Learning and Knowledge

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The new competitive battlefield is knowledge, and the leader's weapons are concepts and insights. To succeed, leaders need to be life-long learners who skillfully and continually encourage their people to learn. Competitor's attacks start with ideas, so effective leaders know that to forge ahead they must constantly stimulate the learning and knowledge that will lead to tomorrow's superior products and services. Effective leaders nurture and manage intellectual capital because in the end that is what determines the quality of the organization's physical and financial capital. Without creative insights and knowledge skills, as GM and IBM discovered during the 1980s, even the best equipment, supported by large pools of capital, will be defenseless against wise, nimble competitors.

Learning and knowledge are critical assets that concern effective leaders, and they are even starting to affect accounting practices. A proxy for the value of learning and knowledge occasionally appears on a balance sheet under the euphemism "goodwill," an ambiguous, catch-all account for the premium a buyer pays for the "going-business" value of a company in excess of its book value. Accounting is beginning to sense that ignoring an organization's learning and knowledge omits a serious asset—its intellectual capital. Accounting societies have convened task forces to study the problem: "The components of cost in a product today are largely R&D, intellectual assets, and services. The old accounting system which tells us cost of mater-

ial and labor, isn't applicable."[1] Some day, accountants may agree on how to value intellectual capital, but, in the meantime leaders need to manage learning and use intellectual capital now.

This chapter looks at the leader's new role—helping people to learn by getting the organization into a learning groove. It then discusses the leader's critical function of framing the demand for knowledge, because the leader's demands largely determine what people will learn. Next, it examines the need for the leader to provide the special conditions that support learning—supporting creative deviance, mastering existing knowledge, protecting unstructured time, and encouraging new perspectives. Finally, it looks at the need for leaders to learn and renew their own knowledge if they are to avoid the knowledge obsolescence that undermines their organization.

THE LEARNING GROOVE

Effective leaders exercise people's intellectual muscles, continually stretching them to reach for new opportunities that require new knowledge. Leaders know that each increment of learning increases the organization's flexibility. Effective leaders guide the organization into a "learning groove," making adaptability second nature.

Banc One, a superregional bank, began in the late nineteenth century as City National Bank, an unpretentious local bank in Columbus, Ohio.[2] Around 1960 new leaders propelled the bank into a groove of spectacular learning and growth. The new leaders set out to make Banc One an adaptive, nimble Tiffany of retail banking. They hired the best people, delegated, innovated, and remade the bank into a learning organization. The first task was to learn about the bank's customers. John G. McCoy, the bank's president and later its CEO, created a new advertising department, directing its newly hired leader, John Fisher, who was not a banker, to find out what customers wanted. Fisher helped the bank's leaders translate customer knowledge into superior service and create a new image that grew deposits from $140 million to more than $400 million in less than a decade.

The next task was to learn about technology and internal operations. The bank's leaders set aside 3 percent of annual earnings to study the use of technology to improve customer service and bank efficiency. They introduced one of the earliest versions of the automated teller machine (ATM) in 1969, and by 1972 the bank was the first in the United States to have ATMs in every branch. Continuing to push learning, the bank's leaders were the first outside California to introduce credit cards, doing so in 1966. They used their knowledge to sell data processing services to other banks. By 1989 they were a major data service center, processing 3.2 million of their own cards and another 3.5 million for third parties.

Using what they had learned about technology and service, Banc One's leaders were ready to stretch again. In 1976 they took a path-breaking step that put them in the middle of the financial services revolution. The bank became the processor for Merrill Lynch's new Cash Management Account (CMA); customers could access their brokerage account funds directly by using a debit card or checks provided by Banc One. This pioneering alliance hastened a revolution in products and delivery that changed the boundaries of the U.S. financial services industry. The bank's leaders continued to push the learning frontier. They established an innovation group outside the bank's mainstream operations to work on new ideas such as toll-free twenty-four-hour telephone service, improved checking and deposit service at the bank's many affiliates, and home banking through personal computers and telephone.

