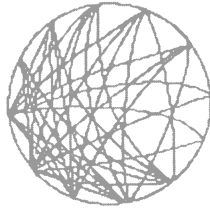

CHAPTER I



WHY

The Way to Work

“Nothing is ever changed except by making it obsolete.”

—Attributed to Bucky Fuller¹

In a “whisper of time,”² the predictions of futurists have become front-page news. Work as we have known it for centuries is obsolete. If you participate in teleconferences, communicate via e-mail, or share information with colleagues on web sites, you work virtually.

What is driving this new way to work?

Continuous, wild change at breakneck speed; new, newer, and newest technology; globalization *and* localization; and a demand for social as well as financial performance all typify business in the Internet Age.

“We can’t solve twenty-first-century problems with nineteenth-century organizations.”³

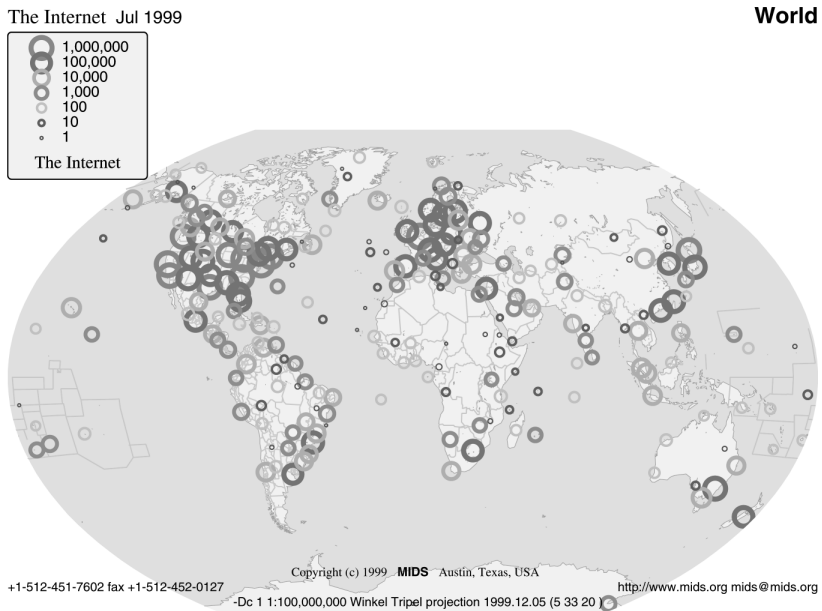
Shapeshifters

Like Odo, the Star Trek shapeshifter on *Deep Space Nine*, work is dematerializing and rematerializing right in front of us. For centuries we've worked primarily face-to-face for the same boss. Now we work virtually across distance and reporting lines.

Neighborhood

The global communications web that makes everyone on the planet neighbors—long imagined in science fiction—is in place. Nearly every country in the world has Internet connections (Figure 1.1).⁴ Coupled with such connectivity is the sheer complexity of markets and customers. Nothing is simple anymore.

Figure 1.1 Global Internet Map



It is now *rare* that individual companies carry out projects completely by themselves. Our own Internet start-up at its seed stage involves a core group of 10 people surrounded, linked to, and intersecting with 10 times that many more, each of whom has his or her own tens and hundreds of connections. Our project, like yours, crosses internal and external boundaries, drawing together members situated anywhere and everywhere.

Consider Valent Software, the emblem of twenty-first-century business. Its 10 employees *never* really collocate, yet within three years they turn a \$700,000 investment into a \$45 million sale to a major web portal. They provide Lycos Clubs, a community-building facility critical to Lycos's success.

Both J. Scott Benson, the CEO, and the company's chief technology officer, Chris Williams, lived in Massachusetts. "[T]he president [Anthony Antonuccio] was parked in Utah, the engineering team [led by Leigh Turner] was based in [Columbus,] Ohio and a handful of other employees worked out of their dining rooms and basements," writes Julie Flaherty in a large feature in the *New York Times*.⁵

"The 'workplace' consisted largely of cell-phone calls, e-mail correspondence and meetings in hotel lobbies. Except for a small office in Woburn, Mass., that it rented primarily as a place to receive mail, Valent did not have a brick of property to its name."

Or consider the Dutch company that Bart Piepers⁶ writes about: "Right now I (Bart) am sitting in [sic] the train. Marcel [Storm, his colleague and coauthor] and I live about 20 miles apart. All the people (about 10) that work for Concept-international in different projects live within a radius of about 150 miles in three different countries. Our goal is to become as international and virtual as possible."⁷

Allegiance to our projects is as strong as it is to our companies. "Who's the boss?" is a good question—if you even have one, or perhaps you have two. You may be part of a small team that sees something that needs to be done—then does it. All of you are leaders in your own domains. Perhaps you all work for different people who themselves cross in ever wider circles of connections. Before long, you may find yourself like the Time Based Notification team at Sun Microsystems, where 60 percent of the members move on to its successor project, the Glass House Gang

(see Chapter 5, “Place”). They do their first project on a shoestring and the next with strong corporate investment.

