Innovation and Change

Chapter 7

STUDENT RESOURCES

ThomsonNOW On the Job and Biz Flix video applications, concept tutorial, and concept exercise

Xtra! Ten exhibit worksheets, author FAQs, quiz, Management News, and video clips from the chapter with exercises

Web (http://williams.swlearning.com) Quiz, PowerPoint slides, and glossary terms for this chapter

W.L. Gore Headquarters, Newark, Delaware.[1] Bill Gore started the W.L. Gore Company in his basement when he left DuPont to develop innovative uses for Teflon (polytetrafluoroethylene or PTFE), the then new nonstick plastic. The company's first products were wires and cables insulated in PTFE. Later, however, Gore discovered that stretching PTFE under the right conditions creates a plastic that does not absorb water and is incredibly strong, chemically inert, resistant to cold, heat, chemicals and flames, and low in friction. Today, W.L. Gore is best known for Gore-Tex, a waterproof, windproof, and temperature-resistant fabric that "breathes" and does not trap perspiration and body heat. Marketed as "Guaranteed to Keep You Dry," Gore-Tex is used not only for coats, gloves, and camping and hiking gear but also for protective outerwear worn by firefighters and military, emergency, and medical personnel.

Of course, developing Gore-Tex took years. Early versions leaked at the seams (for example, where the sleeves were attached) and dissolved

What Would You Do?

on contact with suntan lotions and bug spray. Gore's Stephen Shuster admits, "There were huge challenges." During the early stages, Shuster even wore Gore-Tex products into the shower to determine why the seams leaked. Today, Gore is still committed to quality: it hires University of Delaware students to wear Gore-Tex products in specially designed rain closets or while walking on a treadmill in a room cooled to freezing temperatures.

For two decades, Gore-Tex was a unique product. Today, however, a number of alternative fabrics, such as "Entrant GII" and "eVENT," have many of the same characteristics but cost only $6 to $8 per yard compared to $15 to $30 for Gore-Tex. In fact, Entrant works so well that it, and not Gore-Tex, is the official garment of the U.S. and Canadian ski teams. Not only is Gore-Tex more expensive, but customers who use Gore-Tex in their products think Gore's strict manufacturing requirements are overly restrictive. For example, as part of its quality control, Gore requires manufacturers that use Gore-Tex to submit their products for quality testing. Darcy Lee, who makes snowboarding clothing, says, "You're going

to critique whether my garment is good enough? I thought that was really arrogant." As a result of these factors, sales of Gore-Tex have dropped.

But with Gore-Tex accounting for 21 percent of W.L. Gore's $1.6 billion in revenues, the company has to find ways of offsetting Gore-Tex's declining revenues. Historically, Gore has increased revenues by developing innovative products. But how do you run a company so that it consistently (not just once or twice) develops innovative, market-leading products? Certainly, you can't manage the same way you would with a company that produces the same product over and over again. Founder Bill Gore has always said that companies operate best during a crisis because they throw out the old rules and act quickly to solve it. So, he reasons, why wait for a crisis? Based on his logic, what typical rules, policies, or structures should Gore break or throw out to encourage creativity and innovation? And, by the way, Gore is not interested in incremental innovation that makes products just a little better. The focus has always been on "unique and valuable" ideas that lead to "dramatic improvements" in product performance. So, beyond managing for innovation, how do you manage innovation to regularly produce dramatically different and better products? Finally, what role should company leaders play in encouraging innovation and creativity? Bill Gore left DuPont because its leaders ignored his innovative ideas for using Teflon—the same ideas that have made W.L. Gore a multibillion-dollar company. What role should leaders play in the company, and what role should leadership play in encouraging creativity and innovation? **If you were in charge at W.L. Gore, what would you do?**

organizational innovation
The successful implementation of creative ideas in organizations.

creativity
The production of novel and useful ideas.

organizational change
A difference in the form, quality, or condition of an organization over time.

We begin this chapter by reviewing the issues associated with organizational innovation the problem facing W.L. Gore. **Organizational innovation,** is the successful implementation of creative ideas in an organization.[2] **Creativity**, which is a form of organizational innovation, is the production of novel and useful ideas.[3] In the first part of this chapter, you will learn why innovation matters and how to manage innovation to create and sustain a competitive advantage.

In the second half of this chapter, you will learn about organizational change. **Organizational change** is a difference in the form, quality, or condition of an organization over time.[4] You will also learn about the risk of not changing and the ways in which companies can manage change.

Organizational Innovation

"When you're done, be sure to turn off the lights and lock the doors. We don't want anyone breaking into the tent." The tent? Because of their low cost and interesting architectural features, organizations are increasingly using tents like buildings. A church in Colorado Springs spent $1.6 million to erect a 20,000-square-foot tent with tiled bathrooms, a second floor mezzanine, and 32 aluminum arches for its chapel and youth facility. The facility has heavy vinyl walls and ceilings instead of canvas, huge metal frames instead of tent poles, windows and doors that lock instead of zippered openings, central heating and air-conditioning instead of campfires, and wood floors and carpeting instead of hard, uneven ground, leading architect Todd Dalland, who has designed tents for 30 years to ask, "At what point is it a tent? At what point is it a building?"[5] Nine years ago, Trump Hotel & Casino Resorts put up a two-story, 80,000-square-foot "hospitality and entertainment center" at its Buffington Harbor riverboat casino in Gary, Indiana. From the inside, viewing its crystal chandeliers, marble walls and floors, elevator, numerous restaurants, and high-tech water display, you wouldn't know you were in a tent.

Organizational innovation, is the successful implementation of creative ideas, like using tents for buildings, in an organization.[6]

After reading the next two sections on organizational innovation, you should be able to

1 explain why innovation matters to companies.

2 discuss the different methods that managers can use to effectively manage innovation in their organizations.

1 WHY INNOVATION MATTERS

When was the last time you used a record player to listen to music, tuned up your car, baked cookies from scratch, or manually changed the channel on your TV? Because of product innovations and advances in technology, it's hard to remember, isn't it? In fact, since compact discs began replacing vinyl record albums more than a decade ago, many of you may *never* have played a record album. Lots of people used to tune up their own cars because doing a tune-up was easy, quick, and cheap. Change the points, spark plugs, and distributor cap, and your car was good for another six months or 12,000 miles. Today, with advanced technology and computerized components, tuning up a car is far too complex for most. Hardly anybody makes cookies from scratch anymore, either. Millions of kids think that baking cookies means adding water to a powdered mix or getting premade cookie dough out of the refrigerator. As for manually changing the channels on your TV, you may have done that recently, but only because you couldn't find the remote.

We can only guess what changes technological innovations will bring in the next 20 years. Maybe we'll be listening to compact chips instead of compact discs. (Come to think of it, with iPods, we already do.) Maybe cars won't need tune-ups. Maybe we'll use the Internet to have cookies delivered hot to our homes like pizza. And maybe TVs will be voice activated, so it won't matter if you lose the remote (just don't lose your voice). Who knows? The only thing we do know about the next 20 years is that innovation will continue to change our lives. For a fuller appreciation of how technological innovation has changed our lives, see Exhibit 7.1 on technological innovations since 1900.

Exhibit 7.1
Technological Innovation since 1900

There's no better way to understand how technology has repeatedly and deeply changed modern life than to read a decade-by-decade list of innovations since 1900. The first time through the list, simply appreciate the amount of change that has occurred. The second time through, look at each invention and ask yourself two questions: What brand new business or industry was created by this innovation? And what old business or industry was made obsolete by this innovation?

1900–1910
- electric typewriter
- air conditioner
- airplane
- reinforced concrete skyscraper
- vacuum tube
- plastic
- chemotherapy
- electric washing machine

1911–1920
- artificial kidney
- mammography
- 35mm camera
- zipper
- sonar
- tank
- Band-Aid
- submachine gun

1921–1930
- self-winding watch
- TB vaccine
- frozen food
- commercial fax service
- talking movies
- black and white television
- penicillin
- jet engine
- supermarket

1931–1940
- defibrillator
- radar
- Kodachrome film
- helicopter
- nylon
- ballpoint pen
- first working computer
- fluorescent lighting
- color television

1941–1950
- aerosol can
- nuclear reactor
- atomic bomb
- first modern herbicide
- microwave oven
- bikini
- disposable diaper
- ENIAC computer
- mobile phone
- transistor
- credit card

1951–1960
- Salk's polio vaccine
- DNA's structure deciphered
- oral contraceptive
- solar power
- Tylenol
- Sputnik
- integrated circuit
- breast implants

1961–1970
- measles vaccine
- navigation satellite
- miniskirt
- video recorder
- soft contact lenses
- coronary bypass
- handheld calculator
- computer mouse
- Arpanet (prototype Internet)
- bar-code scanner
- lunar landing

1971–1980
- compact disc
- Pong (first computer game)
- word processor
- gene splicing
- Post-It note
- Ethernet (computer network)

- laser printer
- personal computer
- VHS video recording
- fiber optics
- linked ATMs
- magnetic resonance imaging

1981–1990
- MS-DOS
- space shuttle
- clone of IBM personal computer
- cell phone network
- computer virus
- human embryo transfer
- CD-ROM
- Windows software
- 3-D video game
- disposable contact lenses
- Doppler radar
- RU-486 (abortion pill)
- global positioning system by satellite
- stealth bomber
- World Wide Web

1991–2000
- baboon-human liver transplant
- taxol (cancer drug)
- mapping of the male chromosome
- Pentium processor
- Channel tunnel opens
- HIV protease inhibitor
- gene for obesity discovered
- Java (computer language)
- cloning of an adult mammal

2001–Today
- mapping of human genome
- first cloning of human embryo
- inexpensive global positioning tracking/mapping/guidance systems

Source: T. Gideonse, "Decade by Decade: A Rich Century of Better Mousetraps," *Newsweek Special Issue: The Power of Invention*, Winter 1997–1998, 12–15.

Let's begin our discussion of innovation by learning about: **1.1** **technology cycles,** and **1.2** **innovation streams.**

1.1 Technology Cycles

technology cycle

A cycle that begins with the "birth" of a new technology and ends when that technology reaches its limits and is replaced by a newer, substantially better technology.

In Chapter 3, you learned that *technology* is the knowledge, tools, and techniques used to transform inputs (raw materials, information, etc.) into outputs (products and services). A **technology cycle** begins with the "birth" of a new technology and ends when that technology reaches its limits and "dies" as it is replaced by a newer, substantially better technology.[7] For example, technology cycles occurred when air-conditioning supplanted fans, when Henry Ford's Model T replaced horse-drawn carriages, when planes replaced trains as a means of cross-country travel, when vaccines that prevented diseases replaced medicines designed to treat them, and when battery-powered wristwatches replaced mechanically powered, stem-wound wristwatches.

From Gutenberg's invention of the printing press in the 1400s to the rapid advance of the Internet, studies of hundreds of technological innovations have shown that nearly all technology cycles follow the typical **S-curve pattern of innovation** shown in Exhibit 7.2.[8] Early in a technology cycle, there is still much to learn, so progress is slow, as depicted by point A on the S-curve. The flat slope indicates that increased effort (i.e., money, research and development) brings only small improvements in technological performance. Intel's technology cycles have followed this pattern. Intel spends billions to develop new computer chips and to build new production facilities to produce them. Intel has found that the technology cycle for its integrated circuits is about three years. In each three-year cycle, Intel introduces a new chip, improves the chip by making it a little bit faster each year, and then replaces that chip at the end of the cycle with a brand new, different chip that is substantially faster than the old chip. At first, though, the billions Intel spends typically produce only small improvements in performance. For instance, as shown in Exhibit 7.3, Intel's first 60 megahertz (MHz) Pentium processors ran at a speed of 51 based on the iComp Index.[9] (The iComp Index is a benchmark test for measuring relative computer speed. For example, a computer with an iComp score of 200 is twice as fast as a computer with an iComp score of 100.) Yet, six months later, Intel's new 75 MHz Pentium was only slightly faster, with an iComp speed of 67.

S-curve pattern of innovation

A pattern of technological innovation characterized by slow initial progress, then rapid progress, and then slow progress again as a technology matures and reaches its limits.

Fortunately, as the new technology matures, researchers figure out how to get better performance from it. This is represented by point B of the S-curve in Exhibit 7.2. The steeper slope indicates that small amounts of effort will result in significant increases in performance. Again, Intel's technology cycles have followed this pattern. In fact, after six months to a year with a new chip design, Intel's engineering and production people typically figure out how to make the new chips much faster than they were initially. For example, as shown in Exhibit 7.3, Intel soon rolled out 100 MHz, 120 MHz, 133 MHz, 150 MHz, and 166 MHz Pentium chips that were 76 percent, 117 percent, 124 percent, 149 percent, and 178 percent faster than the original 60 MHz speed.