The leaders transformed Banc One from a modest, single-state bank into a superregional bank. Their learning and adaptability were so effective that they successfully integrated more than forty acquisitions between 1969 and 1989. Regardless of its financial attractiveness, an acquisition was made only if Banc One felt that the new affiliate had high-quality, adaptive leaders. Banc One considered leader learning so vital that some acquisitions were made when the financials were not highly attractive but the leaders were. The leaders of each acquisition, with rare exception, were kept in place to manage and operate their units. Each acquisition was assigned a "mentor" bank of similar size and market; leaders of the mentor bank and its departments transferred their learning and knowledge by visiting the acquired bank several days a month, and leaders of the acquired bank in turn visited the mentor bank and other banks in the Banc One system. Banc One also installed its comprehensive information and performance measurement systems in each new affiliate so that the affiliate's leaders could compare their bank's performance to that of other banks in the system and learn from the high performers. Banc One's leaders were exceptionally successful in helping new affiliates learn and adapt; on average, they increased acquisitions' return on assets a remarkable 66 percent.

Starting with assets of less than $2.8 billion in 1979, Banc One's leaders successfully grew the bank to more than $26.5 billion by 1989. They increased net income at more than 18 percent compounded annually during those ten years. By 1989 the bank had 17,000 employees, fifty-six affiliate banks, and close to 600 offices. Banc One had the highest return on average assets of the country's fifty largest banks in 1988, making it by that measure an outstandingly profitable performer. The leaders had also endowed Banc One with a deep pool of leadership talent distributed throughout the entire bank. Banc One's leaders had moved the bank into a learning groove, making it one of the most productive and profitable banks in the country.

DEMAND GUIDES LEARNING

Effective leaders ask for knowledge that stimulates and guides learning; poor leaders ask for reports on stale facts and little more. Asking for knowledge is an essential part of the leader's new role, because the knowledge that leaders demand determines what people learn and discover. People may occasionally stumble on new knowledge by accident, but most learning is driven by what leaders request.

There are two theories about how new knowledge is discovered—serendipity and demand. The theory of serendipity says that new knowledge comes from intelligent insight into chance events; for example, Charles Goodyear discovered vulcanization after accidentally dropping rubber into a fire, and Alexander Fleming discovered penicillin after hearing his fellow researchers complain about an impurity that was destroying their bacterial samples. Demand theory, in contrast, says that new knowledge comes from a systematic search and analysis done in response to a specific demand for knowledge; for example, people learned how to design orbiting spacecraft, moonlanders, and supersonic aircraft because that's what their leaders demanded.

Serendipity was an attractive explanation when science was less advanced, education was limited, and there were few large organizations to support major research projects. Until the early 1900s, people usually worked in small companies or alone. They had little education, few resources, and limited capital. Knowledge was quite primitive, and much of it resulted from trial-and-error efforts that had little theoretical foundation, so when a person learned something new it seemed accidental. There will continue to be occasions when an individual working alone suddenly sees knowledge that has eluded others. In a complex knowledge society, however, demand theory more accurately describes reality. This means that the leader's demand for knowledge becomes the principle determinant of what people learn and discover.

Leaders face a difficult question: What new knowledge do they want? There is much they do not know. Given limited resources, what do they want to know? People find mainly the knowledge leaders demand, and little more, so the leader's decision regarding what knowledge to search for is critical. How leaders define a problem or an issue becomes the frame that determines what knowledge people will find. Effective leaders select and frame problems appropriately.

The leaders of AT&T, for example, demanded a system that would obviate a projected insatiable need for human operators as telephone traffic grew. AT&T foresaw the explosive growth of the information industry and the globalization of business. The leaders' demands resulted in a system of direct, touch-tone dialing, area codes, country codes, and switching centers that permitted callers to reach parties around the world without the need for a human intermediary. Without the knowledge that led to these developments, phone companies would have had to interview a million or more people a year to hire

enough operators for the projected growth in traffic. Even with more favorable assumptions, the interviewing, record keeping, and management of so many people would have been overwhelming. By properly framing their demand, AT&T leaders guided the learning that obtained the knowledge for a quantum jump in system capacity and efficiency. People found knowledge that eliminated the insatiable need for human operators because that's what AT&T's leaders asked for.

