

contributing to more balance between work and family. Some steps, such as providing day care for single parents, have already been taken in many firms. But there are a broader and more challenging set of steps ahead. For example:

- Support personal mastery as a part of the organization's philosophy and strategy (Chapter 9 discusses the "how to's" and pitfalls in making such support effective).
- Make it acceptable for people to acknowledge family issues as well as business issues and to interject these into pertinent discussions, especially discussions involving time commitments.
- Where needed, help people obtain counseling and guidance for how to make effective use of their family time (many of the difficult problems in parenting and family relationships do not arise solely from inadequate time but from not knowing *how* to handle the issues effectively).

There are, undoubtedly, many other concrete steps that can be taken. But the most important step is the first step—acknowledging that one cannot build a learning organization on a foundation of broken homes and strained personal relationships.

The conflict between work and home is not just a conflict over time, but over values. All the habits that an executive learns in an authoritarian organization are exactly the habits, as *Fortune's* article showed, that make them unsuccessful parents. How can an executive build up a child's self-esteem at home when he or she is accustomed to tearing down other people's self-esteem at the office? The values and habits learned by practicing the five disciplines of a learning organization serve to nurture the family as well as the business. It's a virtuous circle: not only is being a good parent a training ground for being a learningful manager, but being a learningful manager is also good preparation for parenting. The conflict between work and home diminishes dramatically when the organization fosters values in alignment with people's own core, values that have equal meaning at work and at home. Only then will it be possible for managers to stop living by two codes of behavior, and start being one person.

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MICROWORLDS: THE TECHNOLOGY OF THE LEARNING ORGANIZATION

HOW CAN WE REDISCOVER THE CHILD LEARNER WITHIN US?

Human beings learn best through firsthand experience. We learn to walk, ride a bicycle, drive an automobile, and play the piano by trial and error: we act, observe the consequences of our action and adjust. But "learning by doing" only works so long as the feedback from our actions is rapid and unambiguous. When we act in a complex system the consequences of our actions are neither immediate nor unambiguous. Often, they are far removed from us in time and space. This leads to the "dilemma of learning from experience," one of the learning disabilities described in Chapter 2: we learn best from experience, but we never experience the consequences of our most important decisions. How, then, can we learn?

Microworlds enable managers and management teams to begin "learning through doing" about their most important systemic issues. In particular, microworlds "compress time and space" so that it becomes possible to experiment and to learn when the conse-

quences of our decisions are in the future and in distant parts of the organization. While the computer-based microworlds described below are new, the principle of learning through microworlds is actually familiar to us all.

When they play with dolls, children rehearse ways of interacting with people. When they play with blocks, they teach themselves basic principles of spatial geometry and mechanics. Later in life they will learn the general properties of the pendulum through swinging on a swing and all about levers through the playground teeter-totter. The doll, the blocks, the swing, and teeter-totter are what educational theorists call "transitional objects"; the playroom or the playground is a microworld, a microcosm of reality where it is safe to play. Through experimentation with transitional objects in microworlds, children discover principles and develop skills that are relevant in reality beyond play.¹

They also achieve a rate of learning that is truly astounding. By the age of three or four, children have learned basic principles of geometry and mechanics; they have mastered natural language, a feat which artificial intelligence researchers admit is still on the distant horizon for machines; and they have learned all about the "social systems" of home life such as "If I don't clean my room, my mother will." All without ever being "taught."

Learning through transitional objects and microworlds is not limited to children. The aeronautical engineer's model in a wind tunnel is a transitional object in a microworld, as is the naval designer's model ship in a "wave tank." Managers too have transitional objects and microworlds. When a work team goes white-water rafting or engages in some other outdoor team-building exercise, they are creating a microworld to reflect on and improve the way they work together. When personnel staff create a role-playing exercise to be used in supervisory training they are creating a microworld. Many team retreats serve as microworlds, as illustrated by the "dialogue" practice sessions discussed in the Team Learning chapter. Consultants often serve as a transitional object of sorts—a safe sounding board for exploring new and different business ideas without the risks of directly putting those ideas into practice.

But existing microworlds for managers are limited. For example, team-building exercises can produce powerful insights into learning processes, but they usually do not lead to new insights regarding strategic business issues. Role-playing exercises can help develop interpersonal management skills, but they do not show us whether

our personnel policies are aligned with our manufacturing and marketing policies. Perhaps most importantly, few existing microworlds develop individual or team capacities to deal productively with complexity. Few capture the dynamic complexity that confronts the management team when it seeks to craft new strategies, design new structures and operating policies, or plan significant organizational change.

Now a new type of microworld is emerging. Personal computers are making it possible to integrate learning about complex team interactions with learning about complex business interactions. These new microworlds allow groups to reflect on, expose, test, and improve the mental models upon which they rely in facing difficult problems. They are settings for both crafting visions and experimenting with a broad range of strategies and policies for achieving those visions. Gradually, they are becoming a new type of "practice field" for management teams, places where teams will learn how to learn together while engaging their most important business issues.

Microworlds will, I believe, prove to be a critical technology for implementing the disciplines of the learning organization. And they will accomplish this by helping us rediscover the power of learning through play. Shell's Arie de Geus says that organizational learning occurs in three ways: through teaching, through "changing the rules of the game" (such as through openness and localness), and through play. Play is the most rare, and potentially the most powerful. Microworlds are places for "relevant play." There the issues and dynamics of complex business situations can be explored through trying out new strategies and policies and seeing what might happen. Costs of failed experiments disappear. Organizational sanctions against experimentation, either implicit or explicit, are nonexistent. Reflecting on our own and our team's learning skills can be enlightening and "lightening" (as in "lightening up") because this reflection can be separated from the risks and pressures of real decision making.

Today, microworlds for managers are exploring diverse issues from managing growth to product development and improving quality in both service and manufacturing businesses. These experiments build on and incorporate insights about system archetypes, team learning, and working with mental models. We still have a long way to go before "practice fields for management teams" are a way of life in learning organizations. But important principles and tools are emerging that are pointing the way.