Move in Sun’s case is a relative concept. People don’t “move” anywhere physically. Instead, trust binds them, as they can live primarily online. This is where the team works. To work on Sun’s Time Based Notification team means to go online. Face-to-face meetings become ever more precious and increasingly rare.

The nine-to-five office as we have known it is more often than not—*not*. Fully one-third of the 25,000 dwellings in our city, Newton, Massachusetts, house white-collar businesses. “White-collar” itself is on the express train to antiquity. What with casual Fridays having crept backward through the workweek, even suit manufacturers are called upon to update their lines. You attend meetings in your pajamas, talk with people halfway around the globe, use insomnia to catch up online, worry about headset not car-seat comfort, and partner with people you have never—and may never—meet face-to-face. An MCI commercial got it right: the woman with “bed head” and in her slippers on a con call dreading the advent of videoconferencing.

Human beings have always worked and socialized in face-to-face groups. Now people no longer must be in the same building—never mind on the same continent—to work together. They belong to *virtual teams* that transcend distance, time zones, and organizational boundaries.

Ernst & Young International’s chief information officer, John Whyte, “cut travel by 35 to 40 percent” with virtual teams. “We were spending well over a million a year.” He compensates by breaking up his 100-person, three-continent, globe-circling organization into 10 teams of 10 people each. This unleashed what Whyte calls “lots of cross projects that are much closer to real events.” Each team chooses its own ways to work virtually—weekly conference calls (the tried-and-true default communication technology for virtual teams), face-to-face, instant messaging on the Internet, videoconferencing, online whiteboarding.⁸

The use of teams is on the rise, and with a quarter of a billion people on the planet already online,⁹ the face-to-face aspect of normal working relationships is changing dramatically.

Until the advent of the web, such ways of working were simply impractical. A few thousand lines of computer code written in Switzerland in

1989 to help out a network of particle physicists¹⁰—coupled with unprecedented advances in technology—have transformed the world.

The web gives people the unprecedented ability to work together independent of place. Consider the implications of these numbers:

- In four years, the number of adult Americans online went from 9 percent to 56 percent.¹¹ They have access to a billion pages of content worldwide.¹²
- By 2005, there will be a PC and a wireless device in use for nearly every half-dozen people on the planet.¹³
- Internet growth itself—defined as the number of new host computers that comes online daily—is finally slowing.¹⁴ Meanwhile, connections among people and computers are staggering and uncountable, “perhaps on the order of 100 percent annually,” according to Matrix Information and Directory Services.¹⁵

At last, the planet is wired—though “wired” is not entirely accurate either. Much of our interconnection is *wireless*. Connected, linked, matrixed. We are the future now.

Distance-defying communication opens up vast new territory, unbounded by space or time, for “working together apart.”¹⁶ For the first time since nomads moved into towns, work is diffusing rather than concentrating. Officially, we have moved from the Industrial to the Information Age.

Smart Work

New business models give rise to new organizational configurations that belie the classical competitive market.

Working across boundaries—in partnership over corporate lines with vendors and customers, in alliances with complementary enterprises, and in deals with direct competitors—is the norm.

To test this, play “Name the Competitors” in a big deal or new alliance. Shell and Texaco stations across the street from each other are owned by Motiva (retail East), Equilon (retail West), and Equiva Services, which the otherwise competing majors own together. Bank of America and Robertson Stephens comanage deals, such as the IPO for Internet Capital Group, in which Merrill Lynch is the lead underwriter. GM, Ford, and Daimler-Chrysler set up a joint venture for web-based supply chain management.¹⁷

There, on the web, business boundaries blur. “Name the Collaborators” is the new game. Lycos, the portal that goes public 10 months after it is founded,¹⁸ is itself a network of 13 other sites. Ask Jeeves a question (you don’t need the “http://,” the “.com,” or even the Jeeves—the three letters *ask* alone will get you there) and you go to a WebCrawler site with banner ads for AT&T’s online billing and Barnes & Noble, each just a finger flex away. Click and you’re on a site in Tasmania or Toledo (Ohio) or Toledo (Spain). Place itself has dissolved, a current reality declared in *The Death of Distance*,¹⁹ the 1997 book by *Economist* writer Frances Cairncross.

“We don’t have all the good ideas in the world,” says Hank McKinnell, president and chief operating officer of Pfizer, the pharmaceutical company.²⁰ So his company has scores of cross-company collaborations with its competitors and promotes intracompany networking. “No matter how effective any one person is,” McKinnell says,

“All of us are smarter than any of us.”

When is the last time you worked on a project with only people whose offices or desks are near yours? Boundaries that separate functions and divisions within companies have become porous. People rarely work only by themselves. Even solo, independent contractors spend most of their time working in teams.

The boundary-crossing, virtual team is the new way to work.

