A POCKET TOOL FOR TEAMNETS: APPLYING THE FIVE PRINCIPLES AT ALL LEVELS

BOLTING INTO THE FUTURE

In 1993, Pennsylvania's Erie County Economic Development Council named Harry Brown "Employer of the Year." Brown is one of the most successful teamnet executives in the United States, though his company may not fit your image of the exemplary 21st-century organization.

First, Brown is not in an information industry. His corporation, EBC Industries, Inc., formerly Erie Bolt Company, makes nuts and bolts—literally. Second, instead of trying to stamp out or buy out his competitors, he regularly partners with them. And finally, he mentors them. They remain independent and so does he.

"I've figured it out," Brown says. "I woke up at 4 o'clock this morning and finally figured out why we're different. Most companies focus on the competition, how to beat the competition. We focus on the customer, how to meet the customer's needs."

This simple shift enabled Brown to take off the typical business blinders. With his enthusiasm and energy, he has transformed a failing

Rust Belt business with 46 employees—with barely $3 million in revenues, losing at least $100,000 a year, and about six months from bankruptcy—into a thriving enterprise with 100 employees and revenues of $8 million. Note also this fact: he started this turnaround just before the 1987 stock market crash, that is, exactly when the U.S. economy fell into recession.

Brown and his cooperating competitors are very successful at what they do and very hard-working. Their success is based upon:

?A common business purpose: profit that comes from serving
  customers' needs.
?Some 20 or so allies, each with its independent specialty.
?Intense communication across and within company lines. People
  meet, fax, phone, and visit.
?Many leaders; leadership shifts, depending on the task at hand.
?Participation at all levels of all companies.

"I started doing this because it was common sense," Brown says simply. "If times weren't tough, I probably wouldn't have thought of it. But when things aren't going well, you're willing to try anything."

It all began when a customer asked Brown for something he didn't have. "A customer's order required secondary machining operations that we didn't have in-house," Brown explains. "So I called up a competitor Joe Fedorko, at Diversified Manufacturing Company, who did, and it worked."

It worked so well that the next time Brown got an order he couldn't fill, he approached another competitor to whom he'd subcontracted in the past. "We found that they enjoyed doing business with us because there were no surprises. We shared process information, which reduced the number of rejects and streamlined production flow," says Brown. "This grew our product base, and we all started growing together."

Indeed, today, Brown's idea has grown into a thriving network that

operates as a virtual factory complex—including competing specialty plating and coating companies, heat treaters, and machine shops.

APPLYING COMMON SENSE

There is nothing arcane about how Brown and his network do it.

"When we get a blueprint, we get together to discuss the best way to meet those requirements," Brown explains. "As soon as we arrive at the proper manufacturing process, we discuss costs to make sure we're competitive. Then we submit the bid."

They realize a 30 percent cost saving by using each other's capabilities, an advantage that they pass on to customers in lower prices and to themselves in reduced manufacturing expenses. Remarkably, each company in the network has more than doubled its business.

There are challenges, however to regarding one another as virtual extensions of their own plants. It means that they share manufacturing process information, something most competitors fear. "There's always the potential that one of the companies might try to take on the business themselves," Brown says. "This happened once, but in the end, they lost the business because they didn't have the strength of the network. Word spread pretty rapidly, and it was difficult for them to create the relationships they needed to fulfill the contract. Violation of trust never works."

People from the other companies also walk in and out of one another's shops, a practice virtually unheard of in the highly competitive manufacturing world. They can spot new business opportunities and improve their processes as they learn about one another's operations.

For example, Brown's company produced a computer numerically controlled (CNC) machine part. "One of the companies in the network did not have the CNC software they needed to do the process efficiently," Brown recalls. "So we gave them our program, they mod-

ified it to fit their machine, and they did the operation more efficiently."

Although the teamnet members sometimes compete for the same business, they think the gains of sharing information far outweigh the risks of revealing trade secrets, Brown says.

Even the unions are on board. EBC Industries was the first company in the United Steel Workers to sign a five-year contract that includes provisions for flexible work schedules, in-house technical training, cross-training on three pieces of equipment, and profit sharing. "Pay levels increase as people gain additional technical expertise," Brown reports.