What follows are descriptions of three different microworlds taken from three very different business settings. They illustrate the range of strategic and operational issues that microworlds can illuminate:

1. *Future Learning*: in which a management team discovers internal contradictions in a strategy that is only just being put into place;
2. *Seeing Hidden Strategic Opportunities*: in which a team experiments with its members' mental models, and discovers that the assumptions team members hold can shape their customers' preferences;
3. *Discovering Untapped Leverage*: in which we invite you to imagine playing out the roles of local managers in an insurance company in order to see how deceptively easy it is to "look good without being good," to mismanage workload in such a way that quality erodes and potential leverage for improving customer service and profitability is lost.

M i c r o w o r l d

FUTURE LEARNING: DISCOVERING INTERNAL CONTRADICTIONS IN A STRATEGY

Lying behind all strategies are assumptions, which often remain implicit and untested. Frequently, these assumptions have internal contradictions. When they do, the strategy also has internal contradictions, which will prove to make it difficult or impossible to implement. One benefit of microworlds is bringing these assumptions into the open and discovering these inconsistencies.

One such case occurred at a highly successful manufacturer of microcomputers (here called the "Index Computer Company").² The top management team had introduced a microworld as a part of a two-day planning retreat. They had taken on a strategic goal four months earlier: to reach \$2 billion in sales in four years. They were all committed to the goal, from Index's President Tom Jamison on down. And everyone seemed happy with the progress so far.

That's why the vice president of Sales, James Sawyer, felt so uneasy. It was difficult enough to keep and train his present sales force—how did they expect him to double it? He had shared his qualms with other top managers, but they had only responded with platitudes: "You'll work it out. After all, you'll have the budget for

it." Now he was in a bind. He didn't want his fellow executives to think he lacked their commitment to that magic \$2 billion figure. He didn't want to get the reputation of a "nay sayer." And he certainly didn't want to let on that he thought he might not rise to the occasion, especially since he had a reputation as a "fixer" who could solve any problem. But every time he thought about the future, an involuntary shudder of pain ran through his stomach.

Soon the executives split into three-person microworld teams to play out the consequences of the sales plan. Their first task was to construct an explicit model on the computer of the assumptions behind the plan.³ The plan called for a 20 percent annual sales growth, a continuation of the growth rate of the past ten years. And it also called for 20 percent more salespeople each year. As they looked at simulated sales figures for the next four years, it didn't take them long to recognize that the official plan implicitly assumed that the productivity of salespeople would hold steady as the sales force expanded. Hire 20 percent more salespeople, you make 20 percent more sales.

Making the assumption explicit prompted Sawyer to say, "Well, wait a minute. Not all salespeople are equal. There is so much they have to learn—about office automation, software, training, accounting, engineering, consulting, and manufacturing—before they can place a single system. Much of our historic growth," he continued, "came from hiring experienced salespeople whom we lured away from our competitors. We could do that as long as we were small. But now the numbers of new hires we need to sustain our 20 percent growth are getting much larger. We will not be able to get this many people by hiring away from our competitors. We'll be hiring many more inexperienced salespeople in the future."

Sawyer's comment sparked a lively debate about the differences in productivity between experienced and inexperienced salespeople. All agreed that it was necessary to distinguish new, inexperienced salespeople from veterans. When they split back into teams, each team modified their models to make more realistic assumptions. Sawyer's team, for instance, assumed that veterans would be four times as productive as rookies. Some groups assumed less, some groups assumed more, but everyone assumed that training and developing an experienced salesperson required two to four years.

Now, however, none of the models reached that \$2 billion sales goal. Sawyer's model projected sales under \$1.5 billion.

The problem came from the average productivity of the growing

sales force. As the computer simulated the consequences of the projected hiring, it showed more and more rookies, because the rate of new hires exceeded the rate at which rookies became veterans. Although they hired enough total salespeople to meet their plan, the mix of inexperienced and veteran salespeople shifted progressively toward the inexperienced, pulling down average productivity. (The effects of rapid growth on the mix of experienced personnel, you may recall, was also an important dynamic at People Express Airlines in Chapter 8.)

The different work teams tried furiously to find a set of assumptions they could believe which would produce \$2 billion in sales in four years. No one could do it. To see just how extreme the problems might become, one group asked the question, "How many salespeople *would* we have to hire if we simply kept hiring until our sales targets were met?" They found that, "We'd end up almost *doubling* the sales force in the fourth year alone, if we doggedly kept adding bodies until our sales target was reached." All knew that this magnitude of personnel growth would wreak havoc on the sales organization, not to mention the overall personnel budget.

After an hour, the president stood up and asked, "Is there anyone here who still believes that our strategic plan is internally consistent?" No one responded.

The managers had known both halves of the contradiction: that novices are less productive salespeople, and that the new sales goals would require them to hire more novices. But the assumptions came together only when they were put into a microworld that simulated their interaction over time. Now that everyone could see the internal inconsistency, Sawyer found himself able to articulate, for the first time, his general reservations.

"I've felt for some time that executing the new strategic plan will cause problems," he told the group. "And the problems might be even worse than even these simulations suggest. We have a tradition of not revising our business goals once we've announced them publicly. So, not only would we be likely to hire a lot more new salespeople than our official plan projects, but there will be a lot more pressure on our veterans. Couple that with the distractions and frustrations for our veterans who have to help all these new people get up to speed and I wouldn't be surprised if we end up with more veterans leaving and lower productivity from those who stay. We could get into a really vicious cycle. Many of our veterans came to us in the first place to escape this kind of situation somewhere else."

The other managers sensed that Sawyer's fears might well materialize. "Perhaps," said the president, "it's time to step back and consider some of the challenges we face." He had hardly finished his sentence before Susan Willis, the vice president of Human Resources, had motioned for the floor.

"This is crucial," said Willis. "Our people have some problems with the sales managers that I'd like to get onto the table." Willis then talked about the strained relationship between Human Resources and Sales. The sales managers, she said, especially resisted any call to invest their time in training and developing new salespeople. Why, she asked Sawyer, were they so reluctant?