When General Electric does a late-1990s assessment of critical capabilities for the future, it finds that “the skill of leading virtual teams is the new requirement,” according to Russ Baird, head of GE’s Six Sigma Quality Training at the corporate Leadership Development Facility at Crotonville,

New York. “We zeroed in on the skills for continued success and it became obvious that teams are more virtual than they’ve ever been and are rapidly becoming more so. Projects are becoming larger with multiple subteams crossing lots of functional as well as geographic boundaries. We have and need very diverse teams to address projects of this scope.”²¹ Since 1998, GE has been training its famous “Black Belts” in virtual teaming.

Jack Welsh, the company’s chairman and chief executive officer, who all but brought the word “boundaryless” into the business lexicon, has made e-commerce the top priority for all the companies in the portfolio before he retires in 2001. His organizational-networking imperative is paying off—GE is the first company in history to report \$10 billion in earnings.

Virtual Gap, Virtual Edge

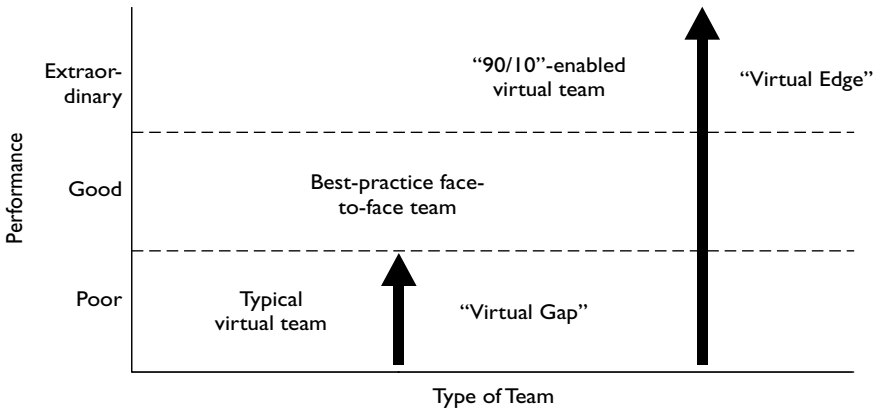
With the technology and connections finally in place, we now face the truly difficult part of the virtual equation—the people element. Real groups are notoriously complicated. Anything that goes wrong face-to-face also goes wrong online, only faster and less gracefully. Going virtual²² is for most people a wrenching experience, both in adapting to new technologies and in adopting new behaviors and working relationships.

Take a typical team, make it virtual, expect trouble. Working across organizational boundaries introduces communications and motivational problems. You immediately need to compensate just to bring the team up to the level of performance of a colocated team—to bridge the virtual gap (Figure 1.2).

There is good news. The steps that teams take to cope with their network nature—using collaborative technologies and designing flexible organizations—not only compensate for capabilities lost, but also establish the basis for extraordinary performance. By solving today’s problem of poor performance among virtual teams, we prepare ground for tomorrow’s dramatically smarter teams with a virtual edge.

Virtual teams are the people-operating systems for the twenty-first century.

Figure 1.2 The Virtual Edge



Like GE, many companies—large and small, old-line and broadband-new—are experimenting with different ecologies of people, organization, and technology. Of considerable consequence is how those who had access to collaborative technology from the beginning use it today. A stop on this journey is a company that always has lived by the technology it makes.

eSun

Sun Microsystems has been betting on cyberspace since its 1982 inception. The first computer it ever shipped had the basic protocols for Internet communication built into it.²³

Sun maintains an extraordinary information infrastructure to support its 37,000-person company. What other companies manage with more people, Sun tries to achieve with better and faster communication. Some Sun people say they no longer use paper at all.

When web technology exploded in the mid-1990s, Sun embraced it immediately everywhere. Several thousands of web servers went up in a matter of months all across the company. CEO Scott McNealy's 1995 corporate-wide injunction "to operate on Internet time without compro-

mising quality” set a daunting new standard. The company also launched a multiyear initiative to solve customer problems with cross-company teams, SunTeams (see Chapter 5, “Place”).

Dot-comming Ourselves

Looking to the new millennium, the company decides to up the ante for itself again in 1999. Sun will become eSun. All customers will come to one Sun front door on the web: www.sun.com. Everything else will flow from there—from online purchasing for all products to MySun.com, where customers and employees will customize their own ways to work with, through, and at Sun.

The job of “dot-comming ourselves” falls to a Sun vice president and general manager from the field. Al Ormiston is just wrapping up his last special assignment—reintegrating Sun’s aftermarket business into another Sun group. SunExpress had been spun off and now the company has brought it back inside. “There was lots of emotion,” Ormiston recalls. “Then the world exploded and everything was ‘portal this’ and ‘portal that.’” The reintegration unwittingly but opportunistically gives birth to the next major change in the way Sun does business.

eSun, now a corporate-wide initiative “to transform the way we do business,”²⁴ begins as an aftermarket online catalog for the System System Products group, following the SunExpress reabsorption. Then Sun’s president and chief operating officer Ed Zander asks Ormiston to “take what you’ve learned and roll it out across the whole company.”