Exhibit 7.2
S-Curves and Technological Innovation

Source: R. N. Foster, *Innovation: The Attacker's Advantage* (New York: Summitt, 1986).

At point C, the flat slope again indicates that further efforts to develop this particular technology will result in only small increases in performance. More importantly, however, point C indicates that the performance limits of that particular technology are being reached. In other words, additional significant improvements in performance are highly unlikely. For example, Exhibit 7.3 shows that with iComp speeds of 127 and 142, Intel's 166 MHz and 200 MHz Pentiums were 2.49 and 2.78 times faster than its original 60 MHz Pentiums. Yet, despite these impressive gains in performance,

Exhibit 7.3

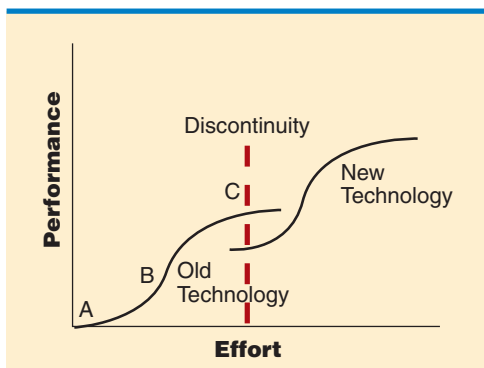iComp Index 2.0 Comparing the Relative Performance of Different Intel Microprocessors

Sources: "Intel iComp (Full List)," Ideas International, [Online] available at **http://www.ideasinternational.com/benchmark/intel/ icomp.html,** 16 May 2002; "Benchmark Resources: iComp Index3.0," Intel, [Online] available at **http://developer.intel.com/ procs/perf/icomp/index.htm,** 13 October 2001, "PC CPU Benchmarks, News, Prices and Reviews," *CPU Scorecard*, [Online] available at **http://www.cpuscorecard.com,** 17 March 2003.

Intel was unable to make its Pentium chips run any faster because the basic Pentium design had reached its limits.

After a technology has reached its limits at the top of the S-curve, significant improvements in performance usually come from radical new designs or new performance-enhancing materials. In Exhibit 7.2, that new technology is represented by the second S-curve. The changeover or discontinuity between the old and new technologies is represented by the dotted line. At first, the old and new technologies will likely coexist. Eventually, however, the new technology will replace the old technology. When that happens, the old technology cycle will be complete, and a new one will have started. The changeover between Intel's Pentium processors, the old technology, and its Pentium II processors, the new technology (these chips used significantly different technologies despite their similar names), took approximately one year. Exhibit 7.3 shows this changeover or discontinuity between the two technologies. With an iComp speed of 267, the first Pentium II (233 MHz) was 88 percent faster than the last and fastest 200 MHz Pentium processor. And because their design and performance were significantly different (and faster) from Pentium II chips, Intel's Pentium III chips represented the beginning of yet another S-curve technology cycle in integrated circuits. A 450 MHz Pentium III processor was 21 percent faster than a 450 MHz Pentium II chip. Over time, improving existing technology (tweaking the performance of the current technology cycle), combined with replacing old technology with new technology cycles (i.e., the Pentium 4 replacing the Pentium III replacing the Pentium II replacing the Pentium), has increased the speed of Pentium computer processors by a factor of 58 in just 17 years and all computer processors by a factor of 300!

Though the evolution of Intel's Pentium chips has been used to illustrate S-curves and technology cycles, it's important to note that technology cycles and technological innovation don't necessarily mean "high technology." Remember, *technology* is simply the knowledge, tools, and techniques used to transform inputs into outputs. So a technology cycle occurs whenever there are major advances or changes in the *knowledge*, *tools*, and *techniques* of a field or discipline. For example, one of the most important technology cycles in the history of civilization occurred in 1859, when 1,300 miles of central sewer line were constructed throughout London to carry human waste to the sea more than 11 miles away. This extensive sewer system replaced the widespread practice of dumping raw sewage directly into streets, where people walked through it and where it drained into public wells that supplied drinking water. Though the relationship wasn't known at the time, preventing waste runoff from contaminating water supplies stopped the spread of cholera that had killed millions of people for centuries in cities throughout the world.[10] Safe water supplies immediately translated into better health and longer life expectancies. Indeed, the water you drink today is safe thanks to this "technology" breakthrough. So, when you think about technology cycles, don't automatically think "high technology." Instead, broaden your perspective by considering advances or changes in knowledge, tools, and techniques.

1.2 Innovation Streams

In Chapter 6, you learned that organizations can create *competitive advantage* for themselves if they have a *distinctive competence* that allows them to make, do, or perform something better than their competitors. Furthermore, a competitive advantage becomes sustainable if other companies cannot duplicate the benefits obtained from that distinctive competence. Technological innovation, however, not only can enable competitors to duplicate the benefits obtained from a company's distinctive advantage but also can quickly turn a company's competitive advantage into a competitive disadvantage. For example, through the 1970s, National Cash Register (NCR) was the leading U.S. producer of, well, cash registers. Yet, in 1971, NCR announced that it was taking a $140 million write-off for millions of brand new cash registers. If the cash registers were brand new, why couldn't NCR sell them? NCR's cash registers were electromechanical and had been made obsolete by newer, more powerful, and cheaper electrical cash registers.[11] Technological innovation had turned NCR's competitive advantage into a competitive disadvantage. And, in the last decade, the same electrical cash registers that began NCR's downfall were themselves made obsolete by scanners that automatically scan prices and product information from bar codes into computerized cash registers.

As NCR's example shows, companies that want to sustain a competitive advantage must understand and protect themselves from the strategic threats of innovation. Over the long run, the best way for a company to do that is to create a stream of its own innovative ideas and products year after year. Consequently, we define **innovation streams** as patterns of innovation over time that can create sustainable competitive advantage.[12] Exhibit 7.4 shows a typical innovation consisting of a series of technology cycles. Recall that a technology cycle begins with a new technology and ends when that technology is replaced by a newer, substantially better technology. The innovation stream in Exhibit 7.4 shows three such technology cycles.

An innovation stream begins with a **technological discontinuity**, in which a scientific advance or a unique combination of existing technologies creates a significant breakthrough in performance or function. For example, minimally invasive techniques are revolutionizing brain surgery. When Douglas Baptist had a golf ball–sized tumor, the surgeon cut a tiny opening through his eyebrow, removed the tumor, and sewed up the opening, leaving practically no trace of

innovation streams
Patterns of innovation over time that can create sustainable competitive advantage.

technological discontinuity
A scientific advance or unique combination of existing technologies that creates a significant breakthrough in performance or function.
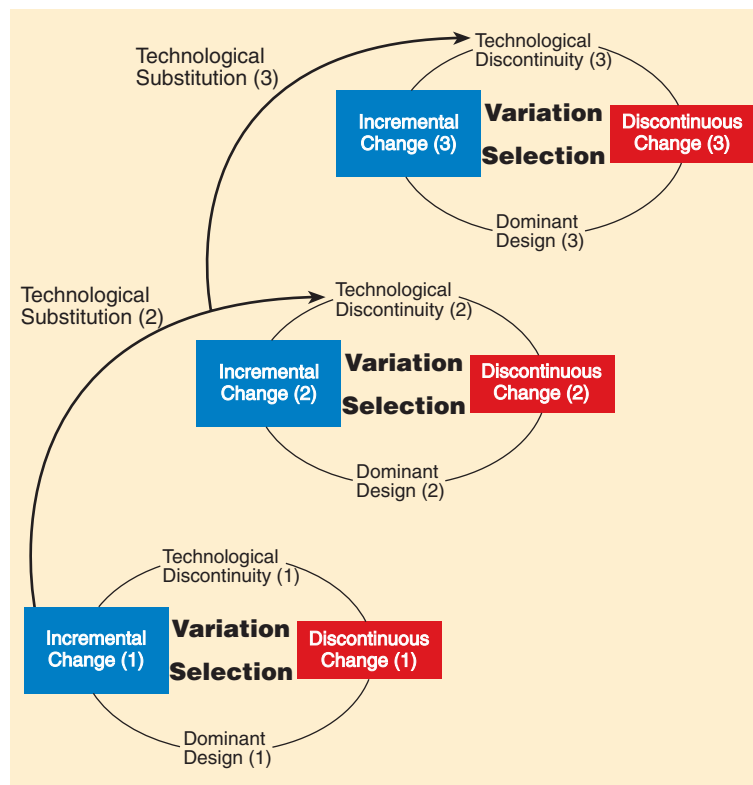
Exhibit 7.4
Innovation Streams: Technology Cycles over Time

Source: Adapted from M. L. Tushman, P. C. Anderson, & C. O'Reilly, "Technology Cycles, Innovation Streams, and Ambidextrous Organizations," in *Managing Strategic Innovation and Change*, ed. M. L. Tushman & P. Anderson (1997), 3–23. (c) 1997 by Oxford University Press, Inc. Used by permission of Oxford University Press, Inc.

the operation. Previously, his skull would have been sawed open. Dr. John Mangiardi, who did the procedure, said, "We used to have to shave off half the head. We don't do that anymore."[13] Today, surgeons use endoscopes (tiny cameras with lights attached to minisurgical tools) and MRI and CT scans (which create 3-D maps of the brain) to remove brain tumors with precision and little physical trauma. As a result, the cost and length of hospital stays associated with these surgeries have been cut in half.

Technological discontinuities are followed by a **discontinuous change**, which is characterized by technological substitution and design competition. **Technological substitution** occurs when customers purchase new technologies to replace older technologies. For example, in the first half of the 1800s, letters, messages, and news traveled slowly by boat, train, or horseback, such as the famous Pony Express, which, using a large number of fresh riders and fresh horses, could deliver mail from St. Joseph, Missouri, to Sacramento, California, in 10 days.[14] Between 1840 and 1860, however, many businesses began using the telegraph, which could transmit messages and news cross-country (or even around the world) in minutes rather than days, weeks, or months.[15] Indeed, telegraph companies were so successful that the Pony Express went out of business almost immediately after the completion of the transcontinental telegraph, which linked telegraph systems from coast to coast.

Discontinuous change is also characterized by **design competition**, in which the old technology and several different new technologies compete to establish a new technological standard or dominant design. Because of large investments in old technology, and because the new and old technologies are often incompatible with each other, companies and consumers are reluctant to switch to a different technology during design competition. Indeed, the telegraph was so widely used as a means of communication in the late 1800s that, at first, almost

discontinuous change
The phase of a technology cycle characterized by technological substitution and design competition.

technological substitution
The purchase of new technologies to replace older ones.

design competition
Competition between old and new technologies to establish a new technological standard or dominant design.

no one understood why telephones would be a better way to communicate. As Edwin Schlossberg explained in his book *Interactive Excellence:* "People could not imagine why they would want or need to talk immediately to someone who was across town or, even more absurdly, in another town. Although people could write letters to one another, and some could send telegraph messages, the idea of sending one's voice to another place and then instantly hearing another voice in return was simply not a model that existed in people's experience. They also did not think it was worth the money to accelerate sending or hearing a message."[16] In addition, during design competition, the older technology usually improves significantly in response to the competitive threat from the new technologies; this response also slows the changeover from older to newer technologies.

Discontinuous change is followed by the emergence of a **dominant design,** which becomes the new accepted market standard for technology.[17] Dominant designs emerge in several ways. One is critical mass, meaning that a particular technology can become the dominant design simply because most people use it. For example, even though Apple's AAC and Microsoft's WMA digital music file formats are arguably better (better sound, smaller file sizes), the MP3 digital file format became dominant because millions of people across the world first used Napster to exchange MP3 digital music files.[18] As a result, today, nearly all new digital file formats are compatible with the MP3 format. If they weren't, digital music lovers wouldn't use them.

Likewise, a design can become dominant if it solves a practical problem. For example, the QWERTY keyboard (the top left line of letters on a keyboard) became the dominant design for typewriters because it slowed typists who, by typing too fast, caused mechanical typewriter keys to jam. Ironically, though computers can easily be switched to the DVORAK keyboard layout, which doubles typing speed and cuts typing errors by half, QWERTY lives on as the standard keyboard. Thus, the best technology doesn't always become the dominant design.