Poor leaders select and frame problems poorly. They demand tangential knowledge, knowledge that has lost its purpose. The leaders of Polaroid, for example, demanded a system for self-developing motion-picture film just as electronic camcorders were entering the market. Eventually Polaroid developed such a system, but it was obsolete before it left the laboratory. Leaders had misdirected learning. The company lost millions of dollars in this ill-fated venture, and its leaders, including the company's founder, were replaced. Polaroid's leaders had pursued a hobby, self-developing film, without regard for the desires of its customers and the actions of their competitors.

Effective leaders realize that they are responsible for what their organization learns. What leaders demand, and how they frame those demands, determines what people learn. Treating that responsibility casually can cost the organization its future.

CONDITIONS FOR LEARNING

When leaders pursue learning and search for knowledge, they lose the stability, order, and predictability they rely on in their daily work. Instead, they enter the amorphous, unpredictable world of insight and discovery. Learning—that is, creating, absorbing, and mastering new knowledge and skills—is a delicate, highly variable process that requires special conditions. To encourage learning and adaptivity, effective leaders initiate and support the following special conditions: creative deviance, mastery of existing knowledge, unstructured time, and new perspectives.

Creative Deviance

To create new knowledge, such as new products or ways of improving current performance, means to depart—often radically—from conventional knowledge. People have to sift through many half-formed concepts and irrelevant ideas before they find an occasional nugget of worthwhile knowledge. Ventures in imaginative thought depart from what is known and accepted, they must, if they are to be useful additions to what is known.

Effective leaders understand that the creative process differs from its output, the creative product. The process flourishes in a climate that encourages deviant ideas. They also understand that many ideas

will be generated but few will pass the test of rigorous critical analysis. Effective leaders are not perturbed by false starts. They are prepared for vigorous argument today in favor of concepts that may be discarded as worthless tomorrow. They do not expect the orderliness and predictability of routine operations.

3M and Creative Deviance

The inventors of the "Post-it," the notepaper that sticks to a page and peels off without tearing the page or the note, had the benefit of leaders who encouraged creative deviance. The Minnesota Mining and Manufacturing Corporation (3M), with sales of $14 billion in 1993, has introduced more than 60,000 new products and markets as many as 100 new products a year. The company's output spans a wide range of products, including pressure-sensitive tapes, adhesives, abrasives, electrical products, photographic supplies, building materials, medical and dental products, and office supplies.[3] The leaders at 3M support creative deviance throughout the company. Leaders encourage and sustain a powerful culture for creative thinking. At the center are product champions, or advocates for new ideas, some of whom are legendary heroes in 3M's history. They carry an imaginary banner—"ardore est quotidiam" (to be a zealot is normal). These champions are fanatically dedicated to ideas that most people would think are deviant and even crazy. The leaders of 3M understand that champions are monomaniacs in love with a concept, tenaciously persisting with understated grace, keeping a spark of interest alive for years, despite organizational indifference and resistance. They know what it means to be a champion, because practically every leader has been a champion. By now, it is second nature for leaders to accept, respect, and nurture creative deviance. Everyone one meets at 3M is a potential product champion. In this culture, not to challenge and stretch knowledge seems abnormal.

The company has a creative-deviance policy that allows scientists to use 15 percent of their time, almost one day a week, to pursue interesting personal projects outside their regular assignments. Leaders periodically review scientists' notebooks. Some leaders may be skeptical, but no one stops these projects or for that matter closely tracks adherence to the 15 percent rule. The leaders have built this unstructured time into their culture and feel that close monitoring will defeat its purpose of stimulating creative deviance.

Leaders expect 3M's fifty divisions to generate 30 percent of sales from products that did not exist five years ago. This leadership policy stimulates a hectic, almost inexhaustible demand for creative deviance in all divisions. Product champions roam freely through this huge, internal market. First, they present their idea to their bosses. If a boss does not support the ideas, then the champion can personally market it to other divisions in his or her group. If none are interested, the

champion can market the idea to the other divisions. If none accept it, then the champion can market to the New Business Ventures Division, which is home to the most far-out ideas.

