CHAPTER 7

"ONLY CONNECT": THE IMPERATIVE OF THE 21ST CENTURY

Only connect! That was the whole of her sermon. Only connect the prose and the passion, and both will be exalted, and human love will be seen at its height. Live in fragments no longer. Only connect, and the beast and the monk, robbed of the isolation that is life to either, will die.

Howards End *by E.M. Forster*[1]

Something entirely new is wrapped around our planet—a way for one person to communicate with many at a very low cost, regardless of where they are in time or space. Spontaneously and with little planning, a global conversation and an information freeway have erupted in less than a decade, making next-door neighbors of people in Potts-town, Pennsylvania, Bangalore, India, and Johannesburg, South Africa. No single organization owns the Internet, the earth's interconnected computer network of networks. No authoritative hierarchy governs **it.** And **it** is growing faster than ever predicted.

The Internet is an electronic technology that makes **it** possible for people to "only connect." The Age of the Network is all about the ability to develop relationships that cross space and time. Geography

need no longer be a barrier to people's capacity to work together and form communities.

The technology network *supports* the people network. Those who regard the technology alone as the network miss the point. Networking means people connecting with people, which happens whether they're sitting around a conference table, pressing their ear to the phone, staring at a computer, or standing by the fax machine.

The really fascinating technology story occurs when people engage at their deepest levels, solving problems, describing experiences, and allowing their "creative juices to really flow."[2]

THE INTERNET WORM

On November **2,** 1988, a graduate student at Cornell University released the first big virus[3] on to the Internet. Launched at *5:01:59* P.M., the "Internet Worm" invaded a certain type of operating system on computers attached to the Internet—from Lincoln Labs and the National Supercomputer Center to Boston University and the University of California at San Diego. It shut down many big research sites and universities within the first hour.

Instantly, a spontaneous, geographically distributed, volunteer army of specialists, which we call "VirusNet," erupted to work round the clock to stop the worm, which they did in barely a day—not, however, before headline news had alarmed the public that World War III might be upon us.

VIRUSNET SELF-ORGANIZES

VirusNet provides a classic study in the impromptu development of a laser-focused, mach-speed, emergency rescue network that achieved its objective—just like that. It demonstrates all five teamnet principles:

? VirusNet's clear *purpose* was to kill the worm.

? Everyone involved—perhaps a dozen at the core, with scores and ultimately hundreds of other minor players—was an *independent member*. If any single person left, VirusNet still survived.

? They communicated like crazy. They were richly *linked*, with intense face-to-face encounters. Countless phone calls skidded down lines of preexisting trust. And the physical Internet played its part: on the *95* percent of **it** not affected by the worm, people sent messages, swapped files, called up programs, and accessed databases.

? There were no bosses. *Multiple leaders* brought their expertise to bear at critical moments. No single person solved the problem; everyone together did.

? By the time **it** was over, VirusNet had engaged all the levels: the hierarchy *and* the lower-archy. While the computer labs hacked out the solutions, the press was in the office of MIT's vice president of information services. Within a week, the previously anonymous computer labsters who cracked the code found themselves in a debriefing with officials from the National Institute of Standards and Technology, the Defense Communications Agency, the Defense Advanced Research Projects Agency, the Department of Energy, the Ballistics Research Laboratory, the Lawrence Livermore National Laboratory, the Central Intelligence Agency, the Federal Bureau of Investigation, and the National Computer Security Center.

While destructive viruses have been bose in the computer world for at least a decade, this was the first *networking* worm. It posed as an imposter to linked computer systems and, once inside, went on to "propagate copies of itself."[4] Strange as **it** may seem, **it** was a relatively harmless worm. It only attacked computers running a specific operating system called Unix, the Bell Labs invention that blew open the potential for open systems and large-scale electronic networking.

Although the worm did not harm data or reveal any passwords, **it** did cause quite a ruckus. First, **it** had no business invading other

machines to begin with. Once **it** arrived, **it** generated garbage throughout the whole system. It had to be stopped.

Robert T. Morris, Jr., was the Cornell student who unleashed the worm and eventually received one year's probation, along with 400 hours of community service and a $10,000 fine for his crime. Was **it** an accident that he chose the eve of the annual face-to-face meeting of Unix experts in Berkeley, California, to release **it?** This rare convergence brought together many of the world's best Unix minds. In any case, the network as a whole learned how to stop the worm in the snap-of-a-finger time of 36 hours.

