unions, one engineer, one supervisor, and one trainer.

The steering committee visited other companies and learned that some of their change efforts took up to five years to complete, which it felt was much too long. It decided to use the cascading, macro-design approach to speed up the plant's change process. The group met from four to five days a week and completed its macro-design and implementation plan in two months. The macro-features included revised department boundaries, specifications for self-managing work teams, special coordinator positions, role expectations for managers and team members, a new maintenance-planning system, new shift-changeover procedures, new training requirements, and a new training system. The group then handed off this macro-design to all departments for their local micro-design and implementation. Within four months, the micro-designs were completed, and their implementation was well under way throughout the plant.

With this cascading, macro-design approach, the plant accelerated the design process for its new organization. In only two months, the steering committee developed the primary characteristics of the new organization and established the expectations for the various units. The vision and the macro-design were clear enough so that each unit could create and implement its micro-design in a short time.

3. Sequenced, Multiple-Conference Approach

In the sequenced, multiple-conference approach, large groups of volunteers (50–150), who make up a cross-section of all units and levels in the organization, develop the vision, analyze data, design the new organization, and plan its implementation in a series of linked conferences in a short time (Axelrod, 2000, 2001; Dannemiller, James, and Tolchinsky, 2000; Emery, 1993; Weisbord et al., 1992). Key external stakeholders, such as customers, are invited to contribute.

Typically, each carefully structured conference lasts from two to three days with three to four weeks between conferences, so people can absorb the results of one conference and prepare for the next. The group of participants varies for each conference, with some overlap from one session to the next. Each conference focuses on one of the design steps and builds on the work of the previous sessions. Conference participants work both in small groups and in the total community. The overall macro-design for a sizable organization can be developed in four conferences over a four- to five-month period. Steering committee members attend all conferences to stay informed about the process and progress, contribute their knowledge and experience, and make some decisions on the spot without the usual long delays of more conventional methods.

This sequenced, multiple-conference approach succeeds because:

- Representatives from all parts of the organization work together on the new design at the same time and place. Key outside stakeholders participate, which keeps the conference work closely connected to the realities of the business environment. When participants exchange ideas face to face, they come to understand and appreciate various viewpoints, reduce their misconceptions of each other, and find common ground.
- Conference activities follow a logical process that sharply focuses discussions and moves participants along so they produce the needed output in the time allotted. The conference structure creates channels of communication that give all participants the same information and encourage extensive open dialogue. High-quality work results from the rich diversity of knowledge and experiences that participants share in devising innovative solutions.
- The importance of the change effort, the high level of participation, the diverse activities, and the continuous sense of accomplishment create excitement and enthusiasm among all participants. To maintain momentum after each conference, all members of the organization are briefed on its activities and results. As a consequence, the whole organization validates the change process and its outcomes.

The Case: First Union

First Union is one of the largest banks in the US. Its consumer credit division, at the time of this case, was an organization of 500 people headquartered in Charlotte, North Carolina, with 60% of its employees located in Roanoke, Virginia. The division's products were both secured and unsecured personal loans and home equity loans. The division supported loan officers in branches in the southeastern US by originating and servicing loans and collecting loans in default.

Banking is a highly competitive and fast-changing business with rapid shifts in products, markets, technology, regulations, and ownership. With this in mind, the senior vice president of the division and his staff decided that the bank needed to improve customer service, cut the time and cost of making loans, and provide better support to the branch bank lenders. In addition, they wanted to increase the level of internal teamwork and make the division an even better place for employees to work. Although the division was in sound condition, they wanted to prepare for the future by developing new capabilities throughout.

High-quality work results from the rich diversity of knowledge and experiences that participants share in devising innovative solutions.

The senior managers, functioning as a steering committee, became convinced that the needed changes would require a significant shift in the organization's culture plus a full redesign of its processes and structure. They also knew that the division would have to shift as a whole, with a simultaneous changeover to a new way of working. They decided that the new organization had to be designed and operating within a year, and they wanted people at all levels to be heavily involved in the change process. Since two other divisions in the bank had successfully used the sequenced, multiple-conference approach, the committee chose this method. Top management supported the change effort and made sufficient resources available.

After considerable planning, the steering committee sponsored four separate conferences, each lasting two to three days, one month apart, with a cross-section of about 90 employees participating in each. The first conference focused on developing a shared vision of the future organization; the second determined what was needed to attain a high level of customer satisfaction; the third explored ways to improve the core work processes; and in the fourth, participants created the broad macro-design for the new organization. About 60% of the division's employees plus a few customers participated in one or more of the conferences. The new design took the original functional organization and reconfigured it into four regional groups, with each servicing the local banks in a specific group of states. Each region contained a number of teams that together were responsible for all the steps in processing new loans in their area. Several centralized support groups were retained.