What if nobody buys, including the New Ventures Division? In 3M culture it is almost a commandment that leaders shall not kill creative deviance. They may delay, divert, or decrease support for an idea, but they do not kill it outright. Leaders know that ideas wax and wane as they proceed through laboratory concept, product development, manufacturing, and marketing. When support for an idea ebbs, leaders believe that's when they discover who is really interested; that's when zealots carry the flag and mount the barricades. Neither leaders nor champions are dissuaded by reduced support or failure; they forge ahead, patiently developing and further refining their ideas.

The company's leaders have the marathon runner's long-term pacing and perspective. They do not exhaust themselves with quick dashes for success or withdraw from the race at the first obstacle. They expect that ideas may take ten to twenty years to go from concept to market success. Leaders expect deviants to fail, just as the leaders themselves did when they were champions. Deviants who stumble are not exiled; they continue to learn and persist with their idea. Leaders have patience, confident that one day 3M people will adequately understand the pieces of the puzzle—customer needs, product concept, design, manufacturing, and marketing—and will know how to assemble them into a successful product.

Leaders at 3M do not discard an idea when it seems to have a small potential market. Eliminating the small-market hurdle has made the company extraordinarily receptive to creative deviance. Leaders have found that they often cannot foresee the long-term potential of a market. They have learned that growth often depends on customers finding new uses for a product or asking about a need that can be met by a 3M innovation. Masking tape, for example, was invented at 3M in the 1930s when company salesmen who sold abrasives to the auto industry reported that auto manufacturers were having difficulty preventing paint from running on two-tone cars. A young technician, Richard Drew, a legend in the company, came up with the idea for masking tape. Initial demand for the tape was modest, but since that time the demand for masking tape has grown beyond the wildest predictions.

Leaders at 3M believe that anyone, not just scientists or product developers, can be a creative deviant. When Scotch Tape—clear tape with adhesive—was introduced, it was used to seal industrial packages. Sales were satisfactory but not extraordinary. Then a sales manager, John Borden, another legendary figure at 3M, devised a dispenser with a built-in cutting blade, and sales took off. The lesson: Anyone, anywhere, can be a creative deviant. Volunteerism is also essential to creative deviance, in the view of 3M's leaders. After an idea is accepted, leaders form a new venture team, composed only of volunteers. Leaders do not want halfhearted, reluctant rowers pulling on the oars when ideas hit rough seas.

Over a period of ten years the leadership culture supporting deviance worked its magic in the creation of the ubiquitous Post-it notes. It started when a 3M chemist, Spencer Silver, created a new adhesive polymer while fooling around with different mixtures containing a new monomer developed by Archer Daniels Midland. The new material was tacky but not "aggressively" adhesive. It was more cohesive than adhesive, so it stuck to itself better than to other substances. The historic goal at 3M was to create stronger, more durable adhesives; scientists routinely discarded weaker adhesives as useless. Silver, however, was entranced by his new, tacky adhesive, although it had no discernible application. He nursed it along for almost five years, visiting other divisions to describe the properties of his strange mixture. He had a solution in search of a problem.

Arthur Fry is one of many deviants who contributed to this new 3M legend. It all began quite innocently. Fry was constantly losing the strips of paper he inserted in his church hymnal to locate songs during choir practice. He made the unlikely creative leap of putting Silver's mild adhesive on the page locator strips. That was the take-off application. After several years of additional conceptualization, laboratory work, and product development, Fry and his team designed machines that could place the mild, tacky adhesive on flat sheets of paper. Designing the production equipment was a major exercise in creative deviance at 3M, where engineers were world-class experts in designing machines to affix strong, not weak, adhesives to rolls of material, rather than to flat sheets of paper.