The worm was not so much discovered by one person; as **it** was detected by many people at the same time. They figured out that **it** was a worm by putting their heads together. Within an hour of its launch, someone saw something strange on an MIT computer but couldn't figure out what **it** was. The first message calling **it** a virus came from someone at NASA's Ames Research Center nine hours after its release, saying the worm had attacked machines at the University of California at Berkeley, University of California at San Diego, Lawrence Livermore National Laboratory, Stanford, and Ames. An hour later, someone at Harvard suggested that the worm was an Internet problem. Within the next hour, more heads went up at separate sites at MIT, Berkeley, Brown, and SRI International.

Immediately, different groups of people in different labs went to work, forsaking sleep, food, and showers. Each lab went after the part of the problem that **it** knew best how to solve.

- One discovered a bug in the worm program that could be used against it.
- Another noticed that the worm crawled in through a wide open door, a particularly vulnerable bit of computer code,[5] and published a way to close **it** by midnight of the day after the worm's launch.
- Others replicated the worm on a "trenched" (isolated) machine, set off from the Internet so that **it** could only worm across its own experiment.
- Morris himself reportedly tried to kill the worm. According to

one account, he regretted his act almost immediately and, within a few hours of the release, asked a friend to post his solution on a computer bulletin board. However, no one could access **it** because the computer systems that needed to see Morris's message were the very ones that were down.

The weary labsters communicated continuously and extensively among themselves about their progress—both on the phone and through other network gateways not shut down by the worm. Occasionally, they went out to meals. In all, only eight days passed until every affected computer was back up and running, with no more than 4,000 machines infected in total, about five percent of the 80,000 then connected to the Internet (in mid-1994, 2,200,000 machines were connected).

PRESS AND PERCEPTIONS

Released on Tuesday, the worm problem had been solved by the time MIT hosted the first national press conference on Friday. The reporters were disappointed.

They had hoped for a much bigger story, perhaps one in which all the world's œmputers had been wiped out in a single moment, "that we were.., moments away from World War III, or that there were... large numbers of companies and banks hooked up to 'MIT's network,' who were going to be really upset when Monday morning rolled around," wrote Jon Rochlis and Mark Eichin in their firsthand account of cracking the worm code.[6] "My greatest fear was that of seeing a *National Inquirer* headline: 'Computer Virus Escapes to Humans, 96 Killed,' "one labster said.

The media also were disappointed with the virus's lack of visuals, having to settle for people "looking at workstations talking 'computer talk.' "Much of the news is invisible to the camera's eye in the Age of the Network.

In fingering Morris as the chief suspect on the morning of the press conference, *The New York Times* reported the great irony of this

story: "The enemy is us," in Rochlis and Eichin's words. It wasn't a terrorist operating out of some distant, strange land, or a corporate blackmailer, or a disgruntled worker who perpetrated the crime. It was a graduate student in computer science at a respected American institution whose father, Robert T. Morris, Sr., was the chief scientist at the National Computer Security Center.

While the worm did very little real damage, **it** revealed the vulnerability of the Internet at the same time as **it** unveiled its strengths. Chief among these is the design of the Internet, founded on the principle of "decentralizing defenses"[7]: don't protect the network; protect the individual nodes on the network.

This tightly couples to the final networking lesson taught by the worm:

> *In a complex, unpredictable world, diversity is the great armor of the whole fabric.*

Since the virus attacked only one type of computer operating system, few sites were put out of business completely. By having many different types of computer systems, the labs were safer than if their systems were all the same.

Diversity is safer, as well as smarter.

GOVERNING THE INTERNET

The Internet is an extraordinary example of network "governance. "It's anarchy that works," writes Norris Parker Smith.[8]

No one, no single institution, controls the Internet, particularly remarkable given that the Defense Advanced Research Projects Agency (DARPA), now known just as ARPA, started this network of networks almost three decades ago. Most of the military research money that went to major universities and corporations came from

DARPA. The agency connected its client research sites into a network built to withstand nuclear strikes or any other kind of catastrophe.