The steering committee then devoted the next six months to preparing for the implementation of the new design. It required all management members to bid on new jobs and allocated employees to teams in the new regional groups. The organization also trained employees in hard and soft skills, developed new human resources policies, installed new information and telecommunications systems, and prepared new facilities for those working in Charlotte. In the month or so before start-up, the members of each regional group met separately for a two-and-a-half-day conference during which they developed the micro-design and a detailed implementation plan for the teams in their unit. Then, over one weekend, the organization implemented a seamless and successful switchover from the old to the new. It spent the following several months fine-tuning the new organization, including realigning some responsibilities and further training managers and team leaders.

Only 15 months had elapsed from the senior staff's first discussion about change until implementation. This rapid change was accomplished through the design conferences, followed by the implementation-planning conferences for each new unit. The keys to this success were the broad scope of the design effort, the carefully designed conferences, employees' availability and widespread participation, the extensive preparation for implementation, the steering committee's steady support, and the meticulous management of all aspects of the change effort.

4. Hybrid Approach

The hybrid approach to organization design combines various elements borrowed from the other three approaches. For example, a design effort might involve a design team, multiple task groups, several conferences to create a macro-design, unit micro-designs, and early training for employees. This hybrid approach accelerates the design process by mixing and matching components from the other methods.

The Case: Scott Paper

At the time of this case, the Winslow, Maine, mill of the former Scott Paper Company employed 500 people in the manufacture and distribution of paper, towel, and tissue products.[1] In order to remain competitive and attract capital, the mill was under great pressure to lower its production costs. During the previous two years, corporate management had reduced the mill's headcount, and a number of employees had recently left the site. Five unions represented the production workers, trades, office workers, and guards.

The mill manager, his staff, and the union leaders, serving as the plant steering committee for the design process, established macro-design guidelines and then commissioned nine parallel design efforts in the production, distribution, support, and office areas. (The trades groups elected not to participate in this effort.) Initially, the committee specified the use of the traditional design team approach to create team-based work systems for the mill. After many months of protracted design effort, corporate management unexpectedly demanded that the teams complete the designs, the unions approve them, and the plant begin implementation within the next four months. The challenge for the steering committee was to quickly finish up the work of the nine design teams, pull the results together into a coherent proposal that also included a new pay system, gain a positive vote from the union members, and begin implementation.

To meet this schedule, the committee decided to hold two back-to-back conferences of two days each within the next month. During the first conference, participants focused on completing and integrating the nine separate unit designs. In the second conference, participants developed the implementation plan for the site. Participants in both conferences were the members of the steering committee and the nine design teams, about 55 people. When they resolved all the planning issues, they rolled out the new design and implementation plan to the entire organization. After the union members voted for the design, implementation began, with extensive training as the first step. By using components of the various accelerated approaches, this hybrid approach sped up the design process at this site and enabled it to meet corporate management expectations.

Choosing the Appropriate Accelerated Approach

Once senior leaders understand the alternative approaches for accelerating organization design, they must carefully assess their current situation and then choose the right approach for their effort. Their decision will be sharpened by using the following eight factors to determine the appropriate approach. Each organization, of course, will weigh these factors differently.[2]

1. Level of agreement among key stakeholders on the need for rapid change.
2. Scope of the design effort.
3. Quality of the current relationships in the organization.
4. Degree of employee involvement in the design process.
5. Amount of direct control that management will exercise over the change effort.
6. Resources required and available.
7. Organization's past experience with organization design.
8. Readiness of the senior leaders to meet the personal requirements of the respective approaches.

The different accelerated approaches chosen by the companies in the cases illustrate the application of these eight determining factors. Each organization was able to speed up its design process by using the approach most suitable for its requirements.

- The companies in the composite case for the modified design-team approach had successfully used the traditional design-team method in earlier change efforts. But as the business environment became more demanding, they began devising ways to speed up the process by prescribing certain design features, building more support among employees, making early changes, and so on. These and other such modifications have come to define the modified design-team approach. No organization today would use a purely traditional approach.
- The Miller Milwaukee plant selected the cascading, macro-design approach after management and the unions agreed on the need for rapid improvement in the organization's capabilities. The leaders also decided to commit the considerable personal time they knew this method required. This approach gave both the unions and management control over the content, process, and outcomes of the design effort, a necessity given that this was the first major change on which they had collaborated. Although this was the first time any Miller facility had used this approach, it proved successful in accelerating the design process in the Milwaukee plant.
- The consumer credit division of First Union chose the sequenced, multiple-conference approach after key managers agreed that an accelerated schedule depended on the contribution and support of all employees. Given the interdependence of the units, management also knew that the organization would have to be designed and implemented as a whole. In addition, the fact that other divisions in the company had used this method successfully was reassuring. The approach enabled the division to meet its aggressive timetable for change.
- The Scott Paper Winslow plant's use of an accelerated approach was driven by the unexpected need to complete its traditional design effort quickly. Leaders created a hybrid approach by deciding to hold two conferences to complete the design teams' work and plan for the implementation of the new organization. The historically good working relationships among management and the unions supported their decision to switch methods quickly. The Winslow plant successfully used the hybrid approach to meet the tight schedule imposed on its change effort.

