

CHAPTER 1

WHY NETWORKS? THE 30,000-FOOT VIEW

A global revolution is underway, a social upheaval in organization that involves you and everyone you know. It shakes every place of work, quakes the foundations of our biggest institutions and our smallest groups, even sends quivers into our homes and communities. It swirls through organizations of all sizes, in all sectors, in all countries. Regardless of gender, race, creed, or economic status, people are turning their organizations upside down, on their sides, and inside out.

The network is emerging as the signature form of organization in the Information Age, just as bureaucracy stamped the Industrial Age, hierarchy controlled the Agricultural Era, and the small group roamed in the Nomadic Era.

Does this mean “smash the boundaries,” “tear down the hierarchy,” and “dismantle the bureaucracy”?

“Clear out the old to make way for the new” goes the conventional wisdom. Appealing as these slogans of management revolution might be, they are misleading. Has any organization you know rid itself

entirely of hierarchy and bureaucracy? What is more important, should it?

To develop healthy, flexible, intelligent organizations for the 21st century, we need to harvest the best of the past and combine it with what is really new. Surely, some learning from thousands of years of organizational life must be worth keeping. There must be continuity as well as change.

So, what is timeless in hierarchy and precious in bureaucracy? Where's the "baby" and what's the "bath water"? What should we throw out, what is best to keep, and what is both new and enduring?

Every day, our interaction with traditional organizations presents us with the personal challenge of learning how to function in groups—small and large. Couples argue about how to organize the housework; coworkers squabble about who's in charge; politicians debate how to balance their power, even to the point of "reinventing government." New ways of doing things are growing in, between, and alongside "the way things are and always have been."

Each of us participates in many small groups. Every encounter, every meeting, every moment spent planning the future is an opportunity to do a little organizational design. With each new set of connections, we realize anew how connected things really are— among people, small groups, companies, cities, nations, and every other human grouping.

Millions of people are active participants in the organizational revolution propelling world civilization into the Age of the Network. The creation of this next age belongs to all of us as we design the organization of the future, which looks as different from the one of the past as the railroad boxcar does from the computer chip.

RIDING THE TRANSITIONAL WAVE

We don't arrive in the next century without a heritage. Today's generations straddle two eras, the graying industrial one behind and the sleek information one ahead. Just a decade ago, this was Sunday supplement speculation; today, it is a mainstream idea.

Collectively, we are in the middle of the transition. Too far in to go back, yet not far enough along to see how it's going to turn out, we are actors in the drama, playing out the awesome zigzags of truly changing times.

Today, in transition, we naturally live with all types of organization.

- Hierarchy, the top-down pyramid, has been pronounced dead, yet lives and, in most circumstances, still holds final rule.
- Even as virtually everyone vigorously complains about it and finds ways to skirt it, bureaucracy, with its neatly stacked, specialized boxes, continues to spew out more policies and procedures, rules and regulations.
- Small groups and teams are in—from the shop floor and front desk to the executive suite and boardroom.
- At the same time, new *networks* are forming, both within and among older organizational forms.

How do these forms fit together to create the most effective organization for a variety of circumstances, including your specific situation? To help answer this question, we need to start with a broad view.

FROM THE 19TH TO THE 21ST CENTURY

At 30,000 feet, the world looks considerably different from the way it does on the ground. The best leaders sometimes see their organizations from such a distance. From a great height, what do you really see in the mind's eye? An organization chart? Images of spreadsheets and

charts of accounts? Sensations of the politics of a board meeting? The faces of customers?

If you're like Bob Barry, a line of business partner-in-charge at KPMG Peat Marwick and a member of its international executive board, you know the old filters of traditional structures don't work today. "For us to be successful, we can't work in the little boxes anymore," says Barry, one of thousands of executives running a 21st-century organizational "car" with a 19th-century chassis.

Peat Marwick is nearly 100 years old. It was literally born in the Industrial Age in 1897. For decades, it was *the* premiere accounting firm, serving the captains of Western industry—until it hit the 1970s. Suddenly, the venerable business took an unpredictably sharp turn into dimensions that it never imagined. It had to cope with the impact of information technology, like the perplexing fact that many of its clients highly value information that KPMG should—but could not— provide. And it faced a global economy where the sun never sets and competition never ceases.

In the late 1980s, it also suffered merger mania (which is how the "KPMG" got in front of "Peat Marwick") and it acquired a number of American firms. Merging fits the industrial dictum that bigger is better a truism under challenge. But the underlying nature of professional services, with partners and offices everywhere serving geographically distributed customers, has led Peat tentatively toward redesigning itself as an Information Age organization.