DARPAnet's architecture, its underlying philosophy of survival, was simple: every computer would be a peer, every machine simultaneously a source and a destination. Nodes on the Internet would act as independent senders and receivers but would also serve as intermediaries, as part of the infrastructure itself. It was taken for granted that the network would be unreliable. No critical "centers" were created, so none could be disabled. Both conceptually and in practice, this made for a very, very decentralized system.

In the late 1980s, the National Science Foundation used the "Internet Protocol," a soon to become famous set of computer standards for transferring information, to connect its five supercomputer centers. This "backbone," as the high-capacity skeleton of a computer network is called, which merged with DARPAnet, allowed a large number of local educational institutions to chain together and connect to
it. *Voila!* Elite access of the few suddenly gave way to the great electronic masses, bursting with activity in hundreds of computer labs. The genie was out of the bottle, and the Internet spread big time.

Constituent parts of the Internet—short for "inter network," meaning between networks—are themselves networks many levels deep. Each computer that connects directly to the Internet is called a "domain," which itself may be a net within a net within a net. The Internet address that you see on TV's *Dateline,* for example, is a net within a net: dateline@news.nbc.ge.com.9

? Its code begins with *Dateline,* a particular addressee's name.
? The @ sign tells you where the computer is situated, in this case at NBC News.
? News is a part of the larger NBC Network, as in .nbc, pronounced "dot NBC."
? NBC itself is part of the giant General Electric, .ge.
? The .com on the end means that it's a commercial site on the Internet. MIT and most other educational institutions use .edu as their "last name." Most countries use their international country

code as their "last name:" for example, .in for India, .fr for France, and (still) .su for Russia.

But even the Internet's naming system is under discussion, which brings us to how the Internet really is governed.

Most of the governance is at the member level, and these internal variations differ in the extreme. Some members of the Internet are structured and controlled quite hierarchically (i.e., the military), some are more bureaucratically compartmentalized (i.e., educational institutions), and some are like teamnets (i.e., Silicon Valley companies). They may be authoritarian or communitarian, tightly controlled or welcoming to all. Control is largely local.

The "highest authority" is the Internet Society (ISOC), a *voluntary* membership organization. ISOC, in turn, appoints the Internet Architecture Board. This prestigious body of volunteers has great responsibility, setting common network standards and ensuring that addresses are unique: There cannot be two dateline@news.nbc.ge.com addresses on the Internet. The Internet Engineering Task Force deals with technical problems and near-term issues. When needed, a "working group" convenes to address a problem and provide information or recommendations as appropriate; then, just as quickly, **it** disbands.

Internet governance is a dramatic real-world example of a very-large-scale, self-organized network.

The Internet emerges from the heart of the Age of the Network, where physical connections converge and relationships grow, where pipes (computer lingo for the wires that connect) and personalities come together.

To think that a vital global facility serving millions of people is completely self-organized! And, oh, the freedom **it** gives.

Being online is not abstract. It is concrete, practical, and can be very personal.

A FEW HOURS IN THE LIFE OF AN ONLINE JUNKIE

For the first time in human history, we can live out E.M. Forster's 1943 advice to "Only connect!" The 21st century is about multiple connections on a global scale.

At this level the world is entirely networked, but unevenly so. Villages in China that don't have refrigerators have cellular phone uplinks. It's easier to send e-mail from Pushchino, Russia, than **it** is to fax. Meanwhile, our neighbors in West Newton, Massachusetts, operate with no such technology—they don't have a modem or even call waiting, for that matter—yet they bring new meaning to globe trotting: they're in Belize one week, in Taipei and Borneo the next, and in the south of France a month after that.

Computers today are highly personal. They support both introverts and extroverts, inner worlds and outer worlds. We (J&J) represent two poles of what awaits us in the 21st century. One of us works at an extremely high level of personal productivity without often going online; the other works with a different mix of technologies but communicates with many people around the world. Technology mushrooms with ever higher capacity in increasingly smaller packages, while people join new transborder communities without ever leaving home.

In a report on one session of Jessica's electronic meanderings, you'll see many uses of the Internet, from pure business to the most personal—none of it possible even a decade ago.