Each accelerated design approach has the potential to push the culture of the organization in a particular direction.

Each accelerated design approach has the potential to push the culture of the organization in a particular direction. For example, the modified design-team approach demonstrates the merits of involving a cross section of employees in the analysis and design of their organization, including its human dimensions. The cascading, macro-design

approach supports the idea of building a partnership among senior leaders as they work together on the design. The sequenced, multiple-conference approach reinforces the value of a high level of employee involvement and information sharing. Leaders may elect to use the accelerated method that embodies the qualities of the preferred future culture, providing there is not too large a gap between it and the current culture.

As an organization moves from the modified design team to the sequenced, multiple-conference approach, the number of employees directly involved in the design process increases significantly. The more people who participate and take responsibility for creating the new organization, the better the design, the greater the commitment to its success, and the faster its implementation. Rapid implementation is a major reason why these approaches are able to accelerate the change process.

Implications for Leaders

Managers tend to underestimate the difficulty of change and therefore underplan, understructure, underresource, and undermanage even conventional change efforts. Since accelerated approaches are more demanding, leaders must be clear about the new requirements and prepare the organization accordingly. Leaders who are considering the use of accelerated design methods must also understand that these require their extensive personal involvement in all phases of the change effort. Regardless of the option they choose, it will take a great deal of their time, subject them to pressures from many sources, challenge their tolerance for ambiguity and limited control, make their leadership style highly visible, and demand a process of personal change that sets the example for others in the organization.

The four approaches I describe here were built on design experience gained over the past several decades, and they have profited from the successful evolution of employee participation in diverse situations. These accelerated approaches work. They are available to all leaders courageous enough to welcome them as a cornerstone for change in their organizations.

Notes

1. Scott Paper is now a part of the Kimberly-Clark Corporation.
2. For the description of a method for choosing the appropriate approach, see: W.O. Lytle, ''Accelerating Organizational Design: Choosing the Right Approach,'' to be published in the forthcoming book, *The Collaborative Work Systems Fieldbook: Strategies for Building Successful Teams* (San Francisco: Jossey-Bass/Pfeiffer, 2003).

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Commentary

by José Luis Alvarez

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William Lytle's article produces a paradoxical effect. It is an optimistic case for change in general and, more particularly, for planned change. Furthermore, it is an invitation to planned accelerated change, an important topic on which Todd Jick wrote an excellent article (Jick, 1995).

The article contrasts with a good deal of the literature on change in high-speed industries (none of the examples provided in the article are really within those sorts of activities), which has become skeptical about planned or designed change and adopted a more market-oriented or loosely coupled design or Darwinian approach: Let's facilitate the blooming of initiatives. The world is so complex that we cannot manage it (at least, in a deliberate, proactive, centralized manner). Good change initiatives will survive, while the less adapted will fade away (see, for instance, the work of Brown and Eisenhardt [1998], and others).

At the same time, the article seems a bit old-fashioned. Lytle is no skeptic about change and provides four no-nonsense, reasonable ways of accelerating change, supported by examples of not very glamorous companies in non-high-tech sectors. These will fit the experience of anyone consulting in the difficult domain of change and constitute a useful reminder of how to do things. In fact, the article contains more common sense in helping companies to accelerate the timing of transformations than new approaches to change.

The article lacks some references to the new literature on the topic of change (to the skeptical literature). I would have also liked to find more contingency logic (when the processes Lytle proposes work and do not work and in which industries).

In sum, the article is good, optimistic common sense that is worth reading.

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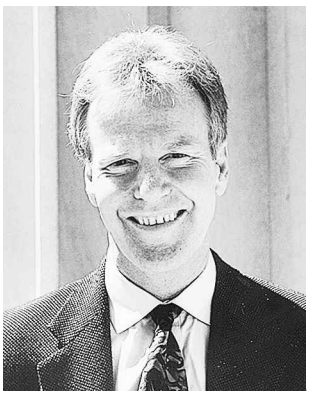
VIEW

From the Chair



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The theme of this issue, ''the devil's in the details,'' harks back to old ideas about success and failure. As the saying goes, ''For want of a nail, the battle was lost.'' After all the grand plans and all the brilliant strategizing, victory and defeat often turn on the cumulation of many small matters, each by itself easy to miss. Yet, as timeless as this advice may be, it seems to go against the current of prevailing sentiment.