The company that promises to “dot-com” everyone else faces a very big challenge. It has to break new ground faster than its customers and its competitors. That means the entrepreneurial models in each of Sun’s groups have to be pulled into one set of best practices across Sun. Ormiston leads that charge.

Ormiston describes the early eSun meetings: “Imagine 30 to 40 people in the room with their arms crossed saying, ‘I’m here but I don’t want to be here.’” Providing “one face of Sun” to customers means consistency across areas that always have been autonomous in the groups—inventory, purchasing, pricing, terms, and conditions, not to mention back-end

technology choices that are extremely important to engineers. “They could all do their own thing in the past. It was a real tangled web,” but after a few years, Ormiston says, “the web forced everyone to take the same approach. We needed a single web-buying environment.” Instead, Sun then had four major divisions, each with its own sales organization and business rules. With eSun, customers come in through the same front end and are guided to the store, the communities, and other Sun services.

Communication

To avoid setting up a “central group with a mandate-like structure,” Ormiston instead sets up a virtual organization. First he works with each Sun group to name its own eSun vice president, who reports both to the division and to eSun, along with eSun Program Management Offices that have the staffs to maintain them.

“Half the battle is being understood,” Ormiston says, so he also asks each division to name a person to the eSun Communications Council. About 15 people from across the company (including public relations, advertising, marketing communications, and human relations) convene. “The idea is ‘from our mouth to their ears.’ Their whole job is to be sure that our messaging is consistent,” he says. “Every time we have 10 new slides explaining what eSun is, they go out through the council.”

The Communications Council owns the eSun site. “We post everything there,” he says, “Notes, meetings, road maps. It’s the first time that we’ve publicly put up everything we do and it causes heartburn. We agreed up front to publish a monthly online eBook with the good, the bad, and the ugly so that we can maintain a nonparochial point of view. Collaborative teaming is just beginning to work with all the products.”

Communication is intense. The eSun program management officers have two or three conference calls a *week*. The same group comes together face-to-face for a day twice a month. And the directors from each division meet face-to-face for a day once a month.

How many people does it take to add the *e* before the company’s name? Ormiston estimates that a little more than 1 percent of the company is involved in eSun, 400 in total, with 100 on the business side and three times that many on the information technology side.

“When I came in from the field to do eSun, I assumed that everything would change because the president said so. No. It doesn’t work that way when people understand that everything they’ve been doing for years is going to change or go away.”

Even for a company like Sun that’s lived by the net since Day One, transitioning to the new world is a challenge. Ormiston calls eSun “a mixed conversation. Some people feel very strongly aligned and some people feel like they’re getting run over. There’s lots of culture and psychology that goes on. We haven’t solved it completely yet, but we’re trying.”

It’s refreshing to talk to people at Sun. They admit that life is difficult in the Network Age and earnestly use their own behavior and technology to improve.

“eSun is the new Sun, and when we’re done,” he pauses, then continues, “I guess we’ll never be done.”

Internet speed, indeed.

How It Feels

In a word, it feels different. It’s a blurry, messy world and everyone is scrambling to catch up.

New Leaders

The younger generation may have a natural advantage in the new world, but leadership in the morphing business environment remains complex.

“In a networked organization leaders have to use influence and powers of persuasion, which is much more complex and much more challenging than giving orders,” says Phil Carroll, chairman and chief executive officer at Fluor Corporation. (Carroll was president and CEO at Shell Oil Company in the 1990s—see Chapter 2, “Networks”). “Young leaders have the ability to operate in this new environment. They recognize that they’re not working on the authoritarian model.”

Leaders must think differently about themselves, Carroll says. “You are not the source of all wisdom.” He calls it an emotional challenge “if you are predisposed to want to exercise leadership from the more authoritarian model. If that’s what you want to be, you’ll find this other

kind of leadership difficult and very frustrating because at times it's slower and not as efficient and you don't get your way. And for some people that is a problem."

Tom Botts, who worked for Carroll at Shell and is now head of Shell U.K.'s Gas Directorate, talks about "unleashing leadership capacity." When he took over as treasurer of Shell Oil Company, he tore down the walls on two floors of Shell's headquarters in Houston, redesigning the space for flow and communication. He did the same thing at Shell U.K.'s headquarters in London nine months after he took on his post there, including removing the walls around his own office. "Doing away with the trappings of power like a big office helps dispel the notion that leadership only rolls down from top," Botts says. "Leadership capacity is buried in the organization and it needs to be unleashed. When you do that, people step to the front with ideas and actions that are pretty imaginative and that others might not have thought them capable of in the past."

Two generations of leaders, old-line company, new thinking.