Dominant designs can also emerge through independent standards bodies. The International Telecommunication Union (**http://www.itu.ch/**) is an independent organization that establishes standards for the communications industry. The ITU was founded in Paris in 1865 because European countries all had different telegraph systems that could not communicate with each other. Messages crossing borders had to be transcribed from one country's system before they could be coded and delivered on another. After three months of negotiations, 20 countries signed the International Telegraph Convention that standardized equipment and instructions, enabling telegraph messages to flow seamlessly from country to country. Today, as in 1865, various standards are proposed, discussed, negotiated, and changed until agreement is reached on a final set of standards that communication industries (i.e., Internet, telephony, satellites, radio, etc.) will follow worldwide. For example, within a few years, multibeam, or spot-beam, technology should double or triple the speed and capacity with which satellites deliver data streams to users on earth.[19] Likewise, China has developed a new standard for third-generation (3G) mobile-phone networks that is fast enough for graphics, video, and other high-speed Internet functions.[20] Eventually, the ITU will choose an official standard from several competing standards for both of those technologies.[21]

No matter how it happens, the emergence of a dominant design is a key event in an innovation stream. First, the emergence of a dominant design indicates that there are winners and losers. Technological innovation is both competence enhancing and competence destroying. Companies that bet on the now-dominant design usually prosper. In contrast, when companies bet on the wrong design or the old technology, they may experience **technological lockout,**

which occurs when a new dominant design (i.e., a significantly better technology) prevents a company from competitively selling its products or makes it difficult to do so.[22] In fact, more companies are likely to go out of business in a time of discontinuous change and changing standards than in an economic recession or slowdown. Second, the emergence of a dominant design signals a shift from design experimentation and competition to **incremental change**, a phase in which companies innovate by lowering the cost and improving the functioning and performance of the dominant design. For example, during a technology cycle, manufacturing efficiencies enable Intel to cut the cost of its chips by one-half to two-thirds, while doubling or tripling their speed. This focus on improving the dominant design continues until the next technological discontinuity occurs.

incremental change
The phase of a technology cycle in which companies innovate by lowering costs and improving the functioning and performance of the dominant technological design.

Review 1: Why Innovation Matters

Technology cycles typically follow an S-curve pattern of innovation. Early in the cycle, technological progress is slow, and improvements in technological performance are small. As a technology matures, however, performance improves quickly. Finally, as the limits of a technology are reached, only small improvements occur. At this point, significant improvements in performance must come from new technologies. The best way to protect a competitive advantage is to create a stream of innovative ideas and products. Innovation streams begin with technological discontinuities that create significant breakthroughs in performance or function. Technological discontinuities are followed by discontinuous change, in which customers purchase new technologies (technological substitution) and companies compete to establish the new dominant design (design competition). Dominant designs emerge because of critical mass, because they solve a practical problem, or because of the negotiations of independent standards bodies. Because technological innovation is both competence enhancing and competence destroying, companies that bet on the wrong design often struggle (technological lockout), while companies that bet on the eventual dominant design usually prosper. Emergence of a dominant design leads to a focus on incremental change, lowering costs and making small, but steady improvements in the dominant design. This focus continues until the next technological discontinuity occurs.

2 MANAGING INNOVATION

As the discussion of technology cycles and innovation streams showed, managers must be equally good at managing innovation in two very different circumstances. First, during discontinuous change, companies must find a way to anticipate and survive the technological changes that can suddenly transform industry leaders into losers and industry unknowns into powerhouses. Companies that can't manage innovation following technological discontinuities risk quick organizational decline and dissolution. Second, after a new dominant design emerges following discontinuous change, companies must manage the very different process of incremental improvement and innovation. Companies that can't manage incremental innovation slowly deteriorate as they fall farther behind industry leaders.

Unfortunately, what works well when managing innovation during discontinuous change doesn't work well when managing innovation during periods of incremental change (and vice versa).

Consequently, to successfully manage innovation streams, companies need to be good at three things: **2.1 managing sources of innovation, 2.2 managing innovation during discontinuous change,** and **2.3 managing innovation during incremental change.**

2.1 Managing Sources of Innovation

Innovation comes from great ideas. So a starting point for managing innovation is to manage the sources of innovation, that is, where new ideas come from. One place that new ideas originate is with brilliant inventors. For example, do you know who invented the telephone, the light bulb, a way to collect and store electricity, air-conditioning, radio, television, automobiles, the jet engine, computers, and the Internet? Respectively, these innovations were created by Alexander Graham Bell, Thomas Edison, Pieter van Musschenbroek, Willis Carrier, Guglielmo Marconi, John Baird and Philo T. Farnsworth, Gottlieb Daimler and Wilhelm Maybach, Sir Frank Whittle, Charles Babbage, and Vint Cerf and Robert Kahn. These innovators and their innovations forever changed the course of modern life. Only a few companies, however, have the likes of an Edison, Marconi, or Graham Bell working for them. Given that great thinkers and inventors are in short supply, what might companies do to ensure a steady flow of good ideas?

Well, when we say that innovation begins with great ideas, we're really saying that innovation begins with creativity. *Creativity* is the production of novel and useful ideas.[23] Although companies can't command employees to be creative ("You *will* be more creative!"), they can jump-start innovation by building **creative work environments**, in which workers perceive that creative thoughts and ideas are welcomed and valued. As Exhibit 7.5 shows, creative work environments have six components that encourage creativity: challenging work, organizational encouragement, supervisory encouragement, work group encouragement, freedom, and a lack of organizational impediments.[24]

Work is *challenging* when it requires effort, demands attention and focus, and is perceived as important to others in the organization. According to researcher Mihaly Csikszentmihalyi (pronounced ME-high-ee CHICK-sent-me-high-ee), challenging work promotes creativity because it creates a rewarding psychological experience known as "flow." **Flow** is a psychological state of effortlessness, in which you become completely absorbed in what you're doing and time seems to fly. When flow occurs, who you are and what you're doing become one. Csikszentmihalyi first encountered flow when studying artists: "What struck me by looking at artists at work was their tremendous focus on the work, this enormous involvement, this forgetting of time and body. It wasn't justified by expectation of rewards, like, 'Aha, I'm going to sell this painting.'"[25] Csikszentmihalyi has found that chess players, rock climbers, dancers, surgeons, and athletes regularly experience flow, too. A key part of creating flow experiences, and thus creative work environments, is to achieve a balance between skills and task challenge. When workers can do more than is

creative work environments
Workplace cultures in which workers perceive that new ideas are welcomed, valued, and encouraged.

flow
A psychological state of effortlessness, in which you become completely absorbed in what you're doing and time seems to pass quickly.

Exhibit 7.5
Components of Creative Work Environments
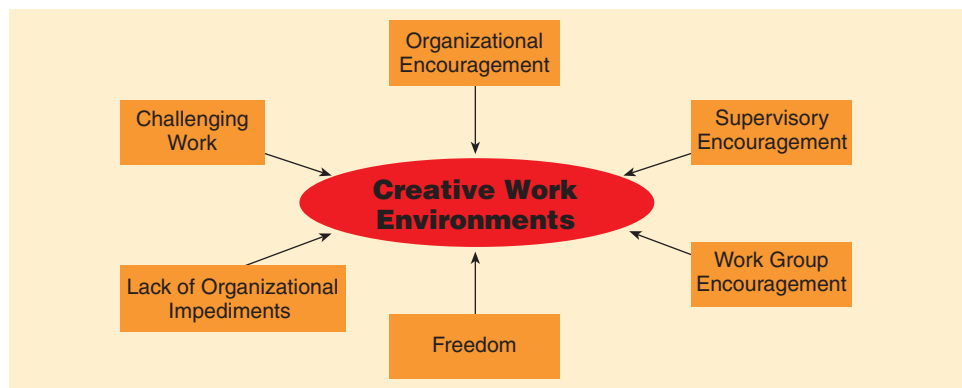
Sources: T. M. Amabile, R. Conti, H. Coon, J. Lazenby, & M. Herron, "Assessing the Work Environment for Creativity," *Academy of Management Journal* 39 (1996): 1154–1184.

required of them, they become bored, and when their skills aren't sufficient to accomplish a task, they become anxious. When skills and task challenge are balanced, however, flow and creativity can occur.

A creative work environment requires three kinds of encouragement: organizational, supervisory, and work group encouragement. *Organizational encouragement* of creativity occurs when management encourages risk taking and new ideas, supports and fairly evaluates new ideas, rewards and recognizes creativity, and encourages the sharing of new ideas throughout different parts of the company.

Supervisory encouragement of creativity occurs when supervisors provide clear goals, encourage open interaction with subordinates, and actively support development teams' work and ideas. *Work group encouragement* occurs when group members have diverse experience, education, and backgrounds and the group fosters mutual openness to ideas, positive, constructive challenge to ideas, and shared commitment to ideas. See Chapter 10 on managing teams, for further discussion of these ideas.

An example of organizational and supervisory encouragement can be found at Tractor Supply Company, which sells farm supplies, equipment, and tools. Tractor Supply encourages employees to take calculated risks, and it doesn't punish them if those risks don't work out. Chairman Joe Scarlett explained what happened after a company buyer took a gamble on a new line of "Iron Smith" power tools for its stores: "It was well put together as a program. But we imported the product and it was junk. We could have fired the buyer. But he did a wonderful job conceptually. We took our punch in the mouth and our financial losses. Today, that buyer is our vp of marketing. The only reason the line didn't work was because the outside people we relied on for a piece of the execution didn't work out. Most people who take risks are not doing crazy things. We just tell them to fix the problem. Nobody gets chewed out."[26]

Freedom means having autonomy over one's day-to-day work and a sense of ownership and control over one's ideas. Numerous studies have indicated that creative ideas thrive under conditions of freedom. On NBC's *Fear Factor* TV show, contestants compete for $50,000 by performing scary, disgusting stunts. During the show's first few years, NBC's only restriction on the creative team was that it avoid dangerous stunts that could be easily imitated by viewers. With little to hold it back, the creative team had contestants slurp a fishhead, cockroach, beetle "milk shake" and spit it into each other's mouths, eat roadkill (animals run over on the road), and dress like Santa Claus and deliver "gifts" to three attack dogs.[28] But now the network's censors are cracking down (i.e., less freedom) and rejecting even the mildest ideas (mild for *Fear Factor*). Executive producer Matt Kunitiz, who runs the creative team, says, "there are only so many things you can do with a worm."[29]

To foster creativity, companies may also have to remove some impediments to creativity from their work environments. Internal conflict and power struggles, rigid management structures, and a conservative bias toward the status quo can all discourage creativity. They create the perception that others in the organization will decide which ideas are acceptable and deserve support. One way in which many companies avoid a conservative, anti-innovation bias is to ask their customers for ideas. After all, if customers are enthusiastic about new ideas, it's harder to discount them. For example, Sportime International sold a million Hands-On basketballs with color-coded markings that show kids where to place their hands for better shooting accuracy. The idea was suggested by

DOING THE RIGHT THING

GIVE CREDIT, DON'T TAKE IT
You came up with a great idea and ran it by your boss, who loved it. Next thing you know, the office is buzzing about this "great new idea." But instead of giving you the credit, your boss took the credit and shamelessly sold the idea as his own. Not only is stealing others' ideas wrong, but nothing kills a creative work environment faster than not giving people credit for their ideas. So, if you're the boss, no matter who comes up with "the" idea, give them credit. Spread the recognition and acknowledgment around so that their coworkers and your boss's boss know about your employees' great ideas. Do the right thing. Give credit where it's due. You'll be rewarded with more great ideas.[27]

Companies can avoid internal impediments to creativity by looking outside the organization. Customers are an important source of innovation. Sportime International followed a customer idea and created Hands-On basketballs for children who need help learning how to shoot.

experiential approach to innovation
An approach to innovation that assumes a highly uncertain environment and uses intuition, flexible options, and hands-on experience to reduce uncertainty and accelerate learning and understanding.

design iteration
A cycle of repetition in which a company tests a prototype of a new product or service, improves on that design, and then builds and tests the improved prototype.

product prototype
A full-scale working model that is being tested for design, function, and reliability.

testing
Systematic comparison of different product designs or design iterations.

nine-year-old Chris Haas, who has made $35,000 in royalties thus far from the suggestion. Spinmaster started selling its Proshops line of simple, unassembled skateboards and bicycles that kids could put together themselves with interchangeable parts. The idea came from its "kids' advisory board." The unassembled Proshops products and bikes far outsell its already assembled products.[30]

2.2 Experiential Approach: Managing Innovation during Discontinuous Change

A study of 72 product-development projects (i.e., innovation) in 36 computer companies across the United States, Europe, and Asia found that companies that succeeded in periods of discontinuous change (characterized by technological substitution and design competition, as described earlier) typically followed an experiential approach to innovation.[31] The **experiential approach to innovation** assumes that innovation is occurring within a highly uncertain environment and that the key to fast product innovation is to use intuition, flexible options, and hands-on experience to reduce uncertainty and accelerate learning and understanding. As Exhibit 7.6, shows, the experiential approach to innovation has five aspects: design iterations, testing, milestones, multifunctional teams, and powerful leaders.[32]

An "iteration" is a repetition. So a **design iteration** is a cycle of repetition in which a company tests a prototype of a new product or service, improves on the design, and then builds and tests the improved product or service prototype. A **product prototype** is a full-scale working model that is being tested for design, function, and reliability. **Testing** is a systematic comparison of different product designs or design iterations. Companies that want to create a new dominant design following a technological discontinuity quickly build, test, improve, and retest a series of different product prototypes. When Avery Dennison Corporation decided to build a new label printer for offices, focus groups complained about paper cuts, the difficulty of peeling labels, the ends of labels sticking together, and labels that got dirty or wrinkled with handling. Office worker Heather Wilson said, "If all you had to do is just grab a label off and stick it on, it would save a lot of time."[33] Accordingly, Avery designed a prototype printer that prints and then partially peels each label. When Avery tested the prototype in offices, workers said that it was too heavy to move, its large electrical plug wouldn't fit a standard surge protector strip, and it was too loud. After numerous design iterations, Avery's Quick Peel Automatic Label Peeler is quiet, weighs just seven pounds, and can print 500 labels in just 30 minutes, compared to 54 minutes for earlier printers.