In the face of daunting complexity and uncertainty, it is not difficult to appreciate the demand for ''seven step'' programs of change. But the basic problem with ''how to'' management fixes is that they aren't very practical. Life is much too contextual and circumstances much too unpredictable to allow us to work things out in advance. Worse, formulaic change strategies expose their adherents to wholesale neglect of what really matters. By reinforcing faith in the plan, they shift attention away from developing the capabilities that contribute most to successfully leading change—clarity on guiding principles and aims and being awake to what is happening here and now.

In my experience, a rich feeling for the ''concrete particulars'' is what comes across whenever successful practitioners reflect on their experience. For example, Aventis's Jürgen Dormann, in his interview with Otto Scharmer in this issue, responds to Scharmer's query about having an ''eye'' for the right people, by saying, ''This process can't be understood in only rational terms. . . . You develop an eye for people . . . [especially] with regard to their values and the consistency in their basic stands on issues . . . [their] character . . . [and] ability to see these things.''

Dormann gives several other examples of the devil in the details—like having a sense for ''what has to be done, when, and in what order'' in a complex change process, or knowing where to draw the line around what a CEO does and does not do. The signals sent by a CEO who makes a decision that could be left to a line or operational manager travel widely. Dormann believes it is important to ''keep out of [running] the business'' and points out that ''it is an incredible education for an organization to allow people to [sort out their own thinking on complex issues].'' But what issues, specifically, should a CEO stay out of and when should he or she intervene? This defines the craft of the effective CEO. Dormann also points out that it has taken him many years to develop consistency in ''doing nothing'' in particular types of situations. This consistency, in turn, is what signals the people in the rest of the organization that they do indeed need to assume responsibility. Inconsistent CEO interventions will produce the opposite: people waiting for the boss's next move.

None of these matters are the domain of strategy as consultants and experts usually write about it. Yet they illustrate the types of issues that really matter—those that separate managers who are successful at creating environments for real learning and change from those who are not. Maybe this is part of the problem. So much of what we use to learn about strategy and change comes from what observers write. To paraphrase learning theorist Michael Polyani, masterful practitioners in any domain ''know far more than they ever say.'' Tacit knowledge always comes down to knowing what to do in concrete, particular situations. This sort of knowledge is extraordinarily difficult to reduce to words of any sort, let alone succinct accounts suitable for busy people.

So, where does that leave us? What can be done to accelerate and deepen learning for creating change if so much depends on wisdom about concrete particulars? It is important to appreciate the difference between concrete particulars and detailed plans or obsession with detailed control. Appreciating the importance of concrete particulars is really about cultivating awareness and first-hand knowledge. So, how can this be done? For one, through encouraging those engaged in deep change to help each other. In our

experience with the SoL community, again and again we find that there is no substitute for rich peer networks to accelerate learning—through honoring ''organizational elders'' and creating the space for them to mentor and through developing managers' inquiry skills so they can then support continual curiosity about what we know and do not know, rather than propounding simplistic solutions. And, paradoxically, through lightening the load of management-imposed numerical targets, the virtual sine qua non of management-driven change efforts—as in ''our goal in this change process is to cut our costs or cycle time by 50%.'' Accounting theorist H. Thomas Johnson, the coinventor of ''activity based costing,'' and Anders Bröm point out in *Profit Beyond Measure* that Toyota achieves unmatched, long-term financial performance with no standardized, central cost-control system. Instead it has a rich array of cost and performance improvement disciplines that operate locally *because only those in the middle of a process can actually appreciate its concrete particulars* and thereby make the best use of numerical performance data.

Forcing people to focus their attention on numerical performance targets set by management actually forces them to focus on abstractions. This may come as a bit of a shock in our numerical, results-oriented cultures in which no belief is more sacrosanct than ''that which is most measurable is most real.'' But nobody has ever seen a ''profit.'' And, as we have all been learning painfully in recent months, many so-called profits can disappear in the flicker of an eye with revised accounting practices. Driving change through management-imposed numerical targets can be a powerful force against real learning—as W. Edwards Deming used to say, ''If management sets the targets and makes people's jobs depend on meeting them, people will do whatever is needed to hit the targets, including destroying the company to get there.''

Mastering concrete particulars starts with creating a management culture that values human judgment and learning on a par with numerical results and sees the latter as a vehicle for achieving the former.

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Reference

Johnson, H.T., and A. Bröm. *Profit Beyond Measure* (New York: Free Press, 2000).