"DO NOT EVEN THINK OF TOUCHNG THIS MODEM"

It is early in the morning, and three messages are waiting from Duke University's Prof. Frank Starmer in my e-mail account on The World, a Boston computer system that offers Internet access. Remember the cardiologist/computer scientist with the lab without walls, based in

Madras, India, for the 1993—94 school year whom we introduced in chapter 1?

Frank, who lives the pain-pleasure nightmare of life in the electronic universe, is in a bit of a state. One small problem hampers communication of a basic breakthrough in his scientific research: last week, the 200-megawatt nuclear power station in South India failed.

"All of Madras was without power for *4—5* hours on Tuesday and then again on Wednesday. On Thursday night, a voltage spike took out our UPS [uninterruptable power supply] system, a transformer that powered the PC and the modem," which destroyed his modem in the process. Without his modem, Frank cannot communicate with his colleagues in France, Russia, Spain, and the United States, who wait anxiously for him to transmit key data from his lab experiments. All agree that they have made a significant discovery. They've pinpointed the origin of "a particular cardiac rhythm disturbance called *torsade de pointes.*"

So, Frank has had to improvise. He has crawled around in closets and resurrected an old, half-working, 1200-baud modem ("If you even look at **it** cross-eyed, **it** fails"), which he has balanced on top of his PC. It has but one tragic defect. While **it** can probably survive something close to a nuclear meltdown, **it** has trouble detecting signals from down the street. This is not a trivial problem. A modem that can't hear a local signal is like a car without an engine—all dressed up with nowhere to go.

Hence the importance of Frank's sign on top of his PC: "Do not even think of touching this modem."

Enterprising fellow that he is, Frank has come up with another workaround. He has a backup Internet address that he can reach if he goes to another lab and "telnets" to his other account. Gibberish? Not to the 20—30 million people already on the Internet and the projected possibility of several hundred million more by the year 2000. For the Internet uninitiated, here's how **it** works. "Telnet" means nothing more than dialing another telephone number on the network, only with letters rather than numbers.

After conveying my sympathetic reply to Frank's plight, I leave my e-mail account to log on to MetaNet, a 10-year-old computer confer-

encing system based in Arlington, Virginia. To get there, I simply type "telnet tmn.com," and instantly I am logged in.

"DEAD TOO SOON"

MetaNet, like The Well in San Francisco and, on a grander scale, America Online, CompuServe, and Prodigy, allows groups of people to read and respond to the same information. Computer conferencing goes on in every conceivable discipline, on every imaginable topic, and at every level of sophistication. The MetaNet is host to many conferences. Next, I check in on a compelling one.

Suddenly, with a few more keystrokes, I am reading words that come from the ground-floor home office of Doug Lea, a 51-year-old "writer and thinker," as his electronic profile reads, and former presidential speech writer. With its "heavy 1790 wood beams, stone walls, and a walk-in fireplace,"1O Doug's office too combines the very old with the very new. His Prometheus ProModem connects him to the rest of the world.

Occasionally, he mutters something that he's read on the screen to his wife, Julie, an award-winning artist, who has just come in from the gardens outside, lovingly tended here for many years by both of them in Waterford, Virginia, one of only three declared National Historic Landmark communities in the United States.

But there is something terribly wrong with this picture. The reason we're here with Doug and Julie is that Zack, their radiantly gifted son,

is "dead too soon," as their poet neighbor wrote for his funeral, killed just shy of his 23rd birthday by an under-age drunk driver.

Doug is grieving in public on the network, posting his thoughts in a MetaNet conference where others can contribute to them, and he has attracted a crowd, including Stephanie Tolan, a novelist from the Midwest, who likens his following to a pod of dolphins: when one is ill, the others swim close by. As he is healing, others are telling fragments of deep tragedies that interweave one with the other, which Doug calls "a mobius."

Days go by and Doug says nothing, then suddenly he adds a long

stream of interconnected memories and family snapshots, spurred by a new event. Today's is an unexpected letter from Zack's mentor at his boarding school, from which he graduated laden with awards, medals, and scholarships, both athletic and academic. Doug posts the letter to the network, adding his report on other Zack-related events from the past few days, including the brief story of a cruel remark delivered by a neighbor, and the pod moves in. A flurry of notes from others, one from a man who speaks supportively, though only sparsely and apologetically, because he "can't find words." Doug's ability to find words for enduring grief magically circles this community.