"Well, we grew our sales organization by attracting the most aggressive people, the kind of people who spend all their time out in the field," said Sawyer. "They don't want to mentor any new hires. They thrive on closing a sale. That's not just where they get their kicks, it's where they make their money. Thanks to our strong incentives, the sales managers with high quotas are among the best-paid people at Index. There are no comparable incentives for helping newcomers; our organization is a lot stronger at rewarding individual accomplishment."

Then Sawyer added that the new strategic plan would simply reinforce this problem. "You must keep in mind that our whole sales organization is geared to meet aggressive targets," he said. "Give them a tougher target, and they'll respond by selling harder. I'll have a very tough time getting them to think about taking time in developing new hires. I understand Susan's problems. I have the same problems."

The microworld had brought to the surface a set of frustrations which had been brewing for some time. Moreover, it focused those frustrations on critical changes which needed to occur if the organization hoped to sustain past success. Most important, the declining sales productivity had failed to galvanize action to date, because it *had not yet taken place in the real world*. The microworld gave them a unique window on the future.

As their strategy retreat continued, the management team saw the core issue as either lowering their growth targets or transforming their sales organization. They concluded that the growth target was realizable *if* new salespeople could be trained much more quickly. This presented a significant challenge, because it meant that veteran salespeople would need to be more committed to mentoring inexperienced colleagues. There would need to be new rewards for sales

managers to develop their staffs. More support to help senior salespeople in mentoring and training would be needed. And they'd need to look more carefully for new hires who wanted to work in a collaborative team environment, where people helped one another become more effective. The changes were significant but achievable.

One tool for change would be another microworld—this one designed for sales managers, in which they could learn to balance, week by week, their time allocation between direct sales efforts, recruitment, training, and management. The salespeople could then discover the long-term benefits of allocating time to personnel development rather than to direct sales efforts.

Predictions such as those achieved at Index are different from normal business forecasts. As former Shell planner Pierre Wack observed: "Suppose heavy monsoon rains hit the upper part of the Ganges River basin. With little doubt you know that something extraordinary will happen within two days at Rishikesh at the foothills of the Himalayas; in Allahabad, three or four days later; and at Benares, two days after that."⁴ This is a prediction, not a forecast. It is something you can say with confidence about the future, because it depends not on projecting historical data into the future, but on understanding the dynamics of an underlying system. By analogy, some of the most interesting learnings that come out of microworlds come from discovering implications for the future, when decisions play out in what had been unrecognized organizational systems.

M i c r o w o r l d 2

SEEING HIDDEN STRATEGIC OPPORTUNITIES: HOW OUR BELIEFS INFLUENCE OUR CUSTOMERS' PREFERENCES

Some of the most important microworlds help teams mired in conflicting views of complex issues. Here, microworlds can be crucial in surfacing different assumptions and discovering how they can be interrelated in a larger understanding. Often, our linear language and defensive ways of presenting our thinking lead to perceiving false dichotomies and irreconcilable differences. When in fact, as did the proverbial "blind men," different managers with different types of business experience are merely seeing "different parts of the elephant." Sometimes, the microworld allows them to "see the elephant" for the first time.

Bill Seaver and John Henry are president and VP for marketing, respectively, of the highly successful Meadowlands shelving company.⁵ (As in the first story, some of the specifics here have been changed, but this is a true story.) Seaver and Henry had come to a basic impasse in the way they saw their customers and their market. Seaver believed that the key to success in the marketplace lay in having good products priced competitively. Henry agreed but also felt that service quality could play a big part in whether or not customers chose Meadowlands. He believed that the company should invest in upgrading its service through training Meadowlands dealers in performing a wide range of services from better account management to office design and troubleshooting for all manner of problems that Meadowlands customers might encounter. Seaver thought these were good ideas but would not support spending significantly more on dealer support than they were already because he was convinced that they would not have significant impact on Meadowlands' sales. "People expect decent service in our business," he said. "They will not pay extra for it."

Seaver appeared to have plenty of evidence on his side. For one, salespeople continually returned to the home office with stories of how difficult it was to make sales unless they could increase discounts. "Our competitors are discounting like mad and we can only hold our own if we match or better them," was the typical refrain. When the officers talked to customers, Henry had to admit, customers rarely asked for better or more diverse types of service. Even when Henry would pursue the point more forcefully, customers would usually respond, "That sounds nice but what would really make a difference to us would be another 5 percent off on the big order we've been discussing with your sales reps." He had to admit that he was the only one on the top team who took the service idea very seriously, and even he had to wonder sometimes.

Still, Henry held to his belief that there must be a way to gain competitive advantage through better service. Unable to resolve their differences, the two agreed to try experimenting with alternative strategies in a microworld the team designed on the basis of assumptions that they did share in common—the distinction between major purchases (e.g., when customers build a new facility) and minor purchases (e.g., replacing old shelving in an existing space), how long customers waited between major purchases, the value attached by customers to quality of design and manufacture, the effect of price on purchases, and the volume of current spending on dealer support. In the microworld, Seaver and Henry were joined

by two other members of the Meadowlands management team: Jim Cortland and Tony Jaynes, the VPs of sales and distribution, respectively.

The four men split into two pairs of partners. Seaver and Henry teamed up as corporate management, deciding, jointly, how much to invest to help Meadowlands' local dealers build the infrastructure to provide customer service. Cortland and Jaynes became the Meadowlands sales department, deciding whether and how much to discount prices each quarter in order to reach sales targets. As in real life, these two decisions were made separately. There was, however, a common goal: the highest possible profits for the firm, over a five-year time span.

At the outset of the simulation, a temporary recession caused an early decline in new orders. Cortland and Jaynes, hoping to maintain market share, responded by increasing the discount percentage. Market share held relatively steady but there was a decline in profit margins, which meant that Seaver and Henry had to reduce their dealer support investment. Through their combined efforts market share held steady and margins declined only slightly over the first year.

Unfortunately, the quiet was short-lived. Over the next two years, Cortland and Jaynes found it necessary to gradually but steadily increase discounts. To compensate for the ever-declining profits, Seaver and Henry gave less and less support to dealers. By the end of three years, price discounts had risen 25 percent and margins had fallen 20 percent relative to the start. Although market share had been preserved, the team members felt little satisfaction with their business performance.