Pace

Robin Abrams, a self-described "gray-hair," has grown up with the Internet, switching courses and careers with the times. Originally a banker, Abrams came to Chemdex as chief operating officer from the presidency of Palm Computing (makers of those handheld devices that people stare and poke at during meetings). Before Palm, she was president of Hewlett-Packard's VeriFone, one of the original virtual companies. (Its product is entirely virtual—the electronic banking system for credit card purchases—and they have created a culture to match.) Prior to Palm, she ran sales on various continents for Apple. Never mind that she has a law degree and a bachelor's in science.

We first met Abrams in 1995 at the launch meeting of Apple's international engineering group in Tokyo. She headed Apple's sales and marketing in Asia and stopped by the meeting on her way from Hong Kong (where she, her husband, and two young daughters then lived) to Apple's Research and Development campus in Cupertino, California. Even though Abrams was riding the crest of Apple's wave in Asia with market share above 20 per-

cent, she dragged her own suitcase behind her through Tokyo's subway maze and jumped into the conversation within moments of entering the meeting.

Eight months after she came to Chemdex in June 1999, Abrams changed jobs again, to the same position in Ventro Corporation, of which Chemdex is just a part. Ventro is one of the new breed of "business-to-business vertical marketing companies."²⁵ Chemdex is one of the verticals.

Chemdex is a nifty business idea that would be simply unthinkable without the Internet, web-friendly databases, and a sufficient population of people online. It is the ultimate food co-op for the life sciences industry. It allows enterprises, researchers, and suppliers to network in an industry whose supply chain has been classically inefficient. It's hard for suppliers to find their customers; it's even more difficult for the customers to place their orders. Enter Chemdex, which

- Digitizes more than a million SKUs spread across the suppliers' numerous 5-pound paper catalogs.
- Equips customers to easily access them by placing icons on their PC desktops.
- Builds the business rules of each participating company into their online use.

"Researchers should be inventing, not paging through catalogs," Abrams remarks. By ephemeralizing the process, Chemdex dramatically reduces expenses from an average of "\$80 to \$120 down to \$40 to \$60 for a purchase order."

Abrams is using videoconferencing more than ever before for interviewing, customer meetings, and negotiating contracts. "I've never done that before, but the customer's time is more precious than mine. You just don't have to do everything face-to-face."

Until Chemdex, Abrams had never negotiated a single contract without meeting her partners face-to-face. "Momentum is so important now," she says. "You don't have six weeks to build bridges." Abrams demonstrates this urgency even in her speech. Equipped with a headphone and typing at top speed using electronic shorthand, it's hard to take down her words as rapidly as she fires them out.

“You have to be sure to hire people who are pretty savvy with people skills,” she says. “Interviewing now is painting an opportunity and giving the candidate tools to make the assessment. It’s a 50/50 deal. They’re interviewing you as much as you’re interviewing them.”

Success in this world requires new business sensibilities. “Gross margin is a rule to be broken,” she explains. “In the old mainframe days, we expected gross margins to be 60 points, 15 points in PC days. Our model is 5 points of operating profit. How does that work? By delivering a high volume of transactions.”

The business pace “creates a phenomenal level of energy,” she says, with people putting in six days a week. And it requires trust. “Visibility, visibility, visibility,” she suggests, extolling the value of face-to-face. “People need to see you.”

Ventro, like many similar companies, has a great cultural challenge: “To blend the talent between young bright minds and the gray-hairs,” she says. “The management team has to be ready, willing, and able to learn. The pioneer is always tweaking the model, so you have to hire people willing to learn and course-correct on the fly.

“There’s no looking back over your shoulder after making a decision. You have to be adept and speedy at conflict resolution because momentum is such an asset. You’re with a bunch of 32- to 35-year-olds, bright and willing to break all the rules and ask all the right questions. But you still have to surround them with a sufficient level of experience in channel strategy, brand building, and product management while keeping this momentum going. If you had all bright 32-year-olds or all bright gray-hairs, it wouldn’t work.”

Bridging the Virtual Generation Gap

The need for adult supervision is a new organizational requirement in the twenty-first century. Before we know it, 10-year-olds will be running the world. Perhaps they already are.

Since the 1990s, a new generation has come into business positions previously reserved for people two or three times their ages. Why? Because the new entrepreneurs have the ideas and the skills to work in the new

way—but not yet the business experience to apply them. There's room for both generations.

Rear Admiral Tom Steffens, director of the Center for Intelligence and Information Operations at the U.S. Special Operations Command in Tampa, Florida, has his own experience of the generation gap: "I always find that I am about two thoughts behind in any 'chat session' I have with my son, who is a sophomore at Virginia Tech.

"The under-30-somethings are more likely to be more computer-facile than their more senior leaders, who may not even have the simple skill of rapidly pointing and clicking (and perhaps even typing). Of course, no leader wants to look incapable of anything, much less using a computer, which every third grader can do, so if the collaboration tool requires you to master Windows or whiteboarding or Internet chat while dealing with the time lag that is inherent in much of it (compared to a telephone) . . . well then, just forget it and call everyone to your office or HQ for a conference, even if it takes a few days or weeks before everyone can fit it into their schedule."²⁶

The gap goes even deeper for Steffens. It's conceptual as well. In his view, the older generation thinks linearly, whereas "two generations behind ours think differently . . . they look at things as whole concepts and visualize the picture (still worth a thousand words, or is it a thousand terabytes?). So the whole collaboration concept works faster with them."