By trying a number of very different designs, or by making successive improvements and changes in the same design, frequent design iterations reduce uncertainty and improve understanding. Simply put, the more prototypes you build, the more likely you are to learn what works and what doesn't. Also, when designers and engineers build a number of prototypes, they are less likely to "fall in love" with a particular prototype. Instead, they'll be more concerned with improving the product or technology as much as they can. Testing speeds up and improves the innovation process, too. When two very different design prototypes are tested against each other, or the new design iteration is tested against the previous iteration, product design strengths and weaknesses quickly become apparent. Likewise, testing uncovers errors early in the design

	Experimental Approach to Innovation: Managing Innovation During Discontinuous Change	Compression Approach to Innovation: Managing Innovation During Incremental Change

Environment	Highly uncertain
	    discontinuous change - technological
	    substitution and design competition
		Certain
		    incremental change - established
		    technology (i.e., dominant design)

Goals	Speed Significant improvements in performance Establishment of new dominant design	Speed Lower costs Incremental improvements in performance of dominant design
Approach	Build something new, different, and substantially better	Compress time and steps needed to bring about small improvements
Steps	Design iterations Testing Milestones Multifunctional teams Powerful leaders	Planning Supplier involvement Shortening the time of individual steps Overlapping steps Multifunctional teams

Exhibit 7.6
Comparing the Experiential and Compression Approaches to Managing Innovation

process when they are easiest to correct. Finally, testing accelerates learning and understanding by forcing engineers and product designers to examine hard data about product performance. When there's hard evidence that prototypes are testing well, the confidence of the design team grows. Also, personal conflict between design team members is less likely when testing focuses on hard measurements and facts rather than personal hunches and preferences.

Milestones are formal project review points used to assess progress and performance. For example, a company that has put itself on a 12-month schedule to complete a project might schedule milestones at the 3-month, 6-month, and 9-month points on the schedule. By making people regularly assess what they're doing, how well they're performing, and whether they need to take corrective action, milestones provide structure to the general chaos that follows technological discontinuities. Milestones also shorten the innovation process by creating a sense of urgency that keeps everyone on task. For example, when Florida Power & Light was building its first nuclear power facility, the company's construction manager passed out 2,000 desk calendars to company employees, construction contractors, vendors, and suppliers to ensure that everyone involved in the project was aware of the construction time line. Contractors that regularly missed deadlines were replaced.[34] Finally, milestones are beneficial for innovation because meeting regular milestones builds momentum by giving people a sense of accomplishment.

milestones
Formal project review points used to assess progress and performance.

Multifunctional teams are work teams composed of people from different departments. Multifunctional teams accelerate learning and understanding by mixing and integrating technical, marketing, and manufacturing activities. By involving all key departments in development from the start, multifunctional teams speed innovation through early identification of new ideas or problems that would typically not have been generated or addressed until much later. Ford relied on multifunctional teams to design its hybrid sport utility vehicle (SUV) that runs on gas and battery power. The hybrid version of the Ford Escape is powerful enough to tow a boat, but still gets 36 miles per gallon. At Ford, researchers, who dream up and test ideas, and product engineers, who find ways to get them to work, usually work in separate buildings. But, to design the hybrid Escape, they worked side-by-side in cubicles for over three years. Team member Tom Gee said, "Before, it might have been a half mile apart, but even one building away is a barrier compared with what we have now. It makes a huge difference."[35] Working side-by-side was critical to figuring out how

multifunctional teams
Work teams composed of people from different departments.

to prevent the battery from being damaged by overcharging in cold weather. Ford's researchers and engineers solved the problem by designing sensors and software that monitor the energy sent to the battery (when the gas engine is being used) 50,000 times per second, making sure that the energy is sufficient to recharge the battery but not enough to damage it.

Powerful leaders provide the vision, discipline, and motivation to keep the innovation process focused, on time, and on target. Powerful leaders are able to get resources when they are needed, are typically more experienced, have high status in the company, and are held directly responsible for the products success or failure. On average, powerful leaders can get innovation-related projects done nine months faster than leaders with little power or influence. One such powerful leader is Phil Martens, head of Ford's product development. With a year to go and Ford's hybrid Escape months behind schedule, he told the team, "We are going to deliver on time. . . . Anything you need you'll get."[36] Martens said, "You could have heard a pin drop." But he followed this declaration by strongly supporting the team. Despite daily inquiries "from above," he promised no interruptions or interference from anyone—even top management. And, when the team members needed something, they got it without waiting. When language differences created problems with the Japanese company that made the hybrid's batteries, "a Ford battery expert fluent in Japanese was dispatched to Japan within 24 hours."[37] Martens said, "I allowed them to be entrepreneurial, and they doubled their productivity." Mary Ann Wright, the launch manager charged with making sure the project stayed on schedule, said, "The same people who had been coming into my office saying, 'I don't know how we're going to get there,' were saying within weeks and months, 'My God, we can get there.'"[38]

2.3 Compression Approach: Managing Innovation during Incremental Change

As Exhibit 7.6 shows, whereas the experiential approach is used to manage innovation in highly uncertain environments during periods of discontinuous change, the compression approach is used to manage innovation in more certain environments during periods of incremental change. And whereas the goals of the experiential approach are significant improvements in performance and the establishment of a *new* dominant design, the goals of the compression approach are lower costs and incremental improvements in the performance and function of the *existing* dominant design.

The general strategies in each approach are different, too. With the experiential approach, the general strategy is to build something new, different, and substantially better. Because there's so much uncertainty—no one knows which technology will become the market leader—companies adopt a winner-take-all approach by trying to create the market-leading, dominant design. With the compression approach, the general strategy is to compress the time and steps needed to bring about small, consistent improvements in performance and functionality. Because a dominant technology design already exists, the general strategy is to continue improving the existing technology as rapidly as possible.

compression approach to innovation
An approach to innovation that assumes that incremental innovation can be planned using a series of steps and that compressing those steps can speed innovation.

In short, a **compression approach to innovation** assumes that innovation is a predictable process, that incremental innovation can be planned using a series of steps, and that compressing the time it takes to complete those steps can speed up innovation. As Exhibit 7.6 shows, the compression approach to innovation has five aspects: planning, supplier involvement, shortening the time of individual steps, overlapping steps, and multifunctional teams.[39]

In Chapter 5, *planning* was defined as choosing a goal and a method or strategy to achieve that goal. When *planning for incremental innovation*, the goal is to squeeze or compress development time as much as possible, and the general strategy is to create a series of planned steps to accomplish that goal. Planning for incremental innovation helps avoid unnecessary steps and

enables developers to sequence steps in the right order to avoid wasted time and delays between steps. Planning also reduces misunderstandings and improves coordination.

Most planning for incremental innovation is based on the idea of generational change. **Generational change** occurs when incremental improvements are made to a dominant technological design such that the improved version of the technology is fully backward compatible with the older version.[40] Software is backward compatible if a new version of the software will work with files created by older versions. For example, the latest version of Microsoft Word will read and work with files saved in Microsoft Word formats that are more than 10 years old (e.g., Word 6 from 1995).

Because the compression approach assumes that innovation can follow a series of preplanned steps, one of the ways to shorten development time is *supplier involvement.* Delegating some of the preplanned steps in the innovation process to outside suppliers reduces the amount of work that internal development teams must do. Plus, suppliers provide an alternative source of ideas and expertise that can lead to better designs. When Bombardier Aerospace designed its new Continental business jet, it relied heavily on 30 suppliers to design and test new parts and share in the $500 million development cost. In today's jets, it is essential that the various electronic components, most of which are computer controlled, do not interfere with each other (this is why you're asked to turn off all electrical devices before takeoff and touchdown). Instead of handling this itself, Bombardier relied on supplier Rockwell Collins, which built an electronics integration testing unit to ensure that the electronic controls for the throttles, wings and rudders, radar, and other components were compatible.[41] In general, the earlier suppliers are involved, the quicker they catch and prevent future problems, such as unrealistic designs or mismatched product specifications.

Another way to shorten development time is simply to *shorten the time of individual steps* in the innovation process. A common way to do that is through computer-aided design (CAD). CAD speeds up the design process by allowing designers and engineers to make and test design changes using computer models rather than physically testing expensive prototypes. CAD also speeds innovation by making it easy to see how design changes affect engineering, purchasing, and production. Karenann Terrell, director of e-business strategy at DaimlerChrysler, explains how the company's CAD system, FastCar, works:

FastCar takes a virtual CAD/CAM design and teams it with all the other information that we already have on hand about the part or vehicle. So, no longer do we change a part and then ask: "How much do those new components cost? What are the quality implications?" As we make changes, all that information is integrated into the new designs. Think of the side of a sedan where the hood and fender come together . . . when we brought them together in a digital mockup, there was a bigger gap than we wanted. Using FastCar technology, we were able to work out the effects of a proposed design change before it was made. In this case, we notified the engineers of the fender and hood, as well as the supplier of a plastic attachment in the wheel well. That vendor said: "If you make that change, I need to cut a new tool, which will cost you lots of money. Why don't I just move my fastening point? Then you don't have a gap." So we didn't have to make a design change. In the old world, it would have been four or five weeks before we knew about the supplier's tool change."[42]

In a sequential design process, each step must be completed before the next step begins. But sometimes multiple development steps can be performed at the same time. *Overlapping steps* shorten the development process by reducing delays or waiting time between steps. By using overlapping rather than sequential steps, most car companies have reduced the time it takes to develop a new car from five years to three years. However, they still develop new models

sequentially. First, they design and build, say, a four-door sedan. Then, after perfecting the design and manufacture of the sedan, two or three years later they introduce the two-door coupe. A couple of years after that, they introduce the station wagon version of the same model. Toyota, however, takes the notion of overlapping steps even further by developing all three versions (four-door sedan, two-door coupe, and station wagon) simultaneously. By overlapping model development, Toyota has cut its total development time for all three models in half, enabling it to bring 18 new or redesigned cars to market in just two years. Its Picnic and Corolla Spacio models went into production just $14\frac{1}{2}$ months after designs were approved, well under the three years it normally takes to develop a new car.[43] In some cases, Toyota has squeezed development time even more, cutting the time between initial design and production to just 8 months.[44]

Review 2: Managing Innovation

To successfully manage innovation streams, companies must manage the sources of innovation and learn to manage innovation during both discontinuous and incremental change. Since innovation begins with creativity, companies can manage the sources of innovation by supporting a creative work environment in which creative thoughts and ideas are welcomed, valued, and encouraged. Creative work environments provide challenging work; offer organizational, supervisory, and work group encouragement; allow significant freedom; and remove organizational impediments to creativity.