By 1993, the sprawling firm had decided to restructure completely, moving from geographic units to lines of business—from physical to conceptual boundaries.

Barry, who heads part of the new financial services organization, says, "I've got to think financial services. But we've always thought geography. It's hard for people to think across boundaries."

Barry knows that the 19th-century bureaucracy has to make room for the 21st-century network, which means that he also has to consider the role of technology.

When we think about the future, it is nearly always in terms of technology—the emissionless car, the voice-activated computer, the

solar-powered community. “But the technological innovations influence, cause, and precipitate organizational changes,” says Kathleen Barry Albertini, a technology expert working on economic development issues.¹ Just as generations of new technology blur in year-end retrospectives, our organizations are changing faster than the mind’s eye can see.

THE CIA NEEDS A NEW MISSION

How can we solve the problems of the 21st century with 19th-century organizations? Tomorrow’s company is as different from its 19th-century ancestor as a steam engine is from a database engine.

Two hundred years is a very long life span for an organization. Most companies don’t make it past 40. (If a dog year is seven human years, then an “org” year is two.) Regardless of how long they have survived so far, most mature companies have trembled through an organizational earthquake in the past few decades that has left them dizzy.

If times are tough on Peat Marwick, just think about what America’s Central Intelligence Agency (CIA) is going through. Until the late 1980s, the CIA had everything under control, so to speak. It had relatively stable competition and a steady cash flow, an enviable position for any organization. Then a completely unexpected thing happened. In 1989, the walls came down, and its traditional market— in fact, its whole *raison d’être*—evaporated overnight. The European structures of Marx and Lenin, icons of the Industrial Age, disappeared, depositing one-tenth of humanity in the postcommunist era at once.²

The whole game of spying is unlike its pre-Age of the Network self. “We are now aware of the existence of many highly organized, sophisticated networks of corruption operating on an industrial scale,” said one *oil company* in *The Wall Street Journal*. The lead story on January 6, 1994, says that “global spy networks eavesdrop on projects of

petroleum firms,” aided by technology in a high-stakes game in which information is the currency.³

Spies are hardly the only problem for the oil companies, which, once flush with cash, now anxiously await the next lurch in prices. Rushed to change like the CIA and in the same fix as KPMG Peat Marwick, they have many unlikely companions in the Age of the Network:

- Hyatt Hotels, Qantas Airways, Air Canada, and the rest of the increasingly fluid travel and hospitality industry.
- Advanced Micro Devices, IBM, Motorola, and every other high-tech company propelled by increasing power and decreasing costs.
- *The Boston Globe*, *The Washington Post*, the Dow Jones/ Ottaway Newspaper Group, and other publishers, which worry as much about systems integration and their role in the digital future as they do about the news.
- Kellogg’s, Giant Foods, and the rest of the food industry, in which “perishable” has taken on a whole new meaning with global markets and just-in-time distribution.
- The Catawba Valley Hosiery Association (some 200 North Carolina firms that produce half of the hosiery in the United States), Furniture/New York (40 small furniture designers and manufacturers working together to increase exports), Appalachia’s ACENET (dozens of small manufacturers joined in networks to serve new markets), and other small firms that need a critical mass to be players on the global economic stage.

The need to network certainly is hitting health care. Consider how it looks to the 78,000 people who belong to the American Association of Critical Care Nurses, whose president, Joan Vitello, says, “Patients and their families require a seamless network of care,” demanding a very different approach from the superspecialized contemporary world of medicine.

Teams and networks of care, yes, but also elsewhere in the health industry: among consumers in insurance pools and alliances; among

doctors in physician networks; among hospitals to share high-cost equipment and facilities; and among all these players and more in health maintenance organizations.

THE NETWORK AGE HOSPITALITY COMPANY

Darryl Hartley-Leonard, president of Hyatt Hotels Corporation in Chicago, had just returned from a 1993 luncheon meeting at the White House, where 12 company heads from widely divergent industries had come together to discuss national trade policy with the president. “Hyatt cannot solve America’s international trade problem alone,” Hartley-Leonard told us, “and neither can any other single company.”

Likewise, Hyatt Hotel Corporation depends on relationships. A management company with 55,000 employees, it has 104 primary customers, each a separately owned hotel. Hyatt doesn’t own its hotels; it manages, and most of what it manages is change, discrepancies in the routine. At any moment, 10 percent of the hotels are having some sort of crisis that requires emergency attention: the Persian Gulf War disrupts travel to Hawaii, a general manager suddenly resigns, Marriott springs a promotion.

Like KPMG Peat Marwick, Hyatt is a natural network—in this case a network of just over 100 hotels.