Creative deviance was evident too in the marketing that saved the Post-it from an early burial. The note pads were test-marketed in four cities. The results were bad, and the product was on the verge of being dropped. Two 3M executives, Geoffrey Nicholson, division technical director, and Joseph Ramey, vice president of division marketing, who had been patrons of the project, could not believe the test results; they had seen people in 3M's offices get hooked on the little Post-it notes. Before the product was lost in a deluge of negative marketing reports, they decided to do their own test-marketing. They visited and spoke to end users in Richmond, Virginia, one of the test markets. They introduced themselves in offices and banks, handed out the little pads to secretaries, middle managers, and vice presidents, and watched the people try them. They saw the same immediate addiction they had seen at 3M as people began sticking them everywhere. Nicholson and Ramey had confirmed what they suspected all along: Talking about the pads and putting them on store shelves would not sell them. You had to give away samples so that people could use them.

The next step, known at 3M as the Boise Blitz, was a massive giveaway of samples in Boise, Idaho, to test the "sampling" theory.

The reorder rate was 90 percent, more than double the rate of any prior highly successful office product. Since then, Post-it sales have grown to an estimated $300 million a year, and another legend has entered 3M's culture. Leaders and product champions consistently encouraged creative deviance and learned how to use a quirky, tacky adhesive to paste hundreds of millions of dollars on 3M's annual earnings.

Mastery of Existing Knowledge

Competent leaders do not waste resources reinventing the wheel. Creating new knowledge builds on what is known, so effective leaders encourage their people to master existing knowledge.

Robert Oppenheimer, the atomic physicist who led the Manhattan Project, which harnessed the explosive power of atomic energy, often said that adding to knowledge in physics was not as difficult as most people thought. He said that first one must learn the language of the subject—the mathematics, the concepts, and the experiments, all of which were available knowledge. This might take time and dedication, but after it had been done, the process of adding to knowledge in physics, he said, was about the same as it was in any other field.

Although Oppenheimer, with characteristic modesty, understated his talents, his point still stands. Mastering existing knowledge is the foundation for advancing knowledge. Competent leaders encourage their people to know the content and the boundaries of existing knowledge—its theory, methods, technology, and findings—so that they can use it to reach beyond current limits.

There is a romantic belief that ignorant people, unencumbered by knowledge, make breakthroughs, stumbling through failed methods because they do not know any better. Occasionally, such people do indeed make breakthroughs. Breakthroughs are made more often, however, by persistent people who master existing knowledge and use what they know.

The computer disk drives that are now taken for granted as a commonplace product might not exist if it weren't for the knowledge mastered by a persistent renegade group of researchers at IBM and their leaders. At the time this project began, disk drives were little more than a concept and some primitive, inefficient models in a laboratory. Magnetic tape drives were a proven commercial product, much faster, more reliable, and with much greater storage capacity than any feasible disk drive.

Evaluators recommended discontinuing the disk drive project because they did not believe that the disk drive could be developed into a commercially viable product or that electromechanical read-write arms could be controlled with sufficient precision and speed to read and write data reliably. They believed that synchronizing the read-write arm

with data on a spinning disk posed insurmountable problems and that a disk of reasonable size could not store enough data to be useful. Senior managers concluded that the effort was futile, so they withdrew funding for the disk drive project.

The researchers, however, had mastered so much knowledge about disk drives that they were able to convince their local leaders to sequester funds and permit them to bootleg their research without senior management's knowledge. A few years later, the disk drive was introduced and became a highly successful product for IBM and for the industry. A senior executive, commenting on this episode several years later, said, "I hate to think of where we would be today if our controls were as good as we like to think they are."

Unstructured Time

Because insight, new ideas, and consensus building follow an irregular, disjointed path, effective leaders give their people unstructured time to pursue creative activity, freeing them from routine, repetitive activities that dull the senses.

This is not to say that a regular work schedule is not necessary. Quite the contrary. People who discover new knowledge follow a regular work schedule regardless of whether they feel creative. They work excessively long hours, however, when facing an intractable problem or teeming with ideas on the brink of a breakthrough. They cannot turn work off arbitrarily. Creative thoughts come in machine-gun bursts, at night, on weekends, regardless of whether people are in the office or at home. They pay a high price in terms of restless nights, family stress, anxiety, and high blood pressure and need time to recuperate and rearrange their thoughts after intense episodes that frequently turn out to be false starts.