CRUISNG TO BIG QUESTIONS

An important feature of the 21st century is that context shifts at the speed of light. A few keystrokes more and I'm attending a completely different conference, where the subject is design. Here the conversation focuses on the work of Christopher Alexander the Austrian-born architect, now at the University of California at Berkeley, who has developed what he calls a "pattern language" for building desks, houses, schools, offices, and whole communities.[11] Lyn Montague, a high school English teacher from Newton, Massachusetts, and an expert on Alexander's work, leads the discussion. Then, more keystrokes:

- ? Respond to a client's e-mail.
- ? Read the agenda for an upcoming meeting of NetResults coordinators (see chapter 6).
- ? Retrieve Vice President Al Gore's speech on the information superhighway from the U.S. Department of Agriculture's online public area (called a "gopher").
- ? Post an answer to a technical question on an electronic bulletin board.
- ? Send a message to the *Utne Reader,* a Minneapolis, Minnesota based magazine, inquiring about its online "e-salons."[12]

? Take a breather on the Internet Relay Channels, where people from all around the world drop in at their leisure, exchanging witty remarks and supportive words. This channel, called "*30plus," was dreamed up in an outdoor restaurant on the quay next to the Sydney Opera House by Helen Webberly, a professor of medieval art history at the University of Melbourne, Australia, and Daniel Ben-Safer, head of computer studies at Sydney's Metropolitan Business College (founded in 1895). "Heloise" (Helen's computer nickname) was "fed up with the macho, testosterone-ridden tone" of most of the chat channels and wanted to start one for "older" people. Thus its name—~30plus. Daniel ("Dabas," as he's known online), the other cofounder of ti'30plus, tells a different story: he says they were tired of hearing people talk only about their majors.

? And then an Internet "talk" request comes in from Zurich; it's "ksa," as Karim Saouli is known online, who manages the computer network for the math department of the Swiss Federal Institute of Technology. He's providing some key advice on our evolving computer network. We switch into "talk" mode; Karim's comments appear on the bottom half of my screen, while mine appear at the top. This is a very inexpensive mode of communication: $2 per hour between Zurich and Boston.

? Oops, better get moving, time's up; log off, and on to the phone.

Behind all this wonderful access and global connectivity lie some very big questions. The Internet, which erupted spontaneously and without great design, is growing up. It is being commercialized for the first time. The really big players are now deeply in the game: companies like IBM, MCI, Microsoft, and AT&T are forming new alliances among themselves daily. Government policy is being formulated in the roiling wash behind onrushing events. New security measures, both protective and intrusive, are being fiercely debated. And we're still a few years from the ultimate convergence of all digital technologies, the omnipresent pan-media/high-speed/full-spectrum bandwidth that will make everything available to everyone instantaneously all the time. Whew!

When you take away all the technology, this vast, extended life space/workplace comes back to people. How do people share ideas and resources in cyberspace? How do things get done? Who thinks about the whole? New leaders have arisen on the net, operating through influence and knowledge rather than through club, position, or legalities.

One such person is Lisa Kimball, who has been making her living catalyzing, coordinating, and cajoling networks for the past decade.

Lisa is an institution in the online community, "one of the early true believers in social transformation via networking," as Howard Rheingold describes her in *The Virtual Community*. "She practices what she preaches to the extent that **it** is hard to find any significant CMC [computer-mediated communication] system in the world that doesn't have a contribution from her."[13]

In 1984, Lisa became a partner in MetaSystems Design Group,'[4] which runs MetaNet, short for The Meta Network, one of the oldest computer conferencing systems in the world, predating America Online by more than half a decade. In 1985, she founded the Electronic Networking Association in a loft in Greenwich Village, New York City; edited its award-winning online newsletter, *NETWEAVER;* chaired its annual meetings; received its 1990 award for "Outstanding Contribution to Networking"; and ultimately dismantled **it** when **it** had outlived its purpose. This is a key feature of networks; in essence, they are biodegradable. Unlike bureaucracies and hierarchies that often persist for years beyond their useful life, networks dissolve quickly when no longer needed.

"One of the advantages of the network structure is that groups can disband as flexibly as they come together," she says. "Setting a 'sunset' date at the beginning prevents people from associating disbanding when 'done' with failure."