Without its relationships with customers, the people who show up to register at the hotels and use their facilities, Hyatt has no business. Hyatt works with travel agents, tour companies, conference planners, and others who control portions of the overall market to reach customers.

Then there are the suppliers. Hyatt liked Ely’s Cheesecake, the product of a small Chicago bakery, so much that its own chefs decided to buy directly from them, “outsourcing” it. This is a mission-critical supplier to Hyatt. What is the dessert menu without cheesecake?

Multiple, complex relationships enmesh Hyatt Hotels with a variety of other companies. Taken as a whole, it’s a \$2 billion company;

taken apart, it is not a business. This is a very different industry than it was even 20 years ago, when companies could go it alone and the future seemed reasonably predictable.

TAKING THE CEO VIEWPOINT

To see the whole of organizations today, we have to move to the 30,000-foot view. We can see large patterns—interconnecting highways, metropolises, hinterlands, and natural geographic areas from that height. Organizationally, we see groups that spread across cities and continents, making partners of suppliers and customers; informationally, we see data and communication pulsing through new arteries of connection.

Even two generations ago, we couldn't easily envision the world from this perspective. We didn't have the ordinary, everyday mental model of the earth as a whole, so conspicuously visible in pictures taken from space.

The globe as a whole is personal in many ways—through media like television, telephones, faxes, and the Internet (the global computer network accessible by a local phone call); and through markets, cultural styles, environmental changes, and other relationships of world scope. The challenge for every one of us is to develop individually yet join with others near and far, locally and globally. To be, in short, both "we" and "me," a part of the whole.

The whole—part challenge applies to organizations as well as people. A company is a whole made up of organizational components, such as divisions, departments, and groups, and is a part of larger wholes, such as alliances, industries, and markets.

Imagine sitting on the edge of a company, where the CEO does, taking that whole—part view.

Naturally taking a big-picture view of the world, CEOs of tiny enterprises and giants straddle the corporate boundary. They look both ways at once, being simultaneously inside and outside.

Not long ago, only a few people needed to take the inside—outside CEO view. In the smartest Network Age organizations, everyone learns to think like a CEO. Everyone can make the best decisions from this vantage point. “I ask the leadership team to wear two hats,” says AT&T’s CEO, Robert Allen. “I say, ‘Come to our management meetings and represent your businesses.’ But there are times when I ask you to put on *my* hat on behalf of the shareholders and help me make decisions that cross business-unit boundaries.”⁴

Even CEOs must expand their views; simply looking in and out is insufficient for navigating through complexity. Knowing the business is no longer enough. Now CEOs must understand everything from the global economy and the politics of Eastern Europe to the effect of newborns on knowledge worker productivity and the cost of grief if one of them dies.

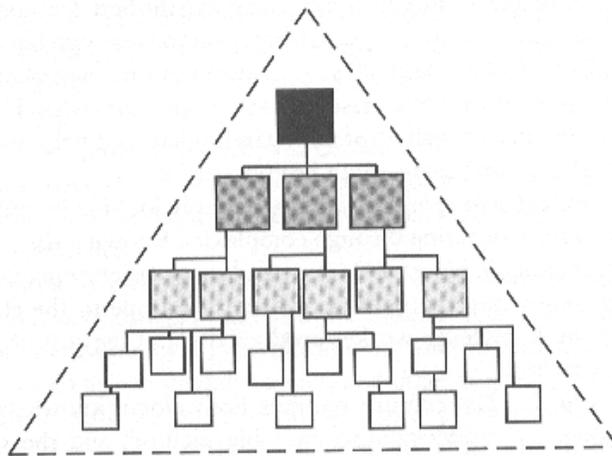
Success in the 21st century requires both *global* knowledge and *local* knowledge, understanding the “big picture” and the specific details. It also requires people to be both competitive and cooperative, simultaneously self-assertive individually and interdependently joined with others.

All the key pieces of the puzzle—from strategy to operations, from mission to service, from customers to shareholders, from competitors to partners—are part of the mental model of the person taking the CEO’s view in the Age of the Network. The next question is how to frame those pieces. What is the overall design of your organization?

FOUR AGES OF ORGANIZATION

Mentally draw the big picture of your organization. Do you see levels of hierarchy connecting specialized boxes of bureaucracy? Is control top-down and are the boxes mutually exclusive? Do you belong in one and only one box?

TRADITIONAL ORGANIZATION



If so, you are working in a 19th-century organization, an Industrial Age machine. This is not good news if your world is turning upside down around you with speed-of-light communication.

Even if the box-chart pyramid is a cliché, it is still the only mental model for most of business and the public sector. It reflects organizational learning gathered over three great eras.