Unstructured time is time in which structure—that is, goals, concepts, and methods—emerges as people explore and work. It is not time without work. Effective leaders guard unstructured time; it is their investment in learning and the creation of new knowledge. They do not neglect near-term, measurable output, but they do balance routine, programmed activities with unstructured time for themselves and their people. They periodically attend mind-stretching programs outside their organizations at which they discuss such things as Who are we? What is our business? What are our strengths and weaknesses? Where are we going? Who are our customers? How can we improve what we do? What would make working here more enjoyable? Effective leaders often put people in new, challenging situations. They rearrange tasks and tune individual schedules to fit a person's learning and creative rhythm. Poor leaders demand structure for all activities, and they get it so long as people repeat what they already know. But effective leaders push into the unknown,

using unstructured time to learn and grow. They know that what people learn in unstructured time today creates the structure for tomorrow's work.

New Perspectives

Effective leaders understand that when people view a situation from new perspectives, they learn and discover new knowledge. People from marketing, engineering, manufacturing, and finance, for example, see product design problems differently and create different solutions. Effective leaders expose people to different perspectives, encouraging them to generate and build on new insights.

Leaders introduced a new perspective when they asked, "How would I see this product if I had to repair or service it?" They learned that consumers wanted reliable, easy-to-repair products. Manufacturers began to build better quality products, and consumers voted in the marketplace, buying products that needed fewer repairs. For many years, however, the leaders of General Motors thumbed their noses at this perspective. Their policy was to find and correct defects after consumers brought the cars back to dealers and complained about breakdowns. GM leaders felt that it was more important to introduce new models on time. The complacency of this "king of the hill" perspective was finally challenged when Japanese manufacturers such as Toyota and Honda introduced high-quality cars that rarely needed repairs. Consumers flocked to purchase them, and GM, which at one time dominated the market, watched its market share drop from 55 percent to 35 percent. GM took multibillion-dollar write-offs, closed underutilized plants, and laid off hundreds of thousands of workers as it lost market share to its rivals. GM's leaders eventually heard the message, but whether they can master the customer's perspective and catch up to their competitors is still an open question.[4]

In a mass-consumption society with a growing population, competent leaders are beginning to introduce yet another perspective: "How would I see this product if I had to dispose of it?" Waste disposal has become a national problem, and manufacturers will increasingly be responsible for disposal of their products. In Germany, for example, the government and auto manufacturers have been collaborating since 1991 to phase in the reprocessing of junked vehicles. Consumers will return their discarded cars to the company that produced them. Volkswagen operates a plant that disassembles, shreds, and pulverizes a VW in two man-hours.[5] German auto company leaders, adapting to this new perspective, have started to design new cars with more recyclable parts and less nonusable waste. The lesson of this new perspective has spread, and British, French, and other European auto makers are beginning to design cars for better recycling, even before their governments force them to.

Tactics for New Perspectives

Effective leaders use various methods to encourage people to take unusual points of view. Leaders often ask people to imagine military, political, or biological analogies for business problems. The leaders of a small company competing against large rivals, for example, asked, "What would you see if you were a small military force? How would you deal with the situation?" The new perspective brought a flood of responses: attack their flank, use guerrilla tactics, avoid a head-on attack that could wipe you out, withdraw and build resources until you can mount a credible attack, attack at night, probe for weak spots, use propaganda to demoralize their supporters, build support with the population in your local area, and look for a breakthrough weapon. The leaders translated these responses into a strategy of opening stores in small areas not served by large competitors, much like the original strategy of Wal-Mart.

Leaders may ask people to view a problem from the perspective of an insect, a tree, a flower, or some other element of nature. Natural organisms have characteristics and behavior that provide new insights into problems. Leaders of one food-processing company with branded products that competed against many other brands asked, "What would you see if you were a bird or flower in a meadow? How would you differentiate yourself?" The ideas from this new perspective led to colorful, distinctive packaging and a new line of exotic, foreign-recipe frozen foods.