In the discussion that followed, Cortland and Jaynes said that the simulation confirmed their assumption that competitive pricing is critical. "As we kept going," said Cortland, "it seemed to me that customers wanted even *more* discounts than they did at the outset. When we tried to hold discounts fixed that last year, volume dropped dramatically"—far more rapidly, he said, than it had when they fixed discounts early in the game. Seaver said that the experiment had certainly done nothing to change his mind that pricing was much more critical than service; he and Henry had found that short-term boosts in dealer support appeared to have little impact on customer orders, while cutting dealer support had little apparent adverse effect on demand. But the overall decline in profitability disturbed him, especially since it matched what actually had been happening in Meadowlands' industry in recent years.

Bill Henry was quiet, apparently deep in thought. Finally, he suggested that they try another experiment. "Why don't we see what happens if, rather than boosting discounts, we increase dealer support and maintain prices. We've got nothing to lose. It's only a game." The others didn't see the point, but they didn't see any reason to refuse, either.

At first, their fears were realized. Customer orders fell off and profits were depressed, both by the reduction in revenues and by increases in dealer support. By the end of the second year, volume was still down five percent and margins were down 12 percent. Cortland and Jaynes asked if they really had to stay with the "no discounting" policy. Henry pointed out that orders were no longer falling, and that they should be patient. In the third year, a turn around began. Volume started increasing, as did margins. They kept playing. By the fifth year, volume and margins were both well above their initial levels. The team members were surprised and a little incredulous.

When they examined more closely what had happened in the two simulations, the management team discovered a reinforcing process built into the structure of the model. The process tended to reinforce the starting assumptions. In the first simulation, their lower price led to lower profits, which in turn led to less investment and lower service quality. This produced disgruntled customers, who in turn clamored for more price cuts. Late-in-the-game efforts to attract them with better service quality lacked credibility, because they had experienced poor service for so long. This put even further pressure on the company to lower prices, which started the cycle all over again.

Conversely, in the second simulation, the vicious spiral became a virtuous spiral. Following Bill Henry's assumption that service mattered to customers, they invested in dealer support, and service quality gradually improved. This made no difference in the short run because customers have to experience improved service before they take it seriously. The benefits of investing in service took several years to harvest because the repurchasing delay in the shelving industry is two to four years. That repurchase delay had never been seen as an important factor before.

Yet, it turned out to be critical to seeing that *both* Henry and Seaver were right. Seaver was right when he maintained that service doesn't matter as much as price. This is true in the short run, especially given that none of Meadowlands' competitors offer any but the most perfunctory services (such as sorting out misshipments) and

these are provided halfheartedly. Consequently, customers don't expect service and don't ask for it. If a manufacturer offers to provide a higher standard of service, customers, understandably, respond skeptically. On the other hand, Henry was also right. Potentially, according to the model used in the microworld, service could be a competitive weapon.⁶ The key lay in understanding that customers first had to experience the benefits of better service before they would value service. This meant that any service-oriented strategy had to be a long-term strategy.

Moreover, the process of managing in the microworld had revealed some fascinating patterns in how the team and other Meadowlands managers interacted. In the first play, before they had adopted Henry's alternative strategy, the two teams of decision makers had quickly formed into tight units and set about making decisions in ways that, in retrospect, seemed all too familiar at Meadowlands. The corporate people (Seaver and Henry) operated in a separate world from the local salespeople (Cortland and Jaynes). The two teams started strategizing and acting almost as if they were each other's adversaries. "We'd be making money if it weren't for you"; "You guys are giving away the store!" said Seaver and Henry, respectively, as Cortland and Jaynes kept increasing discounts to hold sales volume (which of course is how Meadowlands' sales force is measured). After a brief exchange in an effort to coordinate, Cortland said, "Let's do it the 'Meadowlands way'; you do it your way and we'll do it ours." A little later, Seaver cried out, "Leave it alone," as Cortland and Jaynes prepared to raise discounts one more time.

Afterward, the entire group read over transcripts of the actual exchange, which everyone found hilarious. As they chuckled, Henry offered the simple explanation, "This is why we sell shelving." Reflecting on the transcript, the team identified several themes which they felt often characterized how Meadowlands' management teams worked:

- Act as if your dimension of the system is the most important
- Hold others responsible for negative effects of the policies as I define negative
- Advocate your view, and do not inquire into your own or your partner's or other's reasoning

The microworld experiment at Meadowlands not only revealed an important strategic insight, but it had also begun to reveal, in a

nonthreatening way, the need for individual- and team-learning skills. The team realized that its ways of interacting kept them from resolving important issues such as those between Henry and Seaver. They would remain "blind men" so long as they perpetuated the "Meadowlands way."

M i c r o w o r l d 3

DISCOVERING UNTAPPED LEVERAGE: THE DRIFT TO LOW QUALITY IN SERVICE BUSINESSES

The microworlds described thus far were used in the context of one- and two-day management meetings to surface implicit assumptions and catalyze rethinking of important issues. Yet, these represent only glimpses of the "practice fields of the future," where management teams will return regularly to craft strategy, debate critical issues as they arise, and continually extend their business understanding and learning skills. The following case is drawn from a continuing research project with Hanover Insurance, intended to create a "learning laboratory" that will become an ongoing feature of managerial work at Hanover. This learning laboratory illustrates the type of in-depth inquiry and testing of ideas that is sorely missing from today's organizations, and which microworlds are uniquely qualified to enable.

The issues brought out in the Hanover learning lab are not just about insurance. Underlying the specifics of managing claims adjusting is a generic set of dynamics that recur in diverse service organizations, from banking to overnight delivery service, from hospitals and universities to hotels. In all of these settings, there are systemic forces that work against sustaining high quality. It is very easy to think you are doing a good job when, in fact, you aren't. It is easy to "manage by the numbers" and end up with chronic "undercapacity"—overworked employees and unsatisfied customers. It is extremely easy to be modestly profitable and completely miss opportunities for significant increases in quality and profitability. In other words, in all of these service businesses, it is easy to miss the leverage for real success.