From the perspective of the younger generation, it's equally complex. "We have 26-year-olds who've only ever had one job before managing large groups of very smart grads just a few years younger," says Jay Albany, who is 23, and works in a dot-com.

It's not uncommon for people in Albany's position in start-ups to work 16-hour days. This is fast work but it's not necessarily smart, which is where the voice of experience makes its contribution in the Internet economy.

The Virtue of Virtual

The word *virtual* has made it into everyday language. Virtual has the same Latin root as *virtue*, an intimately personal quality of goodness and

power. Its archaic meaning is an apt definition for successful virtual teams: “effective because of certain inherent virtues or powers.”

Here are three contemporary meanings for *virtual*:

- “Not real” but “appears to exist,” something “that appears real to the senses” but is not in fact
- “Not the same in actual fact” but “in essence,” “almost like”
- Virtual as in “virtual reality,” a recent meaning invented for an emerging capability

When we use the term *virtual*, we do *not* mean it in the first sense, the way an old American TV commercial for audiotape did: “Is it live or is it Memorex? With Memorex, you can hardly tell.” With a virtual team, you can tell: Virtual teams are living, not Memorex. They are most definitely *real* teams, not electronic representations of the real thing.

The “almost like” definition, as in “they act virtually like a team,” is on target. There are similarities, but also critical differences. A virtual team conjures up a different picture from that of people in the same organization working together in the same place. People also use *virtual* to connote the same-but-different nature of a “virtual corporation,” “virtual organization,” and “virtual office.”

The third and newest meaning of *virtual* attests to forces that have moved teams into an altogether different realm of existence—virtual reality—or, more precisely, *digital* reality. Electronic media together with computers enable the creation of new kinds of spaces. They are real to the groups that inhabit them, yet are not the same as physical locations.

Virtual teams go digital.

Cyber Real

With electronic technology, virtual teams provoke entirely new ways of working and organizing. To physically travel across distances faster than the speed a person can walk requires technologies and authorities—cap-

tains of ships that sail across oceans to new worlds, engineers guiding trains that chug over mountain ranges to new frontiers, aircraft pilots for safe takeoffs and landings.

In cyberspace, you are captain; you steer.

The word *cyberspace* is telling. Although the term *cybernetics*, meaning “steersman” in Greek, was first coined by Norbert Wiener and his colleagues in the early 1940s to describe the “science of control and communication in both animals and machines,”²⁷ no “cyber” words appeared in the 1955 *Oxford Unabridged Dictionary*. Four decades later, *The New Shorter Oxford* defines *cyberspace*: “space perceived as such by an observer but computer generated and having no real existence; the space of virtual reality.”

Virtual? Yes. Having no real existence? No.

In 1989, Tim Berners-Lee, working at CERN (Conseil Européen pour la Recherche Nucleaire)²⁸ in Geneva, Switzerland, started to develop protocols that would give the particle physicists there a powerful new way to interconnect their global research community using the Internet.

The essential technologies and agreements that make the web possible are very simple and come from humble beginnings. The astonishingly easy-to-use computer language for designing web pages is called HyperText Markup Language (HTML), and the communication that connects web sites follows the now-famous standard, HyperText Transfer Protocol (HTTP).

By 1993, the required protocols were in place, and in the fall of that year, students at the University of Illinois (including Marc Andreessen, who went on to found Netscape) created the NCSA Mosaic browser. With an easy way to steer through cyberspace, the World Wide Web took off and never looked back.

In a few short years, the web has become the communication *phenome extraordinaire*. Suddenly, anyone with Internet access can explore a billion postings around the world on nearly every conceivable topic, gliding from continent to continent in click-of-a-mouse time.

Ted Nelson and Doug Engelbart are among the earliest seers in the 1960s to envision the possibilities of hypertext and the resulting global web of networked knowledge. The word *hypertext* is self-descriptive: It is text that is hyperactive. Anything written in hypertext (or any data ele-

ment) can become what amounts to a computer button of its own, representing simple but profound linking capability. Click your mouse and off you go to that destination. This means that everything on the web can be interrelated—linked.

Companies, libraries, universities, governments, hobbyists, nonprofits, politicians, social activists, families, and just plain folks all have jumped onto the web. For virtual teams, the use of password-protected sites brings a singular value.

For the first time, teams can virtually colocate all the information and interactions they need to work together in context.

That does not mean that all the team's information is on the site, but it does mean that the site can point you to wherever you need to go. Pointers are embedded in text, outlines, graphics, maps, and other media. Virtual reality for virtual teams is already digital and rapidly becoming conceptual.