Lisa's iconoclastic, experience-worn view of organizational life spans both electronic and face-to-face milieus. When we published our *Networking Journal* in the mid-1980s, we asked Lisa to be our

first guest columnist. In "A Networker's Diary," she took us along on her electronic adventures.

In 1994, she completed her Ph.D. in educational psychology at the Catholic University of America and is now moving faster than ever. For us, this chapter would not be complete without introducing Lisa. So, we sent an e-mail message requesting an interview. She was delighted and said that she was logging in from Michigan, where she was attending the Society for Human Ecology conference, "talking about participatory democracy." She asked for a list of questions and said she'd call later. By day's end, she was moving too fast to make a phone call. Instead, she replied online.[15]

LISA'S INTERVIEW

If there is ever a bumper sticker in her honor, **it** will say "Born to Network." Lisa started her career "in early elementary school," publishing a neighborhood newsletter "using lots of carbon paper." Her parents were her mentors. "My mother, Janet Fraser Kimball, worked downtown and seemed to know *everyone.*" Her father, the journalist Penn Kimball, has a saying that inspires her: "There is no such thing as a boring person, only boring reporters."

Lisa's online life began in 1983, when she met Frank Burns, founder of The MetaNet. Another legend in the online world, Frank, a retired lieutenant colonel, is most famous for coming up with the Army recruiting line, "Be All That You Can Be."

Frank sat Lisa down "in front of [an] old Kaypro, with its itty bitty screen, and told me what keys to **hit.16** The screen lit up, and I understood instantly that there were *people* in there (or out there or somewhere) and I was totally thrilled."

But ill equipped. She lacked a modem and could only back-order one in the Washington, D.C., area. "So I went all the way to New York City to buy a 1200-baud Hayes internal modem for about $800, I recall and I had to get extra memory because my 64K IBM with DOS 1.1 couldn't handle the modem," she says. It seems like a century ago.

For people like Lisa, the electronic world is not something separate from the rest of her life. "It's no more abstract than any other aspect of life," she says. "My life is rich with people I see in person, things I read online, people I interact with on networks, books I have stacked up next to my bed, relationships I maintain via telephone, electronic communities I am part of, my neighbors at our summer house, participants in this f-t-f [online-speak for face-to-face] conference, and participants in the online conference I'm attending now. The cyberspace world is merely another dimension of the world, with all of its complexities and beauty and mystery."

THE SOCIAL SCIENCES MEET NETWORKS

Profuse links are the defining characteristic of the Information Age. Links mean the physical connections *and* the relationships among the people. But:

> *Relationships, not technological connections, are the point.*

We described thousands of grass-roots, voluntary organizations around the world that had little technology available to them in our first two books, *Networking* (1982) and *The Networking Book* (1986). Among these collectively powerful yet loosely structured associations, we detected the general principles that apply to all types of networks.

Since World War II, the words "network" and "networking" have emerged in virtually all the social sciences. From sociology and anthropology to psychology and psychiatry, from management and administrative sciences to city planning and infrastructure disciplines like communications, transportation, and waste treatment, networks carry an increasingly heavy conceptual load.

Virtually all uses of the word "network" in the sciences recognize "nodes," which we call "members," and "relationships," which we call "links," as their critical elements. Nearly all uses of the word in the human sciences also cite some variation on "shared purpose" as a basic criterion. Networks pervade social structure[17] and are understood in depth throughout a wide range of analytical tools developed primarily since the 1970s.'[8]

People are always embedded in a web of social relationships, both personal and organizational. One major finding from multiple studies in Social Network Analysis is that the more complex people's webs are—that is, the greater the number of relationships they have—the happier and healthier they tend to be.[19] Particular cliques, groups, projects, and teamnets arise from the larger social network.

Rather than focusing on individual structures, regarding the greater network as a field of potential is of immense practical value. In this environment, the person who makes particular networks happen is the "coordinator.

"THE COORDINATOR," STARRING MRS. DEWAR

Coordinators appear everywhere in the Age of the Network, not just in new realms of cyberspace. Networks began developing new leaders long before computers enhanced their reach. In a richly connected environment where many potential projects are sparking, growing, diminishing, and disappearing, a new role arises, that of the coordinator, whose distinguishing characteristic is the ability to see "connections"[20] among people.