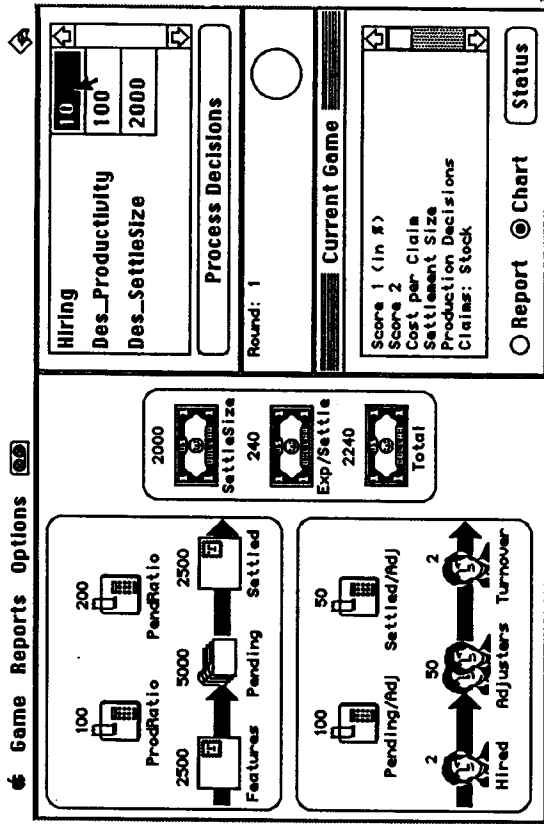
THE CLAIMS LEARNING LABORATORY

Managers come to the Claims Learning Laboratory to develop a more systemic understanding of cost and quality—subjects that have never been more crucial, both within the insurance industry and among its many customers. Escalating insurance costs are reaching crisis proportions. Physicians are giving up their practices in many states because they cannot afford malpractice insurance. The costs of worker's compensation and health insurance are becoming a competitive millstone to many U.S. businesses—for example, comprising upward of 20 percent of the total wage bill of Detroit automakers, as opposed to 8 percent for their Japanese counterparts. Many firms can no longer afford to insure themselves against many important risks—such as toxic waste—and are turning to forms of self-insurance. As the 1980s drew to an end, a nationwide consumer backlash against rising automobile insurance premiums was brewing, led by a referendum in California to cap premiums regardless of the impact on insurance company profits.

For their part, reacting to the rising tide of criticism, insurers have blamed everything from avaricious lawyers and outdated government regulations to lax public morality and the "litigious society." Against this array of "external forces" they have increased lobbying, bolstered legal staffs, and cut costs. Few, however, have looked seriously at how their own practices could be contributing to the crisis. Yet, as you will discover shortly, practices held in good stead are perfectly capable of causing rising costs and falling quality—without any help from outside forces.

Imagine, then, that you are the manager of a claims adjusting office, sitting with your partner, another claims office manager, in front of a personal computer screen displaying the status of the "claims game."⁷ You're in your second day of a three-day workshop back at the main office. Yesterday, you shared concerns and frustrations with fifteen other local managers—the difficulties in keeping good people (turnover rates among adjusters are typically 30 to 50 percent per year), the struggle to continually keep up with the workload, the dilemmas of improving quality while keeping a firm rein on costs. You also talked about your visions for your local office and for the company. Later in the day, you spent time learning about systems thinking, and you now have an intellectual grasp of the basics, and a sense of how it might affect your day-to-day work. But

today, when you sat down for the first time at the computer screen representing a typical adjusting office, you realized that you still didn't have a gut feel for it. The screen before you didn't make it seem any easier: it was like the cockpit of a jet airplane:



It didn't take long to become familiar with the layout—after all, all the jargon came right out of your daily office—which was fortunate, because an all-too-familiar crisis hit in month three. Without warning, incoming claims ("Features") jumped 20 percent. Your backlog of unsettled claims ("Pending") rose alarmingly. Your understaffed office was unable to keep pace and complaints from angry customers waiting to have their claims settled shot up. Fortunately, you and your partner, Rosabeth Harrold from the Schenectady office, had lived through many a similar real-life crisis and you reacted quickly. You raised production targets ("Desired Productivity")—in effect saying, "We'll ask each adjuster to settle 15 percent more cases per month for a while." You also hired a few more people. And you waited. Sure enough, by the eighth or ninth month, your policies had taken hold. Now, at the tenth month backlogs are back to normal even though new incoming claims remain high, customer complaints are down, and you and Rosabeth lean back in your chairs.

"I think we're in pretty good shape now," you say. "We weathered that crisis. Our problems are behind us."

At that moment, Bob Bergin, a senior claims manager and co-leader of the workshop, steps up behind you and looks over your shoulders. "Have both of you noticed," asks Bergin, "that your average settlement size is almost 10 percent higher than it was nine months ago?" (In other words, you're paying out almost \$2,500, on the average, per claim, whereas before you were paying out \$2,240.)

"Oh, sure," you respond confidently. "We saw that. But now that the crisis is over, our adjusters will be able to put in more time again investigating and negotiating claims. Quality will improve, and average settlement size will come back down."

In claims adjusting, high quality service, from the customers' viewpoint, does not merely mean higher payments on settlements. Even overpaid customers are often left discontented. Consider the aftermath of a car accident. The insurance adjuster asks, "What is the damage to your car?" The claimant says, "\$3,000." The adjuster says, "Fine, the check will be in the mail." The claimant hangs up the phone and immediately feels a stab of regret—he must have asked for too little. Otherwise, wouldn't the adjuster have bargained harder? A "quality case" is one settled fairly, in which the customer is treated promptly and considerately.

Bergin appears satisfied. He walks away; but when he checks back a few "months" later, the settlement size has fallen nary a bit. "We're not happy about it," you say, "but it doesn't seem like there's much we can do about it."

"Well," says Bergin, "let's backtrack and see what's causing these problems." He reaches over and calls forth a historical chart of your progress so far.

You discover, to your chagrin, that the settlement size rose sharply during the first several months and never fell significantly thereafter. You and Rosabeth had set your target settlement size ("Des SettleSize" on the game screen), at the original \$2,000 settlement size, but your office's performance had never achieved your standard. Not even for one month.