- First was the age of the camp fire, when nomadic small groups hunted and gathered.
- Then agriculture sprang up, and with it hierarchy, the top-down organizations still with us 12,000 years later.

- Next, with industry, came the steam engine bureaucracies, spread out across departments, divisions, and subsidiaries.

Today, everyone knows the traditional pyramid is out of synch with how work gets done and how decisions are made. For more than one company or agency, the conventional organization chart is a map to the obstructions to getting work done, the mountains to climb, and the rivers to ford.

We are many decades into the fourth era, driven by information, the *Age of the Network*.

- Now we have networks, groups of people working across boundaries of all kinds as knowledge replaces resources as the new source of wealth.

FROM BOXES TO PEPPERONI

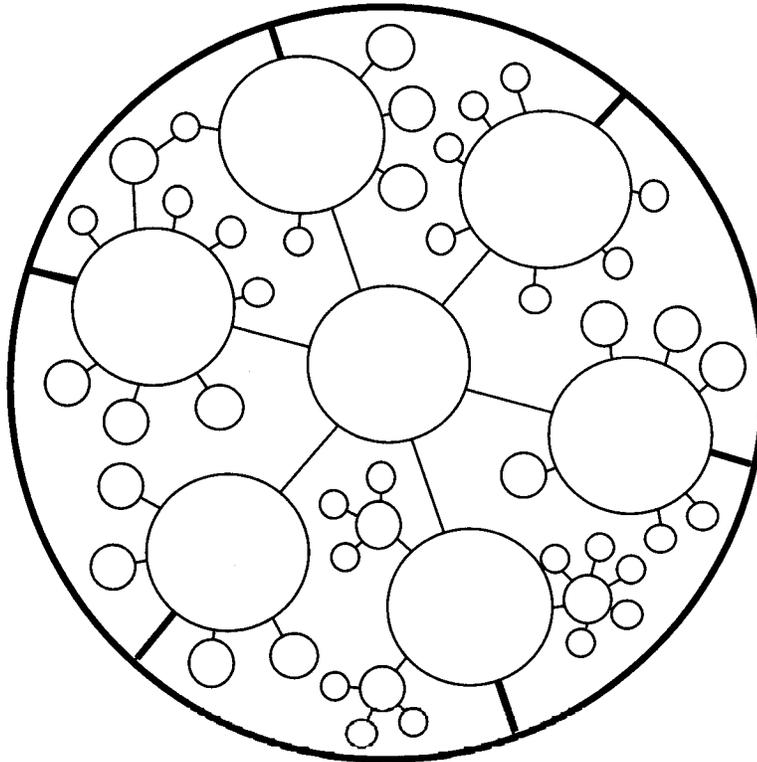
How would you like a pizza instead of a pyramid?⁵

“Our organization chart ... looks like a pizza with a lot of pepperoni sitting on it,” Eastman Chemical Company’s Chairman and CEO, Earnest W Deavenport, Jr., tells *Business Week*.⁶ “We did it in circular form to show that everyone is equal in the organization. No one dominates the other. The white space inside the circles is more important than the lines.” The “white space?” Look below the surface and “see” the domain in which people collaborate.

Eastman provides an excellent, concrete example of an organization that combines teams, hierarchy, bureaucracy, and networks (see chapter 3, “Turning Hierarchy on its Side”). Among the management practices of this \$4 billion spinoff from Eastman Kodak Company is a startling one. The company has replaced some key senior executive functions in mission—critical areas with “self—directed work teams.” Five people manage manufacturing, for instance, as a team in which leaders rotate every quarter.

Shared leadership is one characteristic of organizations arising in the Age of the Network. Networks are meeting the challenge of

EASTMAN CHEMICAL COMPANY'S PIZZA CHART



adapting to a new reality of time in a small world where the sun is always rising and never setting, changing forever the human experience of the fourth dimension.

EXPANDING IN A NEW DIMENSION

In the Industrial Age, we conquered space as the search for new worlds took us to the landing on the moon. By combining the great might of our machines with our imaginations, we pushed back the limits of terrestrial space. Now there is no place else to go on earth because everyone is a neighbor.

We are now global. The frontiers of our local space have closed. Time is the new frontier.

With electronic technology widespread, anyone can talk to anyone and some can talk to everyone—by voice, by computer, by video. Place no longer means that you can be in only one of them; mutually exclusive locations have become relics of the past. Work rolls continuously around the world, following the sun, yet is instantly accessible all the time by everyone whenever they need it. Boundaries are conceptual, not physical, in virtual workplaces and need to be completely reconceived so that “physical site” thinking is no longer a limitation.

The electronic, speed-of-light Information Age redefines ordinary, human-scale space and time.