Companies that succeed in periods of discontinuous change typically follow an experiential approach to innovation. The experiential approach assumes that intuition, flexible options, and hands-on experience can reduce uncertainty and accelerate learning and understanding. This approach involves frequent design iterations, frequent testing, regular milestones, creation of multifunctional teams, and use of powerful leaders to guide the innovation process.

A compression approach to innovation works best during periods of incremental change. This approach assumes that innovation can be planned using a series of steps and that compressing the time it takes to complete those steps can speed up innovation. The five aspects of the compression approach are planning (generational change), supplier involvement, shortening the time of individual steps (computer-aided design), overlapping steps, and multifunctional teams.

Organizational Change

The idea was simple. Build a series of music superstores and watch the customers and profits pour in. For a while, it worked. Sales at MARS Music grew from $49 million to $340 million in just five years as the company built 50 new stores. But, during the same period that MARS set records for sales, it also lost $100 million. When MARS when out of business, founder Mark Bergelman blamed the poor economy and tight capital markets. Chief operating officer Ray Miller was more blunt, saying, "Our stores were too big."[45] Bergelman, who successfully founded Office Depot, insisted that each MARS Music store cover 35,000 square feet with $2.5 million in inventory and a staff of 40. But, at that size, the breakeven point for each store was $10 million in sales per year. By contrast, the stores of Guitar Centers, Mars' leading competitor, were half as large at 17,000 square feet and had a much lower breakeven point. When MARS Music went out of business, investors lost $190 million, music equipment suppliers lost $35 million, landlords who had financed $1.8 million in improvements at each store location lost $50 million, and 2,400 people lost their jobs.

The company's collapse wasn't a surprise. MARS Music and everyone else in the industry knew it was hemorrhaging cash. Yet MARS Music was unable to change its business to stop the bleeding. That inability to change, to figure out ways to bring in more customers and to be more efficient, eventually led to its demise.

After reading the next two sections on organizational change, you should be able to

3 discuss why not changing can lead to organizational decline.

4 discuss the different methods that managers can use to better manage change as it occurs.

3 ORGANIZATIONAL DECLINE: THE RISK OF NOT CHANGING

Businesses operate in a constantly changing environment. Recognizing and adapting to internal and external changes can mean the difference between continued success and going out of business. Companies that fail to change run the risk of organizational decline.[46]

Organizational decline occurs when companies don't anticipate, recognize, neutralize, or adapt to the internal or external pressures that threaten their survival.[47] In other words, decline occurs when organizations don't recognize the need for change. General Motors' loss of market share in the automobile industry (from 50 to 25 percent) is an example of organizational decline. There are five stages of organizational decline: blinded, inaction, faulty action, crisis, and dissolution.[48]

In the *blinded stage*, decline begins because key managers fail to recognize the internal or external changes that will harm their organizations. This "blindness" may be due to a simple lack of awareness about changes or an inability to understand their significance. It may also come from the overconfidence that can develop when a company has been successful. For example, Barneys started as a tiny men's discount clothing store in New York City and grew into an international phenomenon with stores in Beverly Hills, Chicago, London, Tokyo, and a dozen other cities. Barneys sold some of the most expensive and fashionable designer clothes in the world until the overconfidence of the founder's grandsons, Gene and Bob Pressman, eventually led to the company's demise.[49] In his book *The Rise and Fall of the House of Barneys: A Family Tale of Chutzpah, Glory, and Greed*, Joshua Levine of *Forbes* magazine described how overconfidence led the Pressmans to spend more time working out at the gym than running the company.[50] Sure of their success, the Pressmans blindly overspent and overbuilt the company. Indeed, just three years after opening a luxurious $270 million store on Madison Avenue in New York City, complete with marble floors, silver-plated windows, and an extravagantly priced restaurant, espresso bar, beauty salon, and health club, Barneys filed for bankruptcy.

In the *inaction stage*, as organizational performance problems become more visible, management may recognize the need to change but still take no action. The managers may be waiting to see if the problems will correct themselves. Or, they may find it difficult to change the practices and policies that previously led to success. Possibly, too, they wrongly assume that they can easily correct the problems, so they don't feel the situation is urgent. For example, when Barneys expanded from men's into women's clothing, management budgeted $12 million to buy and convert a building into a 70,000-square-foot women's clothing store. When the store ended up costing $25 million, more than double the

organizational decline
A large decrease in organizational performance that occurs when companies don't anticipate, recognize, neutralize, or adapt to the internal or external pressures that threaten their survival.

When key managers fail to recognize the internal or external changes that will harm their organizations, decline is sure to follow. Sure of their success, the Pressmans blindly overspent and overbuilt Barneys, only to have to file for bankruptcy three years into their extravagant corporate spending spree.

© LYNN GOLDSMITH/CORBIS

estimate—a prospect that would have worried most managers—one of Barneys' top managers exclaimed, "What's money?"[51]

In the *faulty action stage*, faced with rising costs and decreasing profits and market share, management will announce "belt-tightening" plans designed to cut costs, increase efficiency, and restore profits. In other words, rather than recognizing the need for fundamental changes, managers assume that if they just run a "tighter ship," company performance will return to previous levels. Barneys fit this pattern, too. Rather than reexamine the basic need for change, Barneys' management focused on cost cutting. Company managers and staff were no longer allowed to spend hundreds of thousands of dollars a year on perks such as cell phones, cars, and entertainment. In fact, some senior managers had clothing allowances of $20,000 a year.[52] Unfortunately for Barneys, this belt-tightening move was too little too late.

In the *crisis stage*, bankruptcy or dissolution (i.e., breaking up the company and selling its parts) is likely to occur unless the company completely reorganizes the way it does business. At this point, however, companies typically lack the resources to fully change how they run their businesses. Cutbacks and layoffs will have reduced the level of talent among employees. Furthermore, talented managers who were savvy enough to see the crisis coming will have found jobs with other companies (often with competitors). Because of rising costs and lower sales, cash is tight. And lenders and suppliers are unlikely to extend further loans or credit to ease the cash crunch. For example, after giving Barneys more than $180 million in loans, its bankers refused to lend the company any more money.

In the *dissolution stage*, after failing to make the changes needed to sustain the organization, the company is dissolved through bankruptcy proceedings or by selling assets in order to pay suppliers, banks, and creditors. At this point, a new CEO may be brought in to oversee the closing of stores, offices, and manufacturing facilities, the final layoff of managers and employees, and the sale of assets. In fact, after filing for bankruptcy, Barneys closed four stores, including the original Barneys.[53] Three years later, Barneys was sold to two investment companies that brought in new management to rebuild the company.[54]

Finally, note that because decline is reversible at each of the first four stages, not all companies in decline reach final dissolution as Barneys did. For example, GM is trying to aggressively cut costs, stabilize its shrinking market share, and use innovative production techniques in an effort to reverse a decline that has lasted nearly a decade and resulted in all-time low stock prices.

Review 3: Organizational Decline: The Risk of Not Changing

The five-stage process of organizational decline begins when organizations don't recognize the need for change. In the blinded stage, managers fail to recognize the changes that threaten their organization's survival. In the inaction stage, management recognizes the need to change, but doesn't act, hoping that the problems will correct themselves. In the faulty action stage, management focuses on cost cutting and efficiency rather than facing up to the fundamental changes needed to ensure survival. In the crisis stage, failure is likely unless fundamental reorganization occurs. Finally, in the dissolution stage, the company is dissolved through bankruptcy proceedings, by selling assets to pay creditors, or through the closing of stores, offices, and facilities. If companies recognize the need to change early enough, however, dissolution may be avoided.

4 MANAGING CHANGE

change forces
Forces that produce differences in the form, quality, or condition of an organization over time.

According to social psychologist Kurt Lewin, change is a function of the forces that promote change and the opposing forces that slow or resist change.[55] **Change forces** lead to differences in the form, quality, or condition of an organization over time.

By contrast, **resistance forces** support the status quo, that is, the existing conditions in organizations. With great views, fine service, and good food, Atwaters, located on top of the 30-story U.S. Bancorp tower in Portland, Oregon, "wanted to be the best restaurant in town and didn't care how much it cost." Under new manager Stephen Earnhart, however, Atwaters' new goal was to be the best restaurant in town *and* make a profit. To attract younger customers, waiters replaced their tuxedos with more casual white aprons and ties. Instead of a team of waiters at each table (waiters, back waiters, and maître d's), service was personalized by having each waiter take responsibility for particular tables in the dining room. When it was slow in the bar, bartenders were asked to help out in the dining room. When it was slow in the dining room, waiters were asked to help out in the bar. Within weeks, employees began to complain. "That's not my job." "That's not what I was hired for." "You're asking me to do more, but you're not paying me for it." As employee dissatisfaction with the changes grew stronger, food began disappearing from the kitchen. Bartenders gave away drinks. The reservation book vanished on busy nights. Stephen Gagnon, a former Atwaters bartender, summed things up, saying, "Employee morale went to hell with all the changes."[56]

resistance forces
Forces that support the existing conditions in organizations.

Resistance to change, like that shown by Atwaters' employees, is caused by self-interest, misunderstanding and distrust, and a general intolerance for change.[57] People resist change out of *self-interest* because they fear that change will cost or deprive them of something they value. For example, resistance might stem from a fear that the changes will result in a loss of pay, power, responsibility, or even perhaps one's job. People also resist change because of *misunderstanding and distrust;* they don't understand the change or the reasons for it, or they distrust the people, typically management, behind the change. For example, James Selby, a former waiter at Atwaters, said, "A lot of us felt the changes were unjustified."[58] Resistance isn't always visible at first, however. In fact, some of the strongest resisters may initially support the changes in public, nodding and smiling their agreement, but then ignore the changes in private and do their jobs as they always have. Management consultant Michael Hammer calls this deadly form of resistance the "Kiss of Yes."[59]

resistance to change
Opposition to change resulting from self-interest, misunderstanding and distrust, or a general intolerance for change.

Resistance may also come from a generally low tolerance for change. Some people are simply less capable of handling change than others. People with a *low tolerance for change* feel threatened by the uncertainty associated with change and worry that they won't be able to learn the new skills and behaviors needed to successfully negotiate change in their companies.

Because resistance to change is inevitable, successful change efforts require careful management. In this section you will learn about: **4.1 managing resistance to change, 4.2 what *not* to do when leading organizational change,** and **4.3 different change tools and techniques.**

4.1 Managing Resistance to Change

According to Kurt Lewin, managing organizational change is a basic process of unfreezing, change intervention, and refreezing. **Unfreezing** is getting the people affected by change to believe that change is needed. During the **change intervention** itself, workers and managers change their behavior and work practices. **Refreezing** is supporting and reinforcing the new changes so that they "stick."

Resistance to change, as shown by Atwaters' employees, is an example of frozen behavior. Given the choice between changing and not changing, most people would rather not change. Because resistance to change is natural and inevitable, managers need to unfreeze resistance to change to create successful change programs. The following methods can be used to manage resistance to change: education and communication, participation, negotiation, top management support, and coercion.[60]

unfreezing
Getting the people affected by change to believe that change is needed.

change intervention
The process used to get workers and managers to change their behavior and work practices.

refreezing
Supporting and reinforcing new changes so that they "stick."

When resistance to change is based on insufficient, incorrect, or misleading information, managers should *educate* employees about the need for change and *communicate* change-related information to them. Managers must also supply the information and funding or other support employees need to make changes. For example, resistance to change can be particularly strong when one company buys another company. Jeff Boyd, who worked for a large Canadian company that was acquired, described the first meeting between his department and the same department from the acquiring company: "It wasn't a friendly meeting. It wasn't hostile or anything like that, but everybody was on their guard a little bit. Right now, everybody's wondering if they'll be able to get along with the other employees, because there's a big difference in both companies' cultures and in the way both companies operate." Boyd concluded, "There's a lot of tension down at the employee level. We're still being kept in the dark about certain things. Everything seems to be up in the air right now."[61] By contrast, New York Presbyterian Health System reduced resistance to change by designating mentors to coach individuals, groups, and departments in newly acquired companies about its procedures and practices. New York Presbyterian's Diane Iorfida said, "Keeping employees informed every step of the way is so important. It's also important to tell the truth, whatever you do. If you don't know, say you don't know."[62]

Another way to reduce resistance to change is to have those affected by the change *participate in planning and implementing the change process*. Employees who participate have a better understanding of the change and the need for it. Furthermore, employee concerns about change can be addressed as they occur if employees participate in the planning and implementation process. As you learned in Chapter 6, CEO A. G. Lafley turned around Procter & Gamble by refocusing the company on its billion-dollar brands (e.g., Tide, Pantene). Martin Neuchtern, chief of global hair care, said, "A. G. made things very clear: Make sure you focus on Pantene."[63] While Lafley clearly shifted the focus to P&G's best brands, the strategies to reenergize those brands were generated through employee participation. At an informal luncheon with mid-level managers, Lafley stated, "I don't have a speech planned. I thought we could talk. I'm searching for meaty issues. Give me some meaty issues."[64] Then, he listened to their ideas. Vice president Chris Start said, "You can tell him bad news or things you'd be afraid to tell other bosses."[65] As a result, there was little resistance to Lafley's sweeping changes at P&G.