"I don't get it," you say. "Sure, for a while quality may have eroded a little. That always happens when there's a crisis—our people were under immense time pressure. But the time pressure eased off." They should have been able, then, to put that time back into their work—to improve quality and reduce overpayments. However, the quality never rebounded to its original level once the time pressure settled back to normal. But why should it have? Suddenly, you and Rosabeth realize that the time pressure was restored to

normal by lowering quality! As an inadvertent consequence of your requests for higher productivity, adjusters now spend, on average, 7 percent less time investigating and settling each claim than they had before. You had tried to mandate excellence by fiat—but the rest of your decisions promoted mediocrity. By pushing to get claims settled, your adjusters did the only thing they could—they took less time per claim. Once the crisis was past, the lower quality became the new norm—after all, newly hired adjusters (remember the 50 percent turnover) had never been in an office that operated by any other norm. In effect, you paid for lowering the backlog and reducing time pressure through less time per claim and higher average settlement size.

Why couldn't you see this? In part, because your attention was fixed elsewhere: on the backlog of cases. Those statistics, easy to measure and compare, are the most common measurement of success in claims management. They demonstrate efficiency; and, since each office's figures are known by other offices, there's plenty of competition to keep the "production measures" (backlogs, claims settled per month, how long customers wait to get claims settled) in line. You and Rosabeth could have said, "We'll hire and train more people, keep our quality as high as ever, and if we can do that, it doesn't matter if our backlog slips for a few months. We'll recoup it later and then some." But it literally did not occur to either of you to try it.

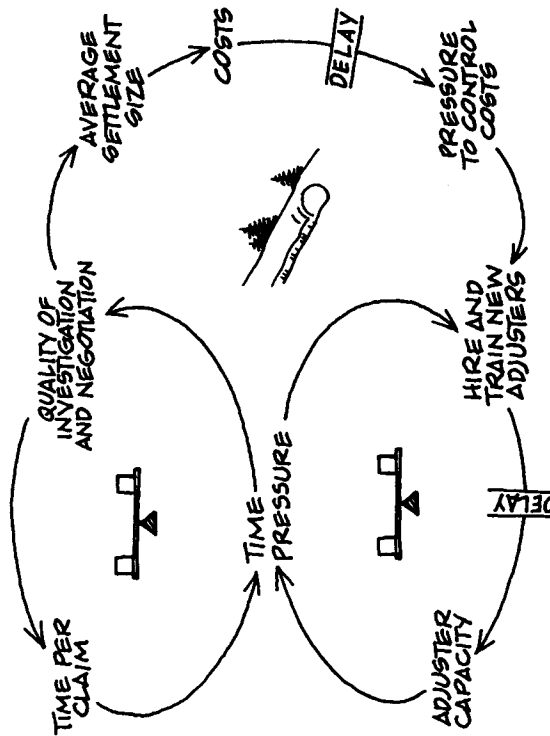
At this point, Bergin and the other coleader, Geraldine Prusko, reconvene the entire group around the table. It turns out that most all the managers experienced the same outcomes as Rosabeth and you. Having all gone through the microworld simulation, the group begins to talk about mediocre quality, a subject you would never have felt comfortable discussing before—if you all hadn't generated that very problem as a result of your own decision making in the game.

Some of the managers talk about their tight budget pressures, how that makes them reluctant to hire and train as many new adjusters as they'd like. Suddenly, there is a wave of realization through the room: *If it weren't for all those overpriced claims settlements, we'd all have more money to build our departments to what they really need to be!*

At this point, Rosabeth says, "Given what we learned yesterday, it feels to me like there's a shifting the burden' structure operating. I'm not sure I can draw it, but look at the symptoms. We experience

stress, in the form of time pressure, more work to do than we can get done. The 'fundamental solution' is to build adjuster capacity. But we 'cover up' the stress by telling our adjusters to work harder, to which they respond by lowering quality, getting the claims settled, and the stress goes away."

One of the other managers picks up on her thread of thinking. "But settlement size goes up," he says, "which we either ignore or attribute to something else—like factors truly out of control, such as hurricanes or bad winters. The higher settlement size means higher total costs, and more pressures to control costs—which means controlling staff costs, leading to less adjusting capacity and eventually to more crises, more time pressure, and more decline in quality." After some discussion, the group puts together the following shifting the burden diagram summarizing their insights:



You're starting to realize that the problem goes beyond the policies of any one company; it stems from the cultural biases of an entire industry that has chronic undercapacity and doesn't know it. "In my thirty years in the business," Bergin tells the group, "I have seen a steady decline in the pay and status of insurance adjusting. Once it was a respected profession. Today, most adjusters are young college graduates with no aspirations to a career in adjusting. Our management practices both react to and reinforce this attitude."

No wonder it's so difficult to keep experienced adjusters, you

realize—and, of course, the more turnover, the harder it is to meet the already tough demands of that backlog.

"So what if we went back to the microworld," suggests Gerald Prusko, "and tried out some other possible strategies?"

Now the computer game comes into its own. Rosabeth says, "Let's see if we can improve quality. Since we made it worse last time, maybe we can reverse our actions and make it better." This seems like a worthwhile experiment, so you set a target for improvement of adjusting (you do this in the game much the same way it often done in a real claims office—by setting a lower target settlement size). "This will send a clear signal to our staff," you say, "that we mean business regarding quality."

The signal may be clear but, it turns out, the results are anything but what you hoped for. After fifteen months, settlement size is even worse than before (almost \$2,500) and things are quickly getting worse still. Chagrined, the two of you start to quit the simulation when Prusko stops by and asks, "I see you've tried to improve quality. Doesn't quite come out the way you expected. Have you figured out why?"

"It seems like the adjusters are ignoring our signal," you offer meekly, knowing that this doesn't really explain why the quality campaign backfired. But then you recall, "We tried something like this back in '86 in our region and it, too, backfired. After six months the adjusters were so exasperated, we gave up on the quality campaign."

"See if you two can figure out what is going wrong," says Prusko, "so you can explain it to the rest of us when we reconvene the entire group."