A global economy and workplace are not just revolutionizing bigness. They affect us all and are accessible to any of us, whether as a teen on the Internet, a small furniture company in an export network, or a global CEO who lives on a plane.

“Change,” which Tom Peters considers a pathetic word to stand for the uproarious revolution upon us,⁷ is constant. “Crazy times call for crazy organizations,” he says. In the Age of the Network, living in the =fourth dimension can be intense. More people are coping with more change than ever before. Are you? Time, as in a lifetime, has dramatically accelerated.

Once, a job lasted for a lifetime. Now the average person will change careers five times. Tomorrow, you will measure the half-life of a job in months, weeks, and days, as long as it takes to get another one. You will move from project to project, each one requiring your full concentration even while you have other things on your mind. The person you fought with mercilessly in your last job may be your boss in your new one—or your customer, or even your partner. Such is life today in Silicon Valley and many other places around the globe.

Most organizations are operating in the Age of the Network, whether they know it, like it, or want it. One obvious indicator is the proliferation of connections with other organizations. They take many names—”strategic alliances,” joint ventures,” “outsourcing partnerships,” and “flexible business networks,” to name a few— linking customers, suppliers, and competitors. When executive, staff, and line colleagues form multiple, overlapping teams, they too are exploding in numberless cross-functional projects, horizontal corporations, and virtual enterprises.

Some companies—some organizations of every type—are already living in a flexible, richly connected, high-trust, high-performance, 21st-century design. They have agility and speed. They’re competitive, *and* they retain heart.

- *They cross, but do not smash, boundaries.*

In networks, people work closely with clients, customers, vendors, suppliers, and even competitors. They know how to maintain boundaries without being immobilized by them, how to hold joint allegiances, how to balance conflicting interests, and how to tap resources beyond their own four walls, creating situations where everyone wins. Boundaries are the basis for self-identity and diversity, and even the Big 3 auto makers are crossing them. Together they have a dozen consortia underway, investigating everything from the electric car to better crash dummies.⁸

- *They manage co-opetition.*

Networks allow you to cooperate and compete at the same time. Without both competition and cooperation, you cannot succeed in turbulent times that require flexibility, nimbleness, and learning, re-

ardless of the size of your enterprise. “Co-opetition” puts these two apparent opposites into a dynamic dance.

- *They work in teamnets—networks of teams.*

To work across boundaries, people form local teams that bridge time and distance in networks. A team from Massachusetts General Hospital works with its counterpart at Brigham and Women’s Hospital as Boston’s two health care giants work through the details of their merger. Little teams make up big networks.

ORGANIZING PRINCIPLES PUT INTO PRACTICE

What are the “Organizing Principles for the 21st Century,” and how can you make use of them?

Some common patterns underlie all networks that are eminently applicable in many arenas. When a community of practitioners applies the principles, they improve them through experiment and experience. You can check our patterns against your own experience.

CONCEPTUAL TOOLS FOR NETWORKS

Networks—the organizations once considered fringe phenomena— now are moving to center stage.

We have focused on networks and networking for 15 years, gathering information and insights, developing theory, testing it through practice, and writing about it—which provoked more information, theory, practice, and writing. We see five key organizing principles for the 21st century:

- ***Unifying Purpose***

Purpose is the glue and the driver. *Common views, values, and goals hold a network together. A shared focus on desired results keeps a network in synch and on track.*

- ***Independent Members***

Independence is a prerequisite for interdependence. *Each member of the network, whether a person, company, or country, can stand on its own while benefiting from being part of the whole.*

- ***Voluntary Links***

Just add links. *The distinguishing feature of networks is their links, far more profuse and omnidirectional than in other types of organization. As communication pathways increase, people and groups interact more often. As more relationships develop, trust strengthens, which reduces the cost of doing business and generates greater opportunities.*

- ***Multiple Leaders***

Fewer bosses, more leaders. *Networks are leaderful, not leaderless. Each person or group in a network has something unique to contribute at some point in the process. With more than one leader, the network as a whole has great resilience.*

- ***Integrated Levels***

Networks are multilevel, not flat. *Lumpy with small groups and clustered with coalitions, networks involve both the hierarchy and the “lower-archy,” which leads them to action rather than simply to making recommendations to others.*

Big businesses like Eastman Chemical Company and small ones like Harry Brown's EBC Industries, local fire departments and the networks springing up among the agencies of the federal government, communities on the Internet, and companywide initiatives to accelerate learning all reflect these principles (see chapter 4, "A Pocket Tool for Teamnets"). They show up within organizations, as cross-functional teams and self-directed groups, and they structure relations among organizations, like strategic alliances and flexible business networks.