Employees are also less likely to resist change if they are allowed *to discuss and agree on who will do what* after change occurs. The Chugach School District in Anchorage, Alaska, had some of the lowest test scores in the state. For superintendent Richard DeLoreozo, that was a clear sign that change was needed. After designing a system that would allow each student to advance at his or her own learning pace, DeLoreozo turned to teacher compensation. But rather than make wholesale changes himself, he went to the teacher's union for input. Together, DeLoreozo and the union developed a program that based teachers' pay on the average improvement of the entire district's students, rather than seniority. Four years later, after enthusiastic support from teachers and students, the district's standardized test scores improved from the 28th to the 71st percentile in the state.[66]

Resistance to change also decreases when change efforts receive *significant managerial support*. Managers must do more than talk about the importance of change, though. They must provide the training, resources, and autonomy needed to make change happen. For example, with a distinguished 70-year history of hand drawing Hollywood's most successful animated films (*Snow White, Bambi, The Little Mermaid, Beauty and the Beast*), it was natural for animators at Walt Disney Company to resist the move to computer-generated (CG) animation. David Stainton, chief of animation, said his animators "fundamentally worry that, 20 years from now, nobody will know how to draw.

They're afraid they won't be able to express their skill to the same level."[67] Animator Bill Keane worried that "I would have to go backwards from what I do by hand."[68] So Stainton told his animators, "Your talent really lies in . . . your ability to bring characters to life," and that can be done through drawing or computers.[69] Disney supported the difficult change by putting all of its animators through a six-month "CG Boot Camp," where they learned how to "draw" animated characters with computers.

Finally, resistance to change can be managed through **coercion**, or the use of formal power and authority to force others to change. Because of the intense negative reactions it can create (e.g., fear, stress, resentment, sabotage of company products), coercion should be used only when a crisis exists or when all other attempts to reduce resistance to change have failed. Exhibit 7.7 summarizes some additional suggestions for what managers can do when employees resist change.

coercion
Using formal power and authority to force others to change.

4.2 What *Not* to Do When Leading Change

So far, you've learned about the basic change process (unfreezing, change, refreezing) and managing resistance to change. However, John Kotter of the Harvard Business School argues that knowing what *not* to do is just as important as knowing what to do when it comes to achieving successful organizational change.[70]

Exhibit 7.8 shows the most common errors that managers make when they lead change. The first two errors occur during the unfreezing phase, when managers try to get the people affected by change to believe that change is really needed. The first and potentially most serious error is *not establishing a great enough sense of urgency*. Indeed, Kotter estimates that more than half of all change efforts fail because the people affected are not convinced that change is necessary. People will feel a greater sense of urgency if a leader in the company makes a public, candid assessment of the company's problems and weaknesses. For example, Continental Airlines former CEO Gordon Bethune said, "We had a crappy product, and we were trying to discount ourselves into profitability. Nobody wants to eat a crummy pizza, no matter if it's 99 cents."[71] By sharing extensive (and depressing) financial information with Continental's workers, Bethune made it clear that the company was truly at risk of going bankrupt. Because employees knew that no airline had ever recovered from bankruptcy, they concluded that accepting change was the only reasonable option, and resistance to change evaporated.[72]

The second mistake that occurs in the unfreezing process is *not creating a powerful enough coalition*. Change often starts with one or two people, but to build enough momentum to change an entire department, division, or company,

Exhibit 7.7
What to Do When Employees Resist Change

Unfreezing	
• **Share reasons**	Share the reasons for change with employees.
• **Empathize**	Be empathetic to the difficulties that change will create for managers and employees.
• **Communicate**	Communicate the details simply, clearly, extensively, verbally, and in writing.
Change	
• **Benefits**	Explain the benefits, "what's in it for them."
• **Champion**	Identify a highly respected manager to manage the change effort.
• **Input**	Allow the people who will be affected by change to express their needs and offer their input.
• **Timing**	Don't begin change at a bad time, for example, during the busiest part of the year or month.
• **Security**	If possible, maintain employees' job security to minimize fear of change.
• **Training**	Offer training to ensure that employees are both confident and competent to handle new requirements.
• **Pace**	Change at a manageable pace. Don't rush.

Source: G. J. Iskat & J. Liebowitz, "What to Do When Employees Resist Change," *Supervision*, 1 August 1996.

change has to be supported by a critical and growing group of people. Besides top management, Kotter recommends that key employees, managers, board members, customers, and even union leaders be members of a *core change coalition*, which guides and supports organizational change. Procter & Gamble's CEO A. G. Lafley said, "I put together the guiding coalition—the leaders who would go with me. If you are going to make a significant change, you have to declare where are we going and why are we going there. Then you have to put together this guiding coalition. You have to put the true disciples together—the prophets who believe in it as passionately as you do. And they help you to carry the organization, because you can't carry a 100,000-person organization spread across 80 to 100 countries by yourself."[73] Furthermore, it's important to strengthen this group's resolve by periodically bringing its members together for off-site retreats.

The next four errors that managers make occur during the change phase, when a change intervention is used to try to get workers and managers to change their behavior and work practices. *Lacking a vision* for change is a significant error at this point. As you learned in Chapter 5, a *vision* is a statement of a company's purpose or reason for existing. A vision for change makes clear where a company or department is headed and why the change is occurring. Change efforts that lack vision tend to be confused, chaotic, and contradictory. By contrast, change efforts guided by visions are clear and easy to understand and can be effectively explained in five minutes or less. At Continental Airlines, the initial change vision was simple: "getting passengers where they were supposed to be on time."[74] With this clear-cut vision focusing managers and workers, Continental now ranks fourth in on-time arrivals and fifth in baggage handling (out of 19 airlines).[75] Previously, it had ranked tenth on both.[76]

Undercommunicating the vision by a factor of 10 is another mistake in the change phase. According to Kotter, companies mistakenly hold just one meeting to announce the vision. Or, if the new vision receives heavy emphasis in executive speeches or company newsletters, senior management then undercuts the vision by behaving in ways contrary to it. Successful communication of the vision requires that top managers link everything the company does to the new vision and that they "walk the talk" by behaving in ways consistent with the vision.

Furthermore, even companies that begin change with a clear vision sometimes make the mistake of *not removing obstacles to the new vision*. They leave formidable barriers to change in place by failing to redesign jobs, pay plans, and technology to support the new way of doing things. One way Continental removed obstacles to its new vision was by completely rewriting its employee policy manual. Former CEO Bethune said, "And we don't call it a manual anymore; we call it guidelines. The new guidelines are supposed to help employees solve problems—give them a sense of where the boundaries are when they run into trouble. But in the general pursuit of their jobs, we want them to use their heads and use their resources." In short, "if you find yourself in the middle of something complicated, something unusual, something that just doesn't fit, then use your head and make the best decision you can."[77]

Another error in the change phase is *not systematically planning for and creating short-term wins*. Most people don't have the discipline and patience to wait two years to see if the new change effort works. Change is threatening and

Exhibit 7.8
Errors Managers Make When Leading Change

Unfreezing
1. Not establishing a great enough sense of urgency.
2. Not creating a powerful enough guiding coalition.
Change
3. Lacking a vision.
4. Undercommunicating the vision by a factor of 10.
5. Not removing obstacles to the new vision.
6. Not systematically planning for and creating short-term wins.
Refreezing
7. Declaring victory too soon.
8. Not anchoring changes in the corporation's culture.

Source: J. P. Kotter, "Leading Change: Why Transformation Efforts Fail," *Harvard Business Review* 73, no. 2 (March-April 1995): 59.

uncomfortable, so people need to see an immediate payoff if they are to continue to support it. Kotter recommends that managers create short-term wins by actively picking people and projects that are likely to work extremely well early in the change process. The short-term wins at Continental came in the form of $65 checks. Bethune told managers and employees that every employee would get a check for $65 each month that Continental finished in the top five in on-time arrivals (as rated by the Department of Transportation). The first time that Continental made it into the top five, it sent out $2.5 million worth of $65 checks to its employees. Bethune said, "We didn't just drop 65 extra dollars into their paychecks and have the whole impact of their bonus disappear. Nor did we let them start calculating how much of it they lost to taxes. We gave each employee $65 in a special check—we took the with-holding out of their regular paychecks so they got 65 actual dollars."[78] In all, Continental spent more than $100 million for on-time bonuses to reward and remind its employees that getting customers to their travel destinations on time is one of the most important things it does.[79]

The last two errors that managers make occur during the refreezing phase, when attempts are made to support and reinforce changes so that they "stick." *Declaring victory too soon* is a tempting mistake in the refreezing phase. Managers typically declare victory right after the first large-scale success in the change process. For instance, it would have been easy for Continental to declare victory the first time that it made it into the top five in on-time arrivals. Declaring success too early has the same effect as draining the gasoline out of a car. It stops change efforts dead in their tracks. With success declared, supporters of the change process stop pushing to make change happen. After all, why "push" when success has been achieved? Rather than declaring victory, managers should use the momentum from short-term wins to push for even bigger or faster changes. This maintains urgency and prevents change supporters from slacking off before the changes are frozen into the company's culture. For example, after quickly moving into the top five in on-time arrivals, Continental maintained urgency by raising the requirements for monthly, on-time bonuses. Now, instead of the top five, Continental had to finish in the top three in on-time arrivals. When it raised the bar, it also raised the reward, increasing the on-time bonus from $65 to $100. Moreover, former CEO Bethune instituted a reward system that maintained urgency among company managers by awarding bonuses only if all of Continental's top 25 executives met their goals. Bethune said, "We had to have all these people working collectively. We put in a compensation program for the 20 top executives that meant they were paid on meeting quarterly budget results and getting 25 percent of your bonus each quarter. You miss the number, you can't get the money back. It kept us all really focused for three months at a time. We never missed our number, and either we all got paid or none of us did. Marketing could not fight with sales; it just ended internecine warfare."[80]

The last mistake that managers make is *not anchoring changes in the corporation's culture*. An o*rganization's culture* is the set of key values, beliefs, and attitudes shared by organizational members that determines the "accepted way of doing things" in a company. As you learned in Chapter 3, changing cultures is extremely difficult and slow. Kotter said that two things help anchor changes in a corporation's culture. The first is directly showing people that the changes have actually improved performance. At Continental, this was easily demonstrated by the company's improved rankings for on-time arrival and baggage handling. The second is to make sure that the people who get promoted fit the new culture. If they don't, it's a clear sign that the changes were only temporary.

When did former CEO Gordon Bethune know that the changes he was seeking were anchored in Continental's culture? He was getting on a Continental flight at the last minute, as the gate agent was scrambling to get the plane out

of the gate on time. Bethune, whose back was to the agent, heard him say, "Excuse me, sir, you'll have to sit down. The plane has to leave." The flight attendant became upset and said to the agent, "Do you know who that is? That's Mr. Bethune!" The agent responded, "That's very nice, but we gotta go. Tell him to sit down." Bethune said that this "is how Continental Airlines stays on time—and how it has changed for the better."[81]

4.3 Change Tools and Techniques

Imagine that your boss came to you and said, "All right, genius, you wanted it. You're in charge of turning around the division." How would you start? Where would you begin? How would you encourage change-resistant managers to change? What would you do to include others in the change process? How would you get the change process off to a quick start? Finally, what long-term approach would you use to promote long-term effectiveness and performance? Results-driven change, the General Electric workout, transition management teams, and organizational development are different change tools and techniques that can be used to address these issues.

One of the reasons that organizational change efforts fail is that they are activity oriented, meaning that they focus primarily on changing company procedures, management philosophy, or employee behavior. Typically, there is much buildup and preparation as consultants are brought in, presentations are made, books are read, and employees and managers are trained. There's a tremendous emphasis on "doing things the new way." But, with all the focus on activities, on "doing," almost no attention is paid to results, to seeing if all this activity has actually made a difference.

results-driven change
Change created quickly by focusing on the measurement and improvement of results.