In 1990, EBC received the Pennsylvania Governor's Labor—Management Cooperation Award. "The union doesn't have any problem with this approach. They see that while there are layoffs all over town in union shops, we're hiring. Management and labor are working together to make sure jobs are more permanent than they were in the past."

It's a rather impressive story taken as a whole—a nuts-and-bolts company cooperating with its competitors that gets along with the union. EBC Industries' network shares five key principles with other teamnet organizations.

FIVE TEAMNET PRINCIPLES

You don't have to change everything to move into the Age of the Network. Harry Brown has created a teamnet with his competitors that offers their Industrial Age product in an Information Age style of business.

Brown successfully and aggressively engages in *co-o petition:* he cooperates with his competitors for business that he cannot do alone.

Let's look closely at the EBC strategy and note its five distinguishing features:

? Unifying Purpose
Shared commitment to the same goal, not legalisms, holds the firms together.

When asked the purpose of his network, Brown simply says, "profit." He also talks constantly about delighting his customers. He knows why he formed the network. Initially, it was for survival; then it proved to be very good for business.

? Independent Members
Each company is different. Each retains its independence while cooperating with others on specific projects.

Brown quickly reeled off the names of nine firms when asked to list the companies in his network—from the five-person contract machine shop, D&E Manufacturing, to the 130-person Erie Plating Company, which does special plating that meets stringent government specifica-. tions. Later that day, he faxed us a list of 12 additional companies, with names like American Tinning and Galvanizing, Hytech Metals, and Machining Concepts. There is no formal, set-in-stone membership— including about a dozen firms involved from the early days—and each company is completely independent, while being interdependent with the others.

? Voluntary Links
They communicate extensively and meet often. No one is forced to participate. There are many crisscrossing relationships.

"There are no regular meetings. No one wants them except on an as-needed basis to address problems as they surface," Brown says.

"Then we involve whoever's working on the project. We meet right on the shop floor. We have dry chalk boards by the machines so people can make notes as they go along. People know each other well. We fax a lot. We've experimented with e-mail, but mostly what we look at is graphics, so faxing is easier. Social get-togethers just happen— nothing formal."

Almost as an afterthought, he says, "We had some golf outings."

? *Multiple Leaders*

Different people and companies lead, depending on what needs to be done. During any given process, more than one person leads.

"It's not so much product driven as process driven, so this happens automatically," Brown explains. "On one project, Champion Bolt [an Erie distributor and small-scale manufacturer of fasteners] had the initial lead in specifying the parts.

"Then we were working on some very difficult stainless steel material. We don't know that technology, so a vendor in our manufacturing group, Ron Wasielewski, who is a technical specialist in the latest cutting tools at Erie Industrial Supply, led that discussion. Now we're all at a higher level of knowledge."

Next, Russ Mollo, Brown's chief engineer, jumped back in when it came to heat treating. So it goes, with leaders changing over time.

"Russ is our resident agent of change and constant reminder to pull in all available resources to advance technologically and personally," Brown says. "Traditional job functions are gradually disappearing. As time goes on, there will be no defined engineering department, no defined sales department. The new organization will be a blend of various functions, resulting in streamlined communications and a more responsive source for our customers."[1]

? Integrated Levels

People work at many levels within EBC and within other partner companies in the teamnet that itself is part of the nuts-and-bolts business, which is embedded in the Erie County economy, which contributes to the U.S. industrial base.

The owners of the firms, the hierarchy, are not the only ones who work together; the "lower-archy" does too. "Machine operators talk directly to one another. It may be rare in other shops but it's common practice here," Brown says. Communication is direct and doesn't have to go through approved channels.

Brown hesitates for a moment when asked to name the departments within his own company. "Well, let's see. The departments kind of bleed into each other." He mentions marketing and sales first, describing Vice President Norm Strandwitz as a "great advocate of team play and information sharing so that more information surfaces. He spends a lot of time on the shop floor."

Then Brown stops to think again, and says, "When you get past marketing, right around that same level, I'd put our QC [quality control] manager, Dan Neal." Brown goes on to describe the rest of the organization, including Joe Legnasky, who is the purchasing manager; Lew Vespoli, the treasurer, who "gets out on the shop floor"; Bob Valimont, the manufacturing manager, "who puts up with people strolling in and out of the shop"; right down to "the foreman in the forge shop and the hourly work force with group leaders."