BELIEVE IN THE CREDO "THOSE WHO DO, PLAN"

A geographically distributed, functionally divided, or multitime zone, cross-boundary group needs to involve everyone it touches as much as possible to succeed. A plan created by one group and handed to another doesn't work in a network. Thus the dictum "Those Who Do, Plan." *People charged with doing work need to plan it for themselves.*

The best networks take the time necessary to clarify their purpose to the point where they can articulate it as a work plan. The people who will carry them out do the best plans, whether formal or informal, the ones that work and remain flexible. Even the plans themselves are not the point. It's the participatory *planning* that brings people into synch to accomplish things together across boundaries.

Networks are an organic form of organization, which means you need to understand them as a process as well as a structure. New networks start small and grow through phases:

- an initial, sometimes long startup phase;
- an intense, sometimes short launch phase;
- an often exciting performance phase;
- a frequently surprising test phase; and, finally,
- a completion phase.

At each stage of development, the five principles presented earlier offer a different utility. In chapter 5, "Rx for Monday Morning," we show how to use these principles for assessing organizational opportunities at startup and as a planning agenda for launch.

MATCH THE WORK WITH THE RIGHT ORGANIZATION

Networks are proliferating, but that doesn't mean they are always the best way to organize.

You can match the work to the right form of organization by understanding what teams can do, when hierarchy applies, what is useful in bureaucracy, what circumstances call for networks—and how to fit them all together.

Size and scope, the pace of change, and the core technology driving the business are all considerations. (Chapter 6 “The Hinge of History,” offers a “how-to” at the strategic level.)

- Is your scope local or global or both? How big should the group be? How can you retain the benefits of being small as you grow larger?
- While we all face an increased pace of change, the velocity is not the same everywhere. Environment strongly influences the nature of organizations, forcing more organic development in fast-changing surroundings and allowing more mechanical approaches where the pace is slower.
- Technology, particularly information technology, also influences organizational architecture. In the Age of the Network, connective technologies complement connective organizations. It is much easier for a networked organization to gain an organizational advantage from networked technology than for hierarchy-bureaucracy to do so.

THE DIFFERENCE OF EXPANDING LINKS

Links—the connective tissue extending in every direction and joining people across organizations, distance, and time—are at the heart of the Age of the Network. Whereas once a person knew perhaps a few hundred others, today his or her Rolodex may contain 10,000 names. Above all, abundant links in every direction make the network different from the organizations that came before—bureaucracies with their horizontal hand-offs from department to department, hierarchies with their top-down commands, and small groups with their one-to-one relationships. In a network, you connect up, down, out, and around.

The links of the network climb the chains of command like ivy and wrap all the way around the globe. Because the network enhances access to others rather than impedes it, even more people come into connection with one another, crossing organizations, anytime and anywhere.

COME IN, MADRAS, INDIA

Frank Starmer’s “laboratory without walls” is an example of a connected organization. We met Frank—well, we’ve never met Frank in person, though we communicate with him frequently. Our introduction was unusual.

The phone rang one day. It was Rainer Hochkoeppler calling from Basel, Switzerland. He had read our books on networks and was inquiring about us coming to Zurich to do a workshop on our latest, *The TeamNet Factor*. Although he was familiar with us, we had never heard of him before, which he realized. As a reference, he followed our first phone call with a fax, recommending that we contact “My best American networking friend, Professor Frank Starmer, at Duke University.”

So we called Professor Starmer to learn more. “He’s in India until May,” we were told. “Do you have access to the Internet? You can send him a message at frank@rodney.mc.duke.edu.”

“Really?” we asked, incredulous. Yes, we had access to the Internet, but with India? Though a leader in software development, India also is famous for its erratic telephone system, on which the Internet depends. Never mind the general communication problems that plague the country: it takes months for letters to arrive, and people can’t even send money abroad to buy books.

“He’ll get it,” we were assured.

That night we skeptically fired off a message to Professor Starmer, explaining who we were and hoping for the best.

By the next morning, we’d received the first of many detailed messages from Madras, India, where Frank, a professor of cardiology and computer sciences and trained as an electrical and biomedical engineer, as well as an early electronic networking pioneer, was spending a year, continuing in his ongoing role as coordinator of a global network of scientists doing basic research on excitable cells. (He also confirmed that our skepticism about the Internet was valid. “Indian e-mail is not really very reliable,” he said. “We have a rather up-and-down link between here and our gateway in Bombay, and particularly during the monsoon season, just finished, all bets are off as to when e-mail arrives.”)