By contrast, **results-driven change** supplants the emphasis on activity with a laser-like focus on quickly measuring and improving results.[82] For example, at Monarch Marking Systems, quality-assurance engineer Steve Schneider guided the company's results-driven change process by first identifying everything in Monarch's factory that could be measured easily. He found 162 measures in all.[83] He further emphasized the importance of quick results by declaring that problem-solving teams had only 30 days to solve a particular problem. He encouraged workers to get to it, saying, "It's a project, not a process."

Another advantage of results-driven change is that managers introduce changes in procedures, philosophy, or behavior only if they are likely to improve measured performance. In other words, managers and workers actually test to see if changes make a difference. Consistent with this approach, Schneider announced that Monarch's problem-solving teams could make any permanent changes they wanted, as long as those changes improved one of the 162 different measures of performance. A third advantage of results-driven change is that quick, visible improvements motivate employees to continue to make additional changes to improve measured performance. For example, one team at Monarch used cross-training to reduce the number of job categories from 120 to 32. Another, encouraged by the success of 90 other problem-solving

Exhibit 7.9
Results-Driven Change Programs

1.	Management should create measurable, short-term goals to improve performance.
2.	Management should use action steps only if they are likely to improve measured performance.
3.	Management should stress the importance of immediate improvements.
4.	Consultants and staffers should help managers and employees achieve quick improvements in performance.
5.	Managers and employees should test action steps to see if they actually yield improvements. Action steps that don't should be discarded.
6.	It takes few resources to get results-driven change started.

Source: R. H. Schaffer & H. A. Thomson, J.D, "Successful Change Programs Begin with Results," *Harvard Business Review on Change* (Boston: Harvard Business School Press, 1998), 189–213.

teams, trained machine operators to enter production data directly into the computer on the factory floor, eliminating the 7,600 hours of staff work required to enter those data from paper records. As at Monarch, the quick successes associated with results-driven change can be particularly effective at reducing resistance to change. Exhibit 7.9 describes the basic steps of results-driven change.

The **General Electric workout** is a special kind of results-driven change. It is a three-day meeting that brings together managers and employees from different levels and parts of an organization to quickly generate and act on solutions to specific business problems.[84] On the first morning of a workout, the boss discusses the agenda and targets specific business problems that the group is to try to solve. Then, the boss leaves, and an outside facilitator breaks the group, typically 30 to 40 people, into five or six teams and helps them spend the next day and a half discussing and debating solutions. On day three, in what GE calls a "town meeting," the teams present specific solutions to their boss, who has been gone since day one. As each team's spokesperson makes specific suggestions, the boss has only three options: agree on the spot, say no, or ask for more information so that a decision can be made by a specific, agreed-on date. GE boss Amand Lauzon sweated his way through a town meeting. To encourage him to say yes, his workers set up the meeting room so that Lauzon couldn't make eye contact with his boss. He said, "I was wringing wet within half an hour. They had 108 proposals, I had about a minute to say yes or no to each one, and I couldn't make eye contact with my boss without turning around, which would show everyone in the room that I was chicken."[85] In the end, Lauzon agreed to all but eight suggestions. Furthermore, once those decisions were made, no one at GE was allowed to overrule them.

While the GE workout clearly speeds up change, it may also fragment change, if different managers approve conflicting suggestions in separate town meetings across a company. By contrast, a transition management team provides a way to coordinate change throughout an organization. A **transition management team (TMT)** is a team of 8 to 12 people whose full-time job is to manage and coordinate a company's change process.[86] One member of the TMT is assigned to anticipate and manage the emotions and behaviors related to resistance to change. Despite their importance, many companies overlook the impact that negative emotions and resistant behaviors can have on the change process. TMTs report to the CEO every day, decide which change projects are approved and funded, select and evaluate the people in charge of different change projects, and make sure that different change projects complement one another.

For example, when FleetBoston Financial merged with Bank of America (BoA), a TMT was used to quickly implement six sigma quality programs (see Chapter 18 for an explanation) throughout the entire merged organization. Six sigma programs, which eliminate mistakes and improve quality, had already saved BoA $2 billion by cutting the time required to open a new branch from 500 to 350 days, reducing the number of ATM and deposit errors by 88 percent, and cutting the response time on individual retirement accounts from three days to 10 minutes. Since BoA had been using six sigma for four years and FleetBoston for just two, the goal of the TMT was to ensure that the six sigma programs for FleetBoston's half of the merged company would catch up as quickly as possible. The team accomplished this by assigning a six

General Electric workout
A three-day meeting in which managers and employees from different levels and parts of an organization quickly generate and act on solutions to specific business problems.

transition management team (TMT)
A team of 8 to 12 people whose full-time job is to manage and coordinate a company's change process.

Transition management teams helped Bank of America better integrate Six Sigma practices at its acquisition of Fleet Boston. TMTs helped the company save money by cutting the number of days it takes to open a new branch from 500 to 350 days.

GETTY IMAGES

sigma expert from BoA to each of FleetBoston's key lines of business. Jim Buchanan, who is in charge of the team, said, "We expect that within two years Fleet will be caught up."

It is also important to say what a TMT is not. A TMT is not an extra layer of management further separating upper management from lower managers and employees. A TMT is not a steering committee that creates plans for others to carry out. Instead, the members of the TMT are fully involved with making change happen on a daily basis. Furthermore, it's not the TMT's job to determine how and why the company will change. That responsibility belongs to the CEO and upper management. Finally, a TMT is not permanent. Once the company has successfully changed, the TMT is disbanded. Indeed, Bank of America won't need a TMT any more once everyone in the merged companies has been trained in six sigma practices. Exhibit 7.10 lists the primary responsibilities of TMTs.

Exhibit 7.10
Primary Responsibilities of Transition Management Teams

1. Establish a context for change and provide guidance.
2. Stimulate conversation.
3. Provide appropriate resources.
4. Coordinate and align projects.
5. Ensure congruence of messages, activities, policies, and behaviors.
6. Provide opportunities for joint creation.
7. Anticipate, identify, and address people problems.
8. Prepare the critical mass.

Source: J. D. Duck, "Managing Change: The Art of Balancing," *Harvard Business Review on Change* (Boston: Harvard Business School Press, 1998), 55–81.

organizational development
A philosophy and collection of planned change interventions designed to improve an organization's long-term health and performance.

Organizational development is a philosophy and collection of planned change interventions designed to improve an organization's long-term health and performance. Organizational development takes a long-range approach to change; assumes that top management support is necessary for change to succeed; creates change by educating workers and managers to change ideas, beliefs, and behaviors so that problems can be solved in new ways; and emphasizes employee participation in diagnosing, solving, and evaluating problems.[87] As shown in Exhibit 7.11, organizational development interventions begin with the recognition of a problem. Then, the company designates a **change agent** to be formally in charge of guiding the change effort. This person can be someone from the company or a professional consultant. The change agent clarifies the problem, gathers information, works with decision makers to create and

change agent
The person formally in charge of guiding a change effort.

Exhibit 7.11
General Steps for Organizational Development Interventions

1. **Entry**	A problem is discovered and the need for change becomes apparent. A search begins for someone to deal with the problem and facilitate change.
2. **Startup**	A change agent enters the picture and works to clarify the problem and gain commitment to a change effort.
3. **Assessment & feedback**	The change agent gathers information about the problem and provides feedback about it to decision makers and those affected by it.
4. **Action planning**	The change agent works with decision makers to develop an action plan.
5. **Intervention**	The action plan, or organizational development intervention, is carried out.
6. **Evaluation**	The change agent helps decision makers assess the effectiveness of the intervention.
7. **Adoption**	Organizational members accept ownership and responsibility for the change, which is then carried out through the entire organization.
8. **Separation**	The change agent leaves the organization after first ensuring that the change intervention will continue to work.

Source: W. J. Rothwell, R. Sullivan, & G. M. McLean, *Practicing Organizational Development: A Guide for Consultants* (San Diego: Pfeiffer & Co., 1995).

implement an action plan, helps to evaluate the plan's effectiveness, implements the plan throughout the company, and then leaves (if from outside the company) after making sure the change intervention will continue to work.

For example, change agent Hajime Oba is one of the key reasons that Toyota cars are tops in quality and reliability. Oba's job is to work closely with Toyota suppliers, showing them how to increase quality and decrease costs. For example, Michigan Summit Polymers installed a $280,000 paint system with robots and a paint oven to bake paint onto the dashboard vents that went into Toyota cars, but Oba showed that a $12 hair dryer did the job better and faster (3 minutes versus 90 minutes for the robots and paint oven). Because of Oba's demonstration, Summit replaced the robots with simple but effective $150 spray guns and the paint oven with intense light bulbs. Overall, Oba has helped Summit cut its defects from 3,000 parts per million to less than 60 parts per million.[88] Oba's efforts as a change agent have significantly improved the quality of parts at Toyota's other suppliers as well. That, in turn, has helped Toyota reach the top of the quality rankings issued by J. D. Power & Associates and *Consumer Reports* magazine.[89]

Organizational development interventions are aimed at changing large systems, small groups, or people.[90] More specifically, the purpose of *large system interventions* is to change the character and performance of an organization, business unit, or department. *Small group intervention* focuses on assessing how a group functions and helping it work more effectively to accomplish its goals. *Person-focused intervention* is intended to increase interpersonal effectiveness by helping people become aware of their attitudes and behaviors and acquire new skills and knowledge. Exhibit 7.12 describes the most frequently used organizational development interventions for large systems, small groups, and people. For additional information about changing systems, groups, and people, see the "What Really Works" feature on the next page.

Review 4: Managing Change

The basic change process is unfreezing, change, and refreezing. Resistance to change, which stems from self-interest, misunderstanding and distrust, and a general intolerance for change, can be managed through education and communication, participation, negotiation, top management support, and coercion. Knowing what not to do is as important as knowing what to do to achieve successful change. Managers should avoid these errors when leading change: not establishing urgency, not creating a guiding coalition, lacking a vision,

Exhibit 7.12
Different Kinds of Organizational Development Interventions

LARGE SYSTEM INVTERVENTIONS	
Sociotechnical systems	An intervention designed to improve how well employees use and adjust to the work technology used in an organization.
Survey feedback	An intervention that uses surveys to collect information from the members, reports the results of that survey to the members, and then uses those results to develop action plans for improvement.
SMALL GROUP INTERVENTIONS	
Team building	An intervention designed to increase the cohesion and cooperation of work group members.
Unit goal setting	An intervention designed to help a work group establish short- and long-term goals.
PERSON-FOCUSED INTERVENTIONS	
Counseling/coaching	An intervention designed so that a formal helper or coach listens to managers or employees and advises them on how to deal with work or interpersonal problems.
Training	An intervention designed to provide individuals with the knowledge, skills, or attitudes they need to become more effective at their jobs.

Source: W. J. Rothwell, R. Sullivan, & G. M. McLean, *Practicing Organizational Development: A Guide for Consultants* (San Diego: Pfeiffer & Co., 1995).

Change the Work Setting or Change the People? Do Both!

Let's assume that you believe that your company needs to change. Congratulations! Just recognizing the need for change puts you ahead of 80 percent of the companies in your industry. But now that you've recognized the need for change, how do you make change happen? Should you focus on changing the work setting or the behavior of the people who work in that setting? It's a classic chicken or egg type of question. Which would you do?

A recent meta-analysis based on 52 studies and a combined total of 29,611 study participants indicated that it's probably best to do both!

CHANGING THE WORK SETTING
An organizational work setting has four parts: organizing arrangements (control and reward systems, organizational structure), social factors (people, culture, patterns of interaction), technology (how inputs are transformed into outputs), and the physical setting (the actual physical space in which people work). Overall, there is a 55 percent chance that organizational change efforts will successfully bring changes to a company's work setting. Although the odds are 55–45 in your favor, this is a much lower probability of success than you've seen with the management techniques discussed in other chapters. This simply reflects how strong resistance to change is in most companies.

Probability of Success

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
probability of success			55%						
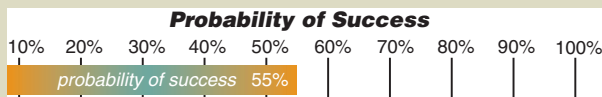
CHANGING THE PEOPLE
Changing people means changing individual work behavior. The idea is powerful. Change the decisions people make. Change the activities they perform. Change the information they share with others. And change the initiatives they take on their own. Change these individual behaviors and collectively you change the entire company. Overall, there is a 57 percent chance that organizational change efforts will successfully change people's individual work behavior. If you're wondering why the odds aren't higher, consider how difficult it is to change personal behavior. It's incredibly difficult to quit smoking, change your diet, or maintain a daily exercise program. Not surprisingly, changing personal behavior at work is also difficult. Thus, viewed in this context, a 57 percent chance of success is a notable achievement.