Obviously, Brown isn't an executive who spends his days carefully designing and studying his organization chart. He just lives it.

Brown also sets his shop in a larger context, beginning with the Greater Erie area. "Any Rust Belt community has to look at what's happened to their business in the past and change," he says. "Then we are part of the nation's manufacturing base to compete globally. We have to pool our management skills so we can learn about our technology needs and assist one another."

A PATTERN LANGUAGE FOR ORGANIZING

The word "network" evokes a clear, simple mental model, a structure of points or circles and connecting lines—nodes and links, vibrant with activity. People intuitively use the idea with a remarkable consistency that continues to surprise us. Where people do get fuzzy is in describing how a network actually does anything coherent.

You probably already practice many of these principles. By simply upgrading your informal network knowledge and translating experience into a concise language, you will enhance your capabilities immediately. In the longer term, if you work with the principles and they work for you, you will gain the keys to networking, with its nearly universal applicability.

We began our search for principles when we started our research in 1979, and it continues today. Experience, examples, and thinking have led us to these five principles.

Purpose
Members
Links
Leaders
Levels

This set of patterns is not sacred. However, we have reviewed, tested, and seen them practiced extensively in every sector—business, nonprofit, grass-roots, government, religious, education—and in networks of all sizes.

Indeed, the great advantage of such timeworn general principles is their enormous power of applicability. Principles allow you to take knowledge from one situation and transfer it to another. People use principles at every level to design human-scale networks to meet their needs, while combining into ever-larger associations that reflect the same elements and dynamics.

Networks scale. No matter how exalted our role—royalty, board chair, or president—we all live in small groups. Small groups of

people represent the largest organizations, embody corporations, and stand for the interests of entire industries. Little organizations make up big organizations. Everyone comes home at night to a small group, if only an extended one. Each of us plays many roles at many levels in many different groups.

What roles do you play at what levels? Seeing how you fit into your own picture is the first step in understanding the networks around you.

Apply the principles to the group closest to you personally and begin simply. Experiment with your own small group at work. Hold an informal planning session with a few close colleagues to try out the new ideas. Try the pocket tool outside of work: help a local school, church, temple, or community group form a network.

Through experience, you become a more astute observer of the organizational landscape. You learn by noticing what's happening in other companies. You recognize common features in the way nonbusiness organizations are coping with the transition from industry to information. See how others:

? Translate vision into work;
? Develop independent work units;
? Establish rich connections;
? Encourage multiple leaders; and
? Involve the hierarchy.

Suddenly, you become aware of things you haven't seen before— like the article in your trade publication about how a group of companies like yours is talking about forming an alliance that expands capabilities and enlarges the customer base. Perhaps you can join, or form the nucleus for a new network.

Now turn your thinking to teamnets and apply the principles to your own situation.
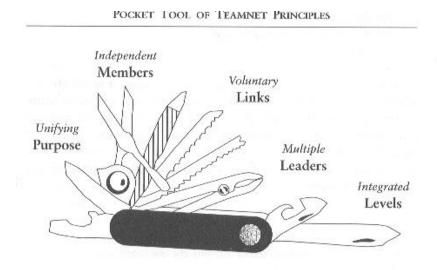
A POCKET TOOL FOR TEAMNETS

Consider the Five Teamnet Principles together as a mental tool, a Swiss Army pocket knife of the mind. Each principle is a separate tool that you can pull out and apply to your situation. They address different aspects of networks, but together they capture the integrated elements of a whole. "Doing it right" means using each principle appropriately, in the proper measure. When you succeed, you have a healthy teamnet.

THE PURPOSE OF PURPOSE

1. Purpose is the glue and the driver.

Every teamnet needs a clear purpose: "Win the MD-12 [Douglas Aircraft's still-on-the-drawing-board, next-generation wide-body,

POCKET TOOL OF TEAMNET PRINCIPLES

Independent
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long-haul jumbo jet] systems integration contract and prepare our company to deliver it," says the computer company bid team. "Implement the new schedule planning process by 1 June," says the airline. "Cut operating costs by 20 percent in 60 days," says the hotel chain.

Teamnets achieve success by clearly defining their purpose. It needs to be simple, and everyone involved needs to understand it and, if possible, participate in its development. Each project in Harry Brown's manufacturing network has its clear purpose that derives from its overall one—meeting customers' needs and making a profit.