We asked Frank who was in his “Excitable Cells Lab Without Walls,” and he sent back an e-mail message with the names and electronic addresses of 32 people circling the globe. It includes scientists in his home lab at Duke, as well as:

*Max Planck Institute in Heidelberg, Germany • University of Chicago • University of Pittsburgh Syracuse University
Montreal Heart Center • Boston University • University of North Carolina • Moscow’s Cardiac Center University Santiago de Compostelo University of Freiburg • University of Utah • Institute of Theoretical and Experimental Biophysics, Pushchino, Russia • the Nonlinear Research Center, University of Nice University of Maryland • Am Shams University, Cairo • Washington University in St. Louis • and last, but back to the beginning, Rainer Hochkoeppler in Basel.*

Their work is not unrelated to our subject. With Frank and his distributed lab, we share the belief that the network is a powerful model for understanding natural complexity.

“The brain is basically a large network of interconnected, excitable cells,” Frank explained in a message written on his 30th wedding anniversary.⁹ “Our interest in excitable cells stems from this observation: within the nervous system, propagation velocity of nerve impulses is rather slow (approx 10 M/sec) or .5 M/sec in cardiac cells. The unit noise is rather high, and the reliability is not really great.

“Compare this with today’s computer chips, where propagation velocity is the speed of light, unit noise is almost nonexistent, and reliability is unbelievable.

“Yet the nervous system can perform pattern recognition and computations in many areas much faster than done with the best vector or parallel machines. For me and many others, it’s interesting to understand the underlying nature of biological ‘networks’—sort of a biological Internet.”

While functioning at a high level of performance at low cost, this small group works together around the world yet rarely sees one another. Over time and in its precious face-to-face meetings, the group has developed deep trust.

“Trust is really essential. It’s rather easy to do ‘ordinary’ science or ‘ordinary’ any job. But to do really creative stuff, it’s essential to be absolutely comfortable. Then the creative juices can flow. There are no distractions.”

Frank personifies a number of key aspects of *links*.

- The Internet itself represents an astonishing explosion of physical, global communication links and personal access unlike anything available to ordinary human beings before.
- Yet Frank’s story is one of relationships grown in the ether of cyberspace, a small group with a global scope and membership. Relationships make the network, but physical links make relationships possible.

- Frank is “networking smart,”¹⁰ deliberately developing fruitful relationships. Overpublicized as the way to get ahead and underappreciated as a skill, networking as an activity is exploding.
- Frank also portrays a new network leadership role—the coordinator—whose job is to tend to the network as a whole, both online and off.¹¹

NETWORKING FALLS TO THE BORROW LINE

Underneath all is trust, the soil in which networks grow connections and relationships.

Trust is the basis of a new source of wealth in the Information Age, one based on connections. As trust accumulates, people build up “social capital,” which can be turned into economic prosperity just like land, human, and technology capital.

How does this alchemy come about, this transformation of social capital into wealth? The answer lies buried nearly a millennium deep, where odd precursors of the Age of the Network cropped up in the most unlikely places and times. Not all developments in life are serial; civilization doesn’t evolve in orderly, neat steps. It springs ahead, falls behind, lurches off strangely, and churns into chaos.

Even though the Middle Ages usually is regarded as an ignorant time before the great enlightenment, 800 years ago a richly networked society flourished in northern Italy. Earlier, bands of marauders had roamed the countryside, terrifying everyone. Feudal lords could not protect them, so the fledgling middle class came together “to help each other without fraud and in good faith.”² The remarkable communal republics were born, the city-states of Venice, Genoa, Bologna, Milan, and others, where equality worked and provoked a cultural and intellectual renaissance.

It’s not so much that people banded together in the face of a common enemy that’s amazing. It’s what came out of it: economic prosperity. From trust and abundant social relationships came the

invention of credit, institutions of depository banks, and lending—in short, the ability to use wealth to generate more wealth, the engine of commerce as we know it today.

Because people connected in many ways and trusted one another, their relationships turned into a medieval source of wealth. Eight centuries later, Emilia-Romagna and other northern Italian regions again turned intense relationships into collective wealth and launched the global flexible business network movement.³

If it's hard to imagine how trust creates wealth, imagine how its opposite chews up money. Although conventional accounting systems make it hard to calculate the cost of mistrust, the cost is real.⁴

- How much does rework cost when advertising doesn't talk to project managers and engineering doesn't talk to manufacturing?
- What's the price tag on unused inventory sitting in a warehouse because manufacturing, marketing, and sales are engaged in such a fierce war that no one believes anything anyone else says?
- Whose budget is paying for the endless meetings that go nowhere because everyone is afraid to show their cards?
- How much overhead is absorbed in employing people whose only function is to watch over others instead of “doing real work”— the supervisors, inspectors, and enforcers?⁵
- How costly is the miscalculation on receivables that disrupts cash flow and leads to drawing down a line of credit, the interest on which exceeds the time value of lost current dollars?