Leaders may ask people to imagine that they are the real object. A team working on a new surgical dressing, for example, was asked "if you were an open wound, what would you see? How would you feel? What would you want?" People said that as a wound they would want protection from trauma and bacteria, access to a healing atmosphere, and a soothing, easy-to-remove shield. This new perspective led to development of an aerated, nonstick dressing. Effective leaders systematically shift perspective because they see again and again that people find creative solutions to problems when they alter their points of view.[6] Poor leaders freeze in one perspective. They look at a situation in one way, get blocked, and cannot find their way out.

Heterogeneous Groups

People with different concepts of a problem spark new insights. Competent leaders form groups with heterogeneous members to encourage the exchange of ideas. They know that people who think differently provoke others to learn. Productive scientists, for example, regularly sample new perspectives by discussing their problems with experts in fields other than their own.

Leaders know that groups of people with diverse backgrounds can be troublesome when they lapse into jargon or focus on defending trivia. Heterogeneous groups are rewarding, however, because they

can turn conventional knowledge upside down so that people see what was previously hidden. Intellectually high-powered groups, brain trusts, think tanks, or policy councils, as they are variously called, are rich mines of learning and new knowledge.

KNOWLEDGE RENEWAL

Effective leaders need to renew their knowledge continually to avoid undermining key decisions and misleading their organization. Poor leaders lag in knowledge and greatly damage their organization. Leaders ultimately have the formal power to make decisions, but their understanding of knowledge and its implications affects the quality of their decisions. Poor leaders who do not continually renew their knowledge become personally obsolete and undermine their organization's competitive position They drift into knowledge obsolescence, not realizing how their power multiplies the destructive effects of their lagging knowledge.

The financial vice president of an electronics company had not kept up with new developments in financial theory and practice. He had hired several bright business school graduates with experience using mathematical models and computers for financial analysis. The vice president could not understand the knowledge these people attempted to use for the company's benefit. He resisted their changes in reporting and financial analysis, which would have substantially improved the firm's cash management and inventory polices as well as the quality of the firm's capital investment decisions. These methods were commonplace in competing organizations.

There was disappointment and high turnover among the new hires. The vice president's decision to ignore their sophisticated financial analysis led to excessive inventories and inappropriate pricing. He dismissed the analysts' risk analysis of several proposed marketing and manufacturing investments because he had difficulty understanding their logic and models. These investments later undermined the firm's profitability. In financial distress, the company was purchased by a larger organization. Leaders of the new parent company gradually assumed control of the finance area and began to see the serious problems caused by the financial vice president's knowledge obsolescence. He was eventually replaced and the department was reorganized. In this case a poor leader with substantial formal power had not renewed his knowledge. His firm was producing state-of-the-art electronics, but his financial knowledge obsolescence had kept the firm in the dark.

Renewal, Not Expertise

Leaders usually lag behind their people as specialized knowledge advances. If they do not, then they are probably settling for mediocre

subordinates or in some way inhibiting their growth. Effective leaders, however, continue their learning, keeping the knowledge gap between themselves and their people within workable bounds. They do not expect to be experts, but they continually acquire new knowledge and problem-solving skills in order to understand the advice they receive and to project its implications. They acquire knowledge to visualize risks and take timely steps to diminish them. Poor leaders in contrast lag in knowledge. They use their power to circumvent their need to learn and to avoid people whose knowledge they do not understand.

Knowledge Arrogance

Few things are as offensive as the complacent expert who "knows it all." Leaders face a new phenomenon—the arrogance of knowledge. Many specialists claim great certainty for their models and mathematical abstractions, but leaders must be rooted in the subtle complexity of the real world. Poor leaders misunderstand models, expecting one-to-one correspondence between the real world and the model. Specialists often contribute to this misunderstanding; many are more concerned with impressing each other with their mathematical sophistication and elegant theories than with communicating with leaders.