Purpose must extend from the abstract to the concrete to be truly useful. It begins with the organization's long-term vision, values, and strategy. These abstractions must translate into time-bound operational missions, measurable goals, clearly identifiable results, and, finally, specific tasks. Action must accompany beliefs and commitments, or the circuit never closes.

Purpose plays an absolutely critical role in teamnets. It establishes legitimacy, functioning in the place of the hire-fire power of hierarchy and the rules and regulations of bureaucracy. It is the basis for the agreements and voluntary relationships that constitute the "work life" of the network.

Which is not to say that purpose isn't important to other forms of organization. "What you're talking about are the Nine Principles of War," said Karl Leatham, a retired army lieutenant colonel, now a business process reengineering expert at Computer Sciences Corporation. "Just substitute the word 'competition' for 'enemy' and 'purpose' for 'target,' and you'll see what I mean." First among the Nine Principles is "The Objective: Direct every military operation toward a clearly defined, decisive, and attainable objective."[2]

Failure is easier to predict than success. A range with extremes can express each of the principles. We portray these extremes as "warnings" because they function as failure detectors. So, problems with purpose can range from too little to too much. Keep in mind that each is not the opposite but the complement of the other extreme. When one tendency threatens the health of a network, you need to introduce a dose of the other.

Warnings: From Glueless to Groupthink

Networks fail without enough purpose—"enough" being an imprecise quantity that always depends on local circumstances and timing. Mostly, people know a motivating purpose when they both feel its power and understand its compelling logic. Teamnets, however, can easily fall apart after they form when the spark of purposeful life flickers and dies. Purpose is a vital source of energy that needs regular renewal, more often the more things change.

The more obscure extreme source of failure is "too much" purpose. "Groupthink" can also kill a network. People can lose their critical faculties when they become cohesive to the point of being cultlike. Purpose turns into ideology as the group discourages critical thinking. People make expensive mistakes when they put blinders on and refuse to tolerate divergent ideas. The need for diversity around purpose underlies the importance of independent members.

DECLARATION OF INDEPENDENCE

2. Each member has a healthy independence.

Think of it as a key test: You are not in a network if joining means you have to give up your independence. Members of networks—individuals in self-directed teams, departments cooperating in cross-functional programs, firms in alliance—retain and usually enhance their independence.

The parts of traditional organizations are dependent on a central and higher authority. Each company in Harry Brown's network stands on its own. Each will continue to exist even if the network collapses.

This principle underlies the virtual business known as VISA International. Financial institutions totalling 23,000 create its products, accepted by 11 million merchants in 250 countries and territories, whose data centers clear more transactions in one week than the

Federal Reserve system does in a year. Sales now equal the combined revenues of General Motors and IBM, having grown 20—50 percent, compounded annually, since VISA's birth in 1970. Dee Hock, founder and CEO emeritus of VISA International and VISA USA, established the business on simple principles, many of which stress the independence of its members:

? Equitable ownership by all participants;
? Maximum distribution of power and function;
? Distributed authority within each governing entity; and
? Infinitely malleable yet extremely durable.[3]

Consider, by analogy, the epochal change in the nature of computing in the last decade. Engineers designed computer systems in "master—slave" arrangements for most of their first 40 years: a glass-enclosed host computer with "dumb" dependent terminals attached. The entire system crashed when the central unit went down.

The unquestioned hegemony of huge mainframes in the Information Age was first shaken by the computer on a chip in the mid-1970s, which led to the personal computers (PCs) that decimated the centralized behemoths. The architecture *of networks* is ascendant in computing in the 1990s. PCs, workstations, mainframes, and other intelligent devices represent the independence of members connected in networks.

Members of a network are so substantial in their self-sufficiency that they do not depend on the network itself. A healthy independence is a necessity, even a prerequisite, for healthy interdependence.

Warnings: From Dependent to Stubborn

Networks fail at one extreme when their participants—whether organizations or individuals—cannot behave independently, the source of many network failures in large bureaucratic cultures. Bureaucrats may be free in theory, but in practice they fear making decisions and prevent others from taking responsibility that constitutes real independence. If you want a more flexible organization, be prepared not only to tolerate but to vigorously support risk taking.