The eruption of the web allows virtual teams to create private digital places. These interactive sites—protected, members-only islands within the global Internet ocean—signal a sharp uptick in the human capability to group.

Definition

What, exactly, is a virtual team?

A virtual team is a group of people who work interdependently with a shared purpose across space, time, and organization boundaries using technology.

Face-to-face interactions among people from the same organization typify old models of teamwork. What sets virtual teams apart is that they

routinely *cross boundaries*. What makes virtual teams historically new is the awesome array of interactive technologies at their disposal.

Webs of technology and trust link virtual teams.

Regular meetings, encounters in the hallway, getting together for lunch, dropping into one another's offices—these paint our conventional portrait of getting things done.

People do not routinely see one another when they are in different places, spread out around the world, or even housed in different parts of the same city. Motorola, for example, has some 20 locations just in the northwest Chicago area, each of which has multiple buildings. Many teams today *never* meet face-to-face, but work together only online. Such is the case with the 1,250 employees of Buckman Laboratories in Memphis, Tennessee, who form and disband numerous situation-specific virtual teams on a daily basis—even though the people in them are spread all around the globe.

One major reason why many virtual teams fail is because they overlook the implications of the obvious differences in their working environments. People do not make accommodation for how *different* it really is when they and their colleagues no longer work face-to-face. Teams fail when they do not adjust to this new reality by closing the virtual gap.

Proximity

What first comes to mind when you think of a team? A group of people working side by side or in close proximity to one another—a basketball or soccer team, perhaps?

From a personal perspective, the important distances are the very short ones. How close people prefer to be for interpersonal interactions varies by culture—from inches to feet.²⁹

How far away do people have to be before they need to worry about compensating for distance? Or put another way, how close do you have

to be to get the advantage of being in the same place? That is, what is the “radius of collaborative colocation?”

Based on proximity, people are not likely to collaborate very often if they are more than 50 feet apart.³⁰

The startling data that MIT professor Tom Allen has been compiling for the past several decades show that the radius is very small. The probability of communicating or collaborating more than once a week drops off dramatically if people are more than the width of a basketball court apart. To get the benefit of working in the same place, people need to be quite close together.

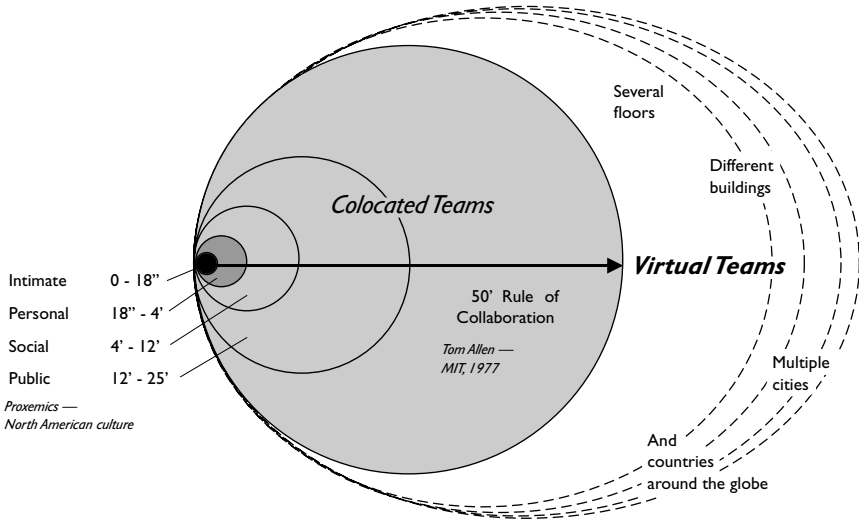
To put this in perspective, think of the people you regularly work with. Are they all within 50 feet of you? Or are some of your coworkers a bit more spread out—down the hall, on another floor, in another building, or perhaps in another city or country? Increasingly, the people we work with are no longer within shouting distance. Any team of more than about 10 or 15 people is, due to sheer physical mass, probably more than 50 feet apart (Figure 1.3).

Globally, the farther apart people are physically, the more time zones they must cross to communicate. Thus, time becomes a problem when people who are not in the same place need some of their activities to be in sync. The window for routine same-time (synchronous) work shrinks as more time zones are crossed, closing to effectively zero when people are on opposite sides of the globe. But even people who work together in the same place can have problems being in the same place at the same time, like those in sales or consulting who rarely occupy their offices at the same time. Even apparently colocated teams often cross time boundaries and need to think virtually.

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Do all the people you rely upon to get your job done work for you or your boss? Probably not.

Figure 1.3 Colocated to Virtual Distance



Most core business processes require that people regularly work across organizational boundaries. Supply chain management, marketing, product development, sales, quality improvement, and change management are just a few activities that require virtual teams to work over walls and across borders.