Probability of Success

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
probability of success			57%						
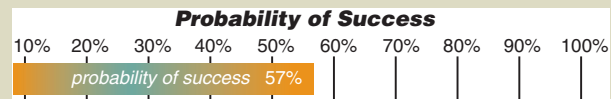
CHANGING INDIVIDUAL BEHAVIOR AND ORGANIZATIONAL PERFORMANCE
The point of changing individual behavior is to improve organizational performance (i.e., increase profits, market share, and productivity, and lower costs). Overall, there is a 76 percent chance that changes in individual behavior will produce changes in organizational outcomes. So, if you want to improve your company's profits, market share, or productivity, focus on changing the way that your people behave at work.[91]

Probability of Success

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
				probability of success		76%			

undercommunicating the vision, not removing obstacles to the vision, not creating short-term wins, declaring victory too soon, and not anchoring changes in the corporation's culture.

Finally, managers can use a number of change techniques. Results-driven change and the GE workout reduce resistance to change by getting change efforts off to a fast start. Transition management teams, which manage a company's change process, coordinate change efforts throughout an organization. Organizational development is a collection of planned change interventions (large system, small group, person-focused), guided by a change agent, that are designed to improve an organization's long-term health and performance.

Key Terms

change agent, *228*
change forces, *220*
change intervention, *221*
coercion, *223*
compression approach to
    innovation, *216*
creative work environments, *212*
creativity, *204*
design competition, *209*
design iteration, *214*
discontinuous change, *209*
dominant design, *210*
experiential approach to
    innovation, *214*

flow, *212*
General Electric workout, *227*
generational change, *217*
incremental change, *211*
innovation streams, *208*
milestones, *215*
multifunctional teams, *215*
organizational change, *204*
organizational decline, *219*
organizational development, *228*
organizational innovation, *204*
product prototype, *214*
refreezing, *221*
resistance forces, *221*

resistance to change, *221*
results-driven change, *226*
S-curve pattern of innovation, *206*
technological discontinuity, *208*
technological lockout, *210*
technological substitution, *209*
technology cycle, *206*
testing, *214*
transition management team
    (TMT), *227*
unfreezing, *221*

Concept Check

1. What is the relationship between technology cycles and the S-curve pattern of innovation?
2. Explain why innovation matters to companies.
3. Describe innovation streams.
4. How can companies create creative work environments?
5. What is the difference between incremental change and discontinuous change?
6. Compare the experiential approach to managing innovation to the compression approach.
7. How do change forces work to bring about change? How do resistance forces work against change?
8. How can companies manage resistance to change?
9. What mistakes do managers commonly make when leading change?
10. List and describe the four main change tools and techniques that managers use.

Self-Assessment

MIND-BENDERS

Innovation is a key to corporate success. Companies that innovate and embrace the changes in their business environment tend to outperform those that stand still. Even so, innovative companies don't simply rely on the creativity of their own workforce. They often contract with outside providers to generate new ideas for everything from operations to new products. In other words, innovative companies fill gaps in their own creativity by looking outside the organization.

As a manager, you will benefit from understanding how you are creative (not if you are creative). And just as important as your own creativity is your attitude toward creative endeavors. The Self-Assessment Appendix has a questionnaire that can give you insights into your own perspectives on innovation and creativity, which will form a baseline for you as you develop your managerial skills. Turn to page 617 and get started!

Management Decision

TOLL HOUSE—STRENGTHENING A CHIPPED BRAND

Ever since 1930, when Ruth Wakefield, proprietor of the Toll House Inn, in Whitman, Massachusetts, assumed chunks of a Nestlé Semi-Sweet Chocolate Bar would melt evenly in the batter of her Butter Drop Do cookies, chocolate chip cookies have been a staple of the American diet.[92] Wakefield's failed experiment for chocolate cookies soon became famous, and in 1939, Nestlé introduced the tiny morsels we know today.

Seventy-some years later, however, Nestlé is no longer a simple chocolate manufacturer, and Toll House is not the only chocolate chip cookie on the block. With Wakefield's recipe on every bag, anyone can bake what most people consider the best chocolate chip cookies around, but a cook who saves the recipe can use a competitor's chips, like Hershey or Ghirardelli. To make matters worse, not many people make cookies from scratch anymore except during the holidays. In a way, Nestlé has lost some control over the Toll House brand.

Nestlé's FoodServices Division hopes to combat this brand weakness with Vision 2010, a 10-year strategic growth plan designed to grow a company already valued at $800 million. The Nestlé Baking Group (NBG), the division responsible for Toll House, might have the toughest time contributing to the company's growth goals. In an attempt to bolster its sales and reach, the NBG worked on making cookie baking more convenient. The result was the innovation of break-and-bake refrigerated dough. Pillsbury soon followed with its own version, and now Pillsbury and Toll House are fierce competitors in refrigerated dough. But Toll House also faces competition from products other than refrigerated dough. The NBG also competes with companies like Kellogg that make snacks you can eat on the run (like the new break-apart Pop Tarts and prepackaged Rice Krispie Treats). Prepackaged snack food is everywhere, and now even break-and-bake dough seems less convenient than it did when the NBG invented it.

Questions

1. Consider the above scenario. Plot Toll House products and innovations on the diagram of technology cycles in by Exhibit 7.4.
2. Does the Nestlé Baking Group need to take an experiential or compression approach to managing innovation? Base your answer on the scenario and your work from question 1.
3. Using the approach you selected in question 2—experiential or compression—generate as many ideas as you can with the goal of getting Toll House out of its break-and-bake rut. Note that your decision from question 2 will determine *how* you approach this question—whether you are looking for a breakthrough or for a slew of incremental changes. You may wish to consider new flavors, new packaging, new distribution channels—anything that can help the NBG reach its Vision 2010 goal of increased sales and stronger branding.

Management Team Decision

BRUSHING UP AT COLGATE

Ever since Procter & Gamble merged with Gillette, your phone has been ringing off the hook from investment bankers wanting your company to make a deal with Alberto-Culver, S.C. Johnson, Reckitt-Benckiser, or Clorox, and today is no exception.[93] The management team has assembled to listen to yet another set of bankers outline some grandiose proposal. You've got another plan for Colgate, however, and it doesn't involve a big acquisition. Quite the opposite, in fact. For the first time in nearly a decade, Colgate's earnings shrank last quarter (by 10 percent), and you are planning to cut 4,400 jobs, restructure the company, and save $300 million in the process.

Colgate's problems are no secret. In a decades-long tug-of-war, P&G has regained the edge thanks to its innovation machine. In the last five years, P&G has aggressively expanded in the oral care markets where it competes most heavily with Colgate. New flavors of Crest, whitening toothpastes, Crest Whitestrips, SpinBrush, and a licensing arrangement with W.L. Gore for Glide floss have all helped Crest reemerge as the leader in the markets it serves. Colgate's most recent innovations—Colgate Total, Motion and Actibrush electric toothbrushes, and Simply White tooth whitener — are now either fading memories or also-rans. And even though Colgate has a strong reputation as a reliable brand, it has been slow to develop new products for developing and existing markets. Perhaps it's just gunshy. The company's most aggressive innovation was the tooth-whitening system Simply White. Regardless of the product's quality, the bottle and applicator looked like

Liquid Paper and proved no match for P&G's Crest Whitestrips. After that near debacle, Colgate managers apparently decided that going for big hits wasn't a workable strategy. So, the company seems to be playing catch-up to P&G and GlaxoSmithKline, a new competitor in the oral care market. In fact, in a recent year, P&G spent $229 million on its toothpaste and tooth-whitening products; Colgate spent only $80 million.

Innovation isn't the only area where Colgate has failed to invest. The company's annual ad budget of $1 billion pales in comparison to the $5 billion P&G spends each year to promote its consumer products. Heavy spending has helped P&G capture 51 percent of unit sales and 70 percent of dollar sales in the tooth-whitening segment. Colgate weighs in with 21 percent and 10 percent, respectively. P&G's innovative approach to advertising has helped catapult its products to the forefront of consumers' minds. For example, advertising and sales for Whitestrips began on the Web, where the demand was overwhelming. Once the product was rolled out on the market, the day after Colgate's Simply White, P&G had a blockbuster. Simply White hit the shelves and stayed there.

After hanging up from yet another conference call with investment bankers urging your management team to consider a merger, you lean back in your chair and look around the table. "I think we all know what we're not going to do," you begin cautiously. "The real question is what we are going to do. Now that we have announced measures to conserve resources, we need to decide how to invest what we save."

For this exercise, assemble a team of four to five students to play the role of the management team at Colgate.

Questions
1. Is innovation really necessary at Colgate? In other words, in a market saturated with innovation, is there something to be said for the "keep it simple" approach? Explain.
2. Do you use the $300 million saved from operational cuts to fund innovation, or do you use the money to better market current products?
3. Where do you suggest Colgate look for sources of innovation?
4. As Colgate begins implementing a new innovation strategy, do you recommend that the company follow a compression approach to innovation or an experiential approach? Why?

Develop Your Career Potential

SPARK YOUR OWN CREATIVITY
Creativity is a vital part of every organization—and not just the whiz-bang, multimillion-dollar type of creativity.[94] Even banal tasks can benefit from a new approach: an office assistant may think creatively about how to manage the company's filing system or figure out a simple way to keep track of who is in and out of the office. A Chicago company called Inventables has developed innovation kits—boxes containing disparate items to spark creativity—which it sells to clients like Procter & Gamble and Motorola four times a year. The idea is that designers and engineers will be inspired by tinkering with the contents of the kits.

You don't need Inventables to become inspired, however. Nor do you have to wait for your company to develop a creative work environment before you can become creative. You can spark your own creativity and think "outside the box" on your own. A Cincinnati-based company called Eureka Ranch uses toys to help adults remember how to be imaginative, and its long client list of *Fortune* 500 companies is a testament to founder Doug Hall's methods. Another company,

Mindware, specializes in educational activities and toys that can help adults regain access to their imaginations. Just looking through its catalog of erector sets, science sets, puzzle books, strategy games, and tangrams may be enough to get your juices flowing.

Activities
1. Visit **http://www.eurekaranch.com** and listen to the audio clip of what the company does and how it does it. What do you think of the three dimensions of creativity?
2. At the Eureka Ranch Web site, visit the page on Brain Brew. What is Brain Brew Radio? Is it available in your area? If it is, consider listening to it once a month to hear the creative ideas that people across the country are working on.
3. Visit **http://www.mindwareonline.com** and peruse some of the products the company sells. Which products do you find most appealing? If it's in your budget, order one of the items as a tool to help you develop and refine your creative side.

Biz Flix
October Sky

The movie *October Sky* is based on the autobiographical book *Rocket Boys* by Homer Hickam. An all-star cast is led by Jake Gyllenhaal, who plays Homer Hickam. As a teenager, Homer is facing a dreary future as a coal-miner until he sees the Soviet satellite *Sputnik* pass over his small mining town of Coalwood, West Virginia. A new interest in rockets infects Homer, who begins to experiment with model rockets in the summer of 1957. Soon, Homer has convinced several of his friends to join him in designing a rocket to enter in the National Science Fair, where they hope to win college scholarships as a result.

What to Watch for and Ask Yourself
1. Are Homer and his friends working toward discontinuous change or incremental change? Explain.
2. Which approach to innovation best describes what the "Rocket Boys" are doing? Identify the elements of the approach you choose that are evident in the clip.

Management Workplace
Ziba Designs

Do you ever wonder who designs all the gadgets and gizmos you see and use everyday? Ziba Design, one of the most renowned industrial design companies, is based in Portland, Oregon; it was started by Sohrab Vossoughi, an Iranian immigrant, more than 20 years ago. No industrial design firm in the world has won as many awards per employee as Ziba, which has won as many as four prestigious awards in one year. Ziba's success is a tribute to the culture of innovation nurtured by its founder.

What to Watch for and Ask Yourself
1. Describe the elements of Ziba's creative work environment.
2. In what ways does Ziba use an experiential approach to innovation? In what ways does the company use a compression approach?
3. Based on what you saw in the video, how well do you think Ziba manages change?