The solution to all these problems is to build trust, expand communication, and increase links among people, the core capabilities of networks.

FASTEN YOUR SEAT BELT FOR TAKEOFF

The Age of the Network organization needs to be smarter than its predecessors because the ride into the 21st century is going to be very fast indeed. Bureaucracy creates cadres of specialists who know only

their particular little bailiwicks. Hierarchy limits access to information with its one-way, top-down stream of command and control. Networks increase communication, multiply information, and bring people into the loop.

Most people want their lives to matter. They want to be part of organizations that engage and learn, where they can see the effect of their achievements, where they have a sense of belonging. It is possible to make a difference in networks, to bring your whole self to work, and to narrow the schism between your “life” and your “work.”

Still, networks are hardly without problems. “You asked me about my ‘most difficult networking problem,’” wrote (in an e-mail message, of course) Gunther Singer, an Austrian automotive consultant who spent the previous five years flattening a multinational company by launching 60 self-managing groups.¹⁶ “It’s the power field where two different systems, ideas, or even paradigms meet. It is the tension between the teamnet/virtual project versus the built-for-eternity hierarchy.”

There is no organizational nirvana where everyone persists sublimely in eternal harmony. If there were, it would be boring and ineffective. “Networks don’t just tolerate conflict,” anthropologist Virginia Hine wrote in the 1970s. “They depend on it.”⁷ Conflict stems from differences of opinion, which are healthy and cause growth.

A story of collaboration and conflict, internal warfare, and kindred communities within high-tech industries gave birth to thousands of companies in the 1980s. People with a new idea that their own company wouldn’t fund started another one, from which still another group eventually split, forming its own company, and so on.

Networks allow you to build on what you have. They enhance your relationships with suppliers, anticipate customers’ needs, and allow entry to new markets with the competition. *Don’t throw out your hierarchy and bureaucracy.* You need them. By clearly defining their places in the organizational universe, you help them to do better what they do best.

TRENDS ON THE HORIZON

The Age of the Network is a harbinger of a pervasive, global organizational shift, a metatrend that points toward other signs close at hand. Keep your eyes on these indicators of the future to help you navigate your journey into the 21st century.

Purpose as a Natural Resource

As radical change prevails for the foreseeable future, organizations will either create their own futures or find themselves reacting to the change driving them. After the wave of interest in reengineering passes, organizations will shift from managing costs to focusing on real business growth. However, it will be tougher than ever to create breakthrough products, enter new markets, and achieve high-performance operations. Facing limits to growth, organizations will reach optimal size, then seek qualitative development rather than quantitative growth. Eventually, people will come to realize that their core business purpose is a natural resource that gives them power in the marketplace.

Focus on People

Team implementations will continue to fail at alarming rates, despite good intentions, unless organizations remove the existing impediments to corporate trust—outmoded reward systems, obsolete status symbols that split people into “haves” and “have-nots,” and outdated management practices. Companies will need to reinstill loyalty and motivate their people anew to do incredibly innovative work after downsizing. But eventually, people will rebel against the unending, ever-increasing demand for higher levels of performance.

The Technology of Social Capital

Physical links will continue to explode—from one-to-one to many-to-many—into “digital convergence” at or about the year 2001. Companies will have to learn how to share important information with all employees and some key information with customers and suppliers to be smarter. Just catching up to the learning organization? Rev it up; we’ll be moving on to the “fast learning” organization. Before long, people will actively create social capital as a new source of wealth. This dynamic new approach to economic development will begin slowly, then suddenly catch on as success stories accumulate, reaching critical mass at the century’s turn.

Everyone a Leader

A new style of leadership is emerging as the old-fashioned, just-do-as-I-say hierarchy fails to perform across company lines. Meanwhile, those to be led are of a different ilk. A new generation of leaders is being groomed that comes from a much more diverse pool, bringing vast cultural differences with them. New jobs and coordinating leadership roles are being invented to manage the burgeoning, bewildering webs of connections and relationships. Not surprisingly, the top will be the last to truly team, and some executives will continue to be embarrassments to their corporate change efforts.

The Strange Benefit of Hierarchy

Layer cutting just for the sake of reducing costs will destroy organizations; a completely flat organization will be equally ineffective. Networks of teams work best across multiple levels. Together, they generate more holistic, integrated views than the single-solution approaches to management, which are on their way out.

The Age of the Network includes all that has gone before, reshapes it, and brings a new spirit and set of capabilities to organizations of every kind and size.