Large-scale-systems change invariably requires teamwork across organizational borders. To reinvent its administration and information management system, the U.S. Department of Commerce involves hundreds of people in teams from five major bureaus and dozens of smaller organizations. Usually numbering 8 to 10 people each, these virtual teams also comprise scores of contractors who provide everything from consultation on change management to software programming.

Alliances, joint ventures, and partnerships all require companies to establish cross-boundary teams.

Benefits

Doing together what we can't do alone.

So why put up with the burden of working across boundaries? Because, when successful, virtual teams dramatically improve business performance. For Shell Oil Company, virtual teams³¹:

- *Reduce costs* by cutting travel costs and time, creating new “e-economies” of scale, and designing better digitally enhanced processes.
- *Shorten cycle time* by moving from serial to parallel processes, establishing better communications, and generating more wide-spread trust.
- *Increase innovation* by permitting more diverse participation, stimulating product and process creativity, and encouraging new business development synergies.
- *Leverage learning* by capturing knowledge in the natural course of doing the work, gaining wider access to expertise, and sharing best practices.

Growth

Virtual teams are not just a great way to organize and make use of cutting-edge technology. Whether consciously or not, many companies are betting their future on virtual teams as their strategic differentiator. By employing virtual teams, they can do things that are impossible within the prevailing model of side-by-side, nine-to-five work.

Virtual teams are a strategy for success.

If they cannot accomplish their goals within their own four walls, net-savvy companies climb over them and partner with someone or several someones with whom they can make it happen. If their competition suddenly overpowers them, twenty-first-century organizations see virtual teams as the way to become smarter, more flexible, adaptive, and more competitive.

The way is not easy. Virtual teams are microcosms of the organizations and environments that spawn them. Today's teams are complex and reflect all the stresses and strains induced by the extraordinary shift in human civilization now completed. As the Industrial Age recedes and the zenith of the Network Age looms ahead, we and our groups are stretched betwixt and between. We are born into the old-age past, yet must navigate in the new-age present.

Virtuous Loop

Old management molds that funnel information up and send orders down are cracking apart. More information is more omnipresent to more people. Competitive pressures to constantly improve cost and quality drive radical redesign of business models and work processes. All the while, information seeks its natural path, defying gravity, flowing with its own simple process physics and mindless of boundaries drawn in the physical world.

There is a *virtuous feedback loop*³² building in the development of virtual teams that promises an exponential rise in performance. Virtual teams are not a fad. They are here to stay and soon to be ubiquitous.

This virtuous loop story begins with yesterday's assumption that people must colocate to work together. Shoulder to shoulder, the traditional team works together, handing off their work to the next team in chains of larger processes, the bucket brigade of working groups, organizational building blocks of closely spaced bodies stacked in command-and-control pyramids. This is the idealized machine organization of the Industrial Age.

Today, however, technology, speed, globalization, and complexity are rearranging this root premise of work design. Two things happen: Distance and time become problems to solve, and organizational issues develop within rigid hierarchy-bureaucracies. To deal with the demands of competition that force cross-boundary work, organizations create virtual teams.

Electronic, particularly digital, media that people typically use to compensate for distance eventually create new possibilities. Entirely new ways for people to work interactively lead to new networked forms of organiza-

tion. As the shift to information work accelerates, new energy is pumped into the system as increasingly more work is devoted to digital products and services.

As the technologies and processes of virtual work improve, more work is designed to gain virtual benefits. This only fuels the accumulating trend toward virtual teams, making it easier for them to come together and work interdependently. More virtual teams mean more networked organizations replacing or transforming traditional hierarchy-bureaucracies.

More virtual teams in the newly fertile digital environment also mean we have the possibility of regularly reaching heights of performance and group intelligence only rarely experienced by traditional teams.

Looking Forward and Back

A good virtual team is, at its heart, a good team. Since many virtual teams do meet periodically, or a few times, or at least once, they also find themselves in the conventional face-to-face setting.

We are untrained for life and work in the fluid, instantaneous global village. Thus, we need new models for teams that also incorporate the timeless features of working together.

Four words capture the essence of virtual teams: people, purpose, links, and time.

- *People* populate and lead small groups and teams of every kind at every level—from the executive suite to the subcommittees of the local school's parent association.
- *Purpose* holds groups together, which for teams means a focus on tasks—work progressing from goals to results.
- *Links* are the channels, interactions, and relationships that weave the living fabric of a group unfolding over time. The greatest difference between in-the-same-place teams and virtual ones lies in the nature and variety of their links.

- *Time* is a dimension common to all life and one that dominates virtual teams—schedules, milestones, calendars, processes, and life cycles.

Work in a world where the sun never sets is very complex. There are few maps and lots of complaints. People are trying to feel their way, uncertain that they are making the right decisions.

For virtual teams and networks to be truly transformational, they must include what is timeless and enduring in human groups. They also need to reflect the features that are really new in the turbulent years following the turn of the millennium. The organizing challenge of our time is to learn to work in virtual teams and networks while retaining the benefits of earlier forms.