It takes about a half hour, but you and Rosabeth eventually piece together an interesting explanation. "Quality campaigns increase time pressure on already beleaguered adjusters," you tell the group. "This leads to several reinforcing spirals that get things out of control in a hurry." You show the group how time pressure, which started to go up almost immediately with the quality campaign, kept on rising.

"We're falling behind the 'power curve,'" you offer, using an old flying metaphor. "When adjusters start trying to do a better job in order to achieve lower settlement sizes," you say, "they fall behind in their overall volume of claims, and backlogs grow. Customers get angry. And, as we all know, angry customers are difficult customer. They call frequently to check on their claims. They complain. The

take up even more time. Less and less adjusters' time gets spent on adjusting, pushing them still further behind. We've all lived through this 'vicious spiral.'"

"And there's another vicious spiral," Rosabeth adds. "Once the pending backlog and time pressure get out of control, work stress goes through the roof. More adjusters leave and the people remaining have even more work, and even more time pressure—leading to even more turnover. That's why we all try so hard to control our pending backlogs. And it's why improving quality is so difficult."

MANAGING FOR QUALITY IN SERVICE BUSINESSES

Those difficulties are hardly unique to claims management, or even to the insurance business.⁸ In fact, the dynamics of managing quality and capacity do not differ fundamentally in a wide variety of service businesses.

Several years ago, after a presentation of the basic theory and a preliminary version of the claims management microworld to a group of visitors at MIT, an executive from the Internal Revenue Service came up to me and asked if I would consider making the same presentation in Washington. "Although insurance adjusting and tax auditing are very different professions," he said, "the system pressures toward undercapacity and mediocre quality you have described exist in spades at the IRS. I have felt for several years that we may have only a fraction of the tax investigators we should have to do a quality job and that the additional people would easily pay for themselves in additional tax revenues generated."

The simple fact is that most of our service businesses don't serve very well. Airlines which overbook as a matter of course, restaurants which provide no training to serving people, nurses who are too overworked to provide compassionate care, auto repair shops whose employees are rude and where you are overcharged—these are but a few of the regular service abuses which are so commonplace they go almost unnoticed. In "survey after survey," as Lynn Shostack wrote in the *Harvard Business Review*, "services top the list in terms of consumer dissatisfaction."⁹

Managing for quality in a service business is inherently challenging. First, service businesses do not produce a "thing" whose quality can be measured, weighed, and tested. Quality is determined in

individual transactions between "servers" and customers, occurring literally thousands of times each day in a large organization. Service quality is inherently subjective and personal. It depends upon rapport between server and customer. It depends on how happy the server is and on whether he or she experiences the job as satisfying. It depends on the customer's expectations being met, expectation that might be neither clear nor mutually appreciated by both server and customer.

Because service quality is intangible, there is a strong tendency to manage service businesses by focusing on what is most tangible such as numbers of customers served, costs of providing the service and revenues generated. But focusing on what's easily measured leads to "looking good without being good"—to having measurable performance indicators that are acceptable yet not providing quality service. Work gets done but at a steadily poorer standard of quality by servers who are increasingly overworked, underpaid, and underappreciated.

Entire industries are actually more vulnerable to this drift to mediocrity than individual firms. For one firm in a competitive industry eroding quality will be corrected relatively quickly through loss of customers. But if there is no other place for customers to turn, the feedback signal from the market may be weak or nonexistent. Moreover, expectations adjust to past experience. After a while, customers give up asking for better service. Firms set their standards by looking at each other. If quality erodes industry-wide, firms come to accept low standards without ever questioning them.

Oftentimes, the only way this "trance of mediocrity" gets broken is when a completely new firm enters the market—for example, a foreign competitor—who has not been a victim of the trance. This rude awakening came to many U.S. manufacturing firms in the 1970s and 1980s, when they suddenly discovered their levels of quality were noncompetitive in a global marketplace. U.S. service firms have been sheltered from foreign competition, but that is starting to change—not through the invasion of foreign imports but through foreign purchase of U.S. firms. Foreign owners eventually bring in foreign managers, who in turn transplant foreign management practices and standards.¹⁰ Increasing foreign competition in services promises to become one of the significant business trends of the 1990s.

Microworlds like that at Hanover offer a unique way to break out of the trance imposed by unquestioned industry standards. They do

so by helping managers develop a "theory" of business operations and the strategic implications of basic changes in operating policies. This theory is based on applying systems principles and tools like the archetypes to the particulars of a given business.

As the workshop continues, the claims managers begin to ponder some important managerial lessons. It is now clear that the backlog of unsettled "pending" claims can be extremely misleading. In particular, it *never* tells you whether or not your capacity is adequate. If there is more work to do than can be done at the current standard, servers can always adjust the time they spend with each customer. If they come under pressure, they simply do the job more quickly and often more poorly. *It is simply not possible to assess capacity separately from quality in a service business.* If we cannot assess quality reliably, we cannot assess capacity reliably. This is why so many service businesses have chronic undercapacity.

To put your new insights to a test, you and Rosabeth experiment with some further strategies. You learn that what is required is more than just hiring people. When you "throw more bodies at the problem," hiring large numbers of new adjusters, it produces only modest gains in quality; the newcomers quickly adopt the mediocre standards of the rest of the office. You must develop a balanced strategy of aggressive hires and steadily elevating quality standards. The result, over the long run, is steady improvement in quality and cost.

By the third day, most of the managers are learning that successful strategies depend on no single factor, but upon *coordination*. You hire and train people at a steady rate, you reduce staff turnover, you let backlog slip somewhat at first, and you strengthen the quality target steadily. You pay close attention to the intangibles of quality and adjuster effectiveness. This strategy takes some patience, but after five "years" of it, you're shocked by how lucrative your on-screen business has become. Even more interesting, it is still improving. Total costs (settlement costs plus expense costs) are still falling as your expanded, more experienced and skillful adjuster force continues to improve quality.