Effective leaders renew their knowledge to keep abreast of how theory points to practical action. They may be impatient with arrogant specialists and their theories, but they have learned to listen to them in order to ferret out answers and guides to action. Effective leaders understand that the conceptual gap between them and knowledge specialists strains their relationship. They often see knowledge workers as naïve and conceited, whereas specialists often see leaders as unsophisticated and self-protective. Each can obstruct and frustrate the other, and their relationship, although intended to infuse knowledge, can degenerate into unproductive skirmishes. Effective leaders prevent destructive escalation of this conflict by continually renewing their knowledge. They are not intimidated by the surface arrogance of knowledge workers. Competent leaders support the search for knowledge that may not have immediate application, knowing that it helps ensure that the firm will be prepared when its products are out of date and competition intensifies. They know that they have a right and an obligation to ask for explanations of assumptions and theories. They ask for pilot tests and demonstrations to help them judge when to use knowledge that they may not fully understand.

Leaders of a major bank formed an internal management science (MS) group to study the bank's management of its asset portfolio. At first, the MS group had difficulty communicating with the bank's leaders. Over a period of years, however, the bank's leaders guided the MS group into demonstrating the benefits of using its models to manage

the bank's portfolio. The bank's leaders gradually implemented the MS recommendations, significantly improving the bank's performance. Although not management scientists, the bank's leaders continually upgraded their knowledge through seminars and visits to other organizations. They came to understand, in general terms, how MS models were designed and tested, acquiring enough insight and confidence to support the MS group for years and continually proposing additional situations for its study. The leaders of the bank had productively managed a sophisticated MS group, learning how to apply MS knowledge to propel the bank to becoming one of the top ten performers in the industry.

Effective leaders expect to use their formal power even though their specialized knowledge may be limited. They explore their knowledge limitations and learn enough to understand what they need to know. Poor leaders, failing to renew their knowledge, succumb to knowledge arrogance and incur high costs. In recent years, a number of major organizations, such as Procter and Gamble and Hallmark, and localities such as Orange County, California, have lost millions of dollars through poor investments in financial derivatives. Some of them are suing their investment bankers, claiming that they were insufficiently informed of the risks. Here is a classic illustration of leaders whose lagging knowledge, real or feigned, exposed their organization to serious risks and who then blamed someone else for the costs of their knowledge obsolescence.

SUMMARY

The core of the leader's new role is to foster learning in an organization with distributed knowledge. Leaders help people learn by continually putting them in situations that stretch their knowledge and thinking. Their demands—that is, how well leaders select and frame problems and opportunities—largely determine what people will learn. Effective leaders can frame problems appropriately, as in AT&T's approach to solving its burgeoning need for operators, or poorly, as in Polaroid's futile foray into instant motion pictures.

The leader's function is shifting from getting things done by hierarchical direction to growing intellectual capital by insightful, supportive guidance. Leaders need to provide the conditions that foster learning if they are to build an adaptive organization. The first condition, creative deviance, requires that leaders have a tolerance for curiosity and differences. It also requires patience with zealots and a willingness to persist when success is not immediate. The second condition, mastery of existing knowledge, helps leaders avoid useless rediscovery and lets people know where the boundaries of knowledge are and where to push the envelope. The third condition is unstructured time, which frees people from repetitive routine and lets them learn and think creatively. The final condition, new perspectives, uses creative thinking techniques and heterogeneous groups to jog people out of fixed, single-minded views. New perspectives help people learn about consumer needs and product design and about how to make better competitive use of knowledge. Effective leaders also renew their knowledge, ensuring that they do not lag too far behind their people and obstruct progress or expose their organization to unnecessary risk. Leaders know that they need to learn if they are to keep up with the learning and growth of their people.

In the next chapter we look at an important change in the context of leadership. A new kind of stress is emerging that inhibits the learning and knowledge needed to compete; it is called knowledge stress. What are the sources of knowledge stress? How has the growing reliance on knowledge changed the character of the workforce and its attitudes toward leaders?