Elizabeth Meyer Lorentz will not receive the fame she deserves in her lifetime. Then again, she just might. As we write this, she is 81 and still networking.

With a small network that coalesced around the work of Yale psychology professor Seymour Sarason, Elizabeth has invented, commented on, and superbly played the role of the Coordinator. It has to be capitalized because **it** is so important. The network depends upon

it. The Coordinator brings the network to life, matching needs with resources. It's a vital role, and Lorentz and company have been lending it legitimacy for nearly a quarter of a century. Elizabeth models coordinators after the role of the Oxford tutor, who "links students to the possibilities of the university and the world outside." Links. Possibilities.

Having just read Seymour's book, *The Creation of Settings and the Future Societies,*[2]' she met him for lunch in the early 1970s at the Yale Faculty Club. "We were walking in the street when I said how great I thought his book was," she recalls. "Seymour stopped, turned, and said, 'Please don't be brief.' "[22] It was a good beginning to a long collaboration.

In their two books that followed, Elizabeth appears as the central character, Mrs. Dewar (pronounce **it** to understand **it:** "do-er"). As a trustee of her local hospital for more than 15 years, Elizabeth chaired the long-range planning committee. At the same time, Seymour and his colleagues had a federal grant to study networks. "Mrs. Dewar's network" became the object of their study, with her as the Coordinator Extraordinaire, involving the whole community, everyone who had a stake in the future of the hospital.

"I survived three executive and presidential changes," she recalls, "and I learned how the executives try to bypass the board. *They* were always plotting, so I'd plot back." Which she did by being a world-class coordinator.

"It's a radar type of mind that sees things and connections in the social fog that most people cannot," her peers reported. "I get lost trying to follow the connections she comes up with."[23]

"FINDING" PEOPLE

"The coordinator is a scanner of possibilities,"[24] Elizabeth says. To "design configurations of people," as she puts **it,** the coordinator must first "find" them.

So, Elizabeth invented a one-hour interview that usually turned

into five. “They’d start canceling appointments left and right, and then I knew I was on track,” she recalls. “The interviews help you ‘find’ the person.”[25] “Finding” means identifying the person’s full range of possibility, capability, skill, expertise, and talent. Elizabeth calls **it** “mapping a person’s terrain, asset hunting instead of looking for what’s wrong with people. A certain characteristic may be an asset, depending on what you match **it** with.” She advises interviewers to:

- Think while you talk. Mentally match this person with others in the network. “Your job is to think, ‘for whom is this an opportunity?“[26]
- Make sure that the first vital phone call is made, even if you have to make it yourself for people who are reluctant.
- Get a real kick out of making a match; it’s the coordinator’s “reward.... An inner integration reflecting the outer one takes place,” she says.”
- Be ready to demean yourself and have no pride. “Like a little poodle, the coordinator has to gallop after people, asking their plans and reminding them by example that they are not a twosome but a part of a network.”

Knowing the people in any network, not just in a community service one, is critical. Because it is a dynamic rather than a static organization, a network needs someone to coordinate the flow of people. No network survives without connections and coordination; for the techies, call it “gateways” and “network managers.” It’s all the same.

Yet, key practical questions remain unanswered. People will pay for technology network managers and infrastructure support, but will they pay for coordinators on the people side? Who trains them? How do you convince people that coordination is not an add-on to an existing job?

THE WORLD, WITH ALL OF ITS COMPLEXITIES AND BEAUTY AND MYSTERY

John Quarterman tracks the growth of global networking. What will happen he asks, when Marshall McLuhan's "global village," first described in his book by that name, is one of the largest countries on earth?[27] It's already larger than Australia and more than twice the size of Sweden, larger than Denmark, Ireland, Israel, and many countries in Africa combined. Never mind California. If Quarterman's projections are right, before long there will be more people using the Internet than citizens of any single country except India or China.

Perhaps. If commercialization of this precious resource is handled sensibly. If prices don't go sky high, so that use is expected to drop, as Australians now predict it will there.

"Only connect!" Links technological and social. With every connection, a little bit of good will is built, strengthening the social fabric, creating more trust.