The claims game was not designed for forecasting; and only time will tell what you, and the other claims managers, are able to achieve "back at the ranch." But the learning lab has given you some fascinating insights into what might be possible. It has also shown some dangerous problems in conventional management practice, such as managing by the production measures. As Rosabeth puts it, "In my

career, I have developed some 'feel' for how managing the workflow, time pressure, adjuster stress and turnover, and quality of adjusting and fairness of settlements all interrelate over my years as a manager. But here we have been able to observe variables that are almost impossible to measure in real life—see interactions that are all but invisible to us in our offices." You leave with a richer picture of the interdependencies within which you live every day and a belief that there is more leverage for improvement in your own and other claims managers' policies than you ever dreamed possible."

MICROWORLDS AND ORGANIZATIONAL LEARNING

Today, we are at the very beginning of learning how microworlds can accelerate organizational learning. Below are some of the key issues that are being studied.

• *Integrating the microworld and the "real" world*

The unique power of microworlds lies in surfacing hidden assumptions, especially those lying behind key policies and strategies, discovering their inconsistency and incompleteness, and developing new, more systemic hypotheses for improving the real system. How can such learning lead to more carefully designed "real life" experiments to test insights gained in microworlds, and will these experiments, in turn, allow managers to design better microworlds?

• *Speeding up and slowing down time*

In microworlds, the pace of action can be slowed down or speeded up. Phenomena that stretch out over many years can be compressed to see more clearly the long-term consequences of decisions. We often also want to slow down the interactions among members of the team, so that they can see subtle ways in which they shut down inquiry or discourage testing of different views. Will repeated experiences in microworlds expand managers' perceptual "time window," making them both more perceptive of slow, gradual organizational and business changes and of very rapid interpersonal interactions and thought processes?

• *Compressing space*

In microworlds, managers can learn about consequences of actions that occur in distant parts of the system from where actions

are taken. Will this help them recognize such consequences in real life and make "the systemic choice"?

- *Isolation of variables*

In laboratories, scientists can eliminate intruding outside variables and carefully simplify the complexity of real processes. The real world of management offers no such control; but a micro-world is a controlled environment, in which experimenters can ask "What if?" questions about outside factors. Microworlds also let you bring in potential outside factors that have not yet taken place in reality—for example, "Suppose regulators forced us to put a ceiling on rates: what might happen to us?" Will microworlds help managers learn to disentangle complex interactions in real settings?

- *Experimental orientation*

Microworlds let teams experiment with new policies, strategies, and learning skills. Actions that cannot be reversed or taken back in real business can be redone countless times in the microworld. Over time, will microworld learning make management teams more open to consider and test wide ranges of hypotheses, and less likely to get "locked in" to particular ways of looking at problems?

- *Pauses for reflection*

Microworld experiments have revealed just how nonreflective most managers are. Despite the ready access to information and controlled experimentation in the computer environment, managers tend to jump from one strategy to another without ever stating clearly their assumptions and without ever analyzing why strategies produce disappointing results. Will learning to explicate assumptions and reflect on outcomes of experiments in microworlds inculcate habits that carry over to real life decision making?

- *Theory-based strategy*

The business practices of most firms are firmly "anchored" to standard industry practices. By contrast, systems thinking and microworlds offer a potentially new basis for assessing policy and strategy. They lead to "theories" of critical business dynamics which can then clarify the implications of alternative policies and strategies. Midway through the year-long research that resulted in the Claims Learning Laboratory, the claims vice president observed, "I am beginning to conclude that we have half the adjuster capacity we need to achieve high quality and minimize

total costs (settlement costs and staff costs). You have no idea what a crazy thing that is to say—we already have *higher* staff costs than most of our competitors. Without these models would be impossible to even seriously consider such an idea. Will continued development of microworlds lead to a new approach to strategy development, that is less vulnerable to accepting implicit mediocre industry standards?

- *Institutional memory*

"Learning builds on past knowledge and experience—that is, organizational memory," wrote Ray Stata, CEO of Analog Devices, in 1989 in the *Sloan Management Review*. "Organizational memory must depend on institutional mechanisms," rather than on individuals Stata says, or else you risk "losing hard-won lessons and experiences as people migrate from one job to another." Will continued research on microworlds and "generic structure" theories of business dynamics—such as the theory of quality-cost-capability interactions underlying the "claims game"—lead to a "library of microworlds"? And will such a library, when tailored to the needs of a particular firm, create a significant new form of organizational memory?

The microworlds of today are rough precursors of what microworlds of the future will be like. All the examples cited above would have been impossible only four or five years ago, before the current generation of personal computers with advanced graphics capabilities. The coming years will see dramatic advances in both the availability and capabilities of microworlds for managers.

Beyond just advances in technology, future microworlds will be more sophisticated in fostering the multiple learning disciplines. For example, imagine a computer simulation that actively fosters reflection by looking at your decisions and saying, "Do you realize the patterns of the decisions you have made?" Future microworlds for teams will allow managers to play out their real-world roles and understand more deeply how those roles interact. This will help management teams hone their systems thinking and team learning skills simultaneously, while also analyzing how individual decisions interact to create important problems. (The "beer game" from Chapter 3 and the Meadowlands case above are actually simple examples of such microworlds.)

In the long run, microworlds will, I believe, have dramatic effects on both people and organizations. The computer is not yet an artifact

of daily life. In the next generation it will be. To my eight-year-old son Nathan, the computer is not much more significant than his pencil. (His first was given as a present when he was four.) And he uses it just as readily. He will grow up seeing simulation as being just as commonplace as representation. As often as we ask "What is it?" he will ask "How do things work?" and "How might they work differently?" Representation is the tool for adaptation. Simulation is the tool for creating.

In the learning organization of the future, microworlds will be as common as business meetings are in today's organizations. And, just as business meetings reinforce today's focus on coping with present reality, microworlds will reinforce a focus on creating alternative future realities.

18

THE LEADER'S NEW WORK

WHAT DOES IT TAKE TO LEAD A LEARNING ORGANIZATION?

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

Learning organizations demand a new view of leadership. My colleague, organizational consultant Charles Kiefer, tells a story of working with a product development team whose members became committed to a shared vision of a dramatic new product, which they eventually brought to market in one third the normal time required. "Once the vision of the product and how they would develop it began to crystallize," says Kiefer, "the team began to work in an extraordinary way. The energy and enthusiasm were palpable. Each individual felt a genuine sense of responsibility for how the team as a