People also carry independence to the other extreme, to stubbornness, where their narrow-minded behavior overwhelms cooperative efforts. Those who are so independent that they can't see a common purpose fragment the network, destroy its coherence, and doom it to fail. Small business networks often fail because some members are too stubbornly independent.

LINK CITY, PLANET EARTH

> *3. Team nets have many links—expansive relationships among people and extensive connections through technology.*

Many people wrongly regard a network as nothing more than a mesh of physical links. Even so, they unconsciously point to the network's distinguishing feature. Links—multifaceted, omnidirectional, complex, technical, and personal—are the cardinal characteristic of the Information Age organization.

First, see your links as the physical communication systems, besides meetings and collocation, that you use (or soon will):

phones, faxes, memos, letters, overnight mail, conferencing (phone, video, computer), e-mail, the Internet, cellular phones, and mobile computing. The list goes on, and these are only the person-to-person media.

It's not news that our world is more connected than ever before and that the trend is accelerating. However, people misunderstand when they think that networks mean only computers, telephones, and other channels of communication.

Even technology networks are more than computers and telephones. What use is an e-mail or voice mail system if *people* aren't using it? Cayman Systems, a network hardware vendor, advertises that it "hasn't forgotten that what we're really connecting is people, not just computers."[4]

People develop relationships over time through their interactions. They must use physical links to communicate—channels to interactions to relationships and back.

Technology alone is inert. Look at the interactions that arise from the work to see a network in process, the pattern of who talks to whom how often. There trust develops and relationships crystallize— in the interactions over time and in moments of crisis. One company that installed a new communications system without a clue about how to use it to achieve more productive work relationships is representative of many that ignore the social side of change. New communication technologies stimulate new forms of organization and induce change, planned or not, desired or not.

Warnings: From Isolation to Overload

A lack of links is a clear cause of network failure. Missing physical connections, interactions that peter out, and stillborn relationships plague every network. No true network will form where personal connections are weak, that is, where people are not close. There is no trust without real relationships, and without trust, there is no network.

The failures caused by too many links, too many messages, and too quick a pace are less obvious. Overload is a major and widespread problem of the Information Age. You're in trouble when you dread calling into your voice mail or checking your e-mail because you know that once you begin, you're committed for the next few hours. Clogged communications systems shoot overload to first place on the failure indicator list for fast-growing networks. Overload depresses learning, which is central to the Information Age organization. The well-functioning teamnet manages information dynamically— filtering, categorizing, storing, sharing, and updating it, offering interpretation just in time—without great hassle.

CLIMBING THROUGH THE TEAMNET VINES

4. Fewer bosses, more leaders.

Everyone is a leader at the time when his or her unique experience and knowledge add to the group's intelligence. Bell Atlantic's CEO, Raymond W Smith, describes leadership on "ever-shifting, cross-disciplinary teams" as "determined by who's most expert on the matter—not the corporate hierarchy."[5] That networks have multiple leaders surprises many people.

All human organizations have leaders—whether informal or formal. Hierarchy and bureaucracy minimize leadership; teamnets maximize it.

When Hyatt Hotels' sales and marketing organization went from functions to market segments, they appointed two leaders for each new market team. Each person holds a separate portfolio of responsibilities within the team. Everyone has something vital to contribute, with leadership broadly distributed.

Consider these questions to gauge whether you have fewer bosses and more leaders: Do you hear only one voice at meetings? Are there subgroups with task leaders? Does more than one person make commitments and take responsibility? Do people feel heard and believe that they have a voice in decision making? Do they participate—or at least feel that they can? This sense of participation is a key indicator of teamnet health.

Look for new styles of leadership. In particular, look for the natural networkers, the coordinators. These are the people at the nexus of relationships, people who are natural catalysts. They constantly develop matches between people's needs and resources.

Warnings: From Leaderless to Followerless

Without many leaders, networks fail, so it is easy to see how this spread-out organization could suffer from a lack of leadership. The "leaderless network" problem often creeps up slowly, almost undetected, as the original crop of leaders burns out before new leaders are ready to come online. Suddenly, one day the energy is gone, and no one knows why.

An abundance of leaders can bring its own problems. The *"prima donna* effect" is a good name for this extreme. Experts come in, do their work, and leave, while bosses breeze by, dropping orders, and special interests focus on their own niches. If we're all leaders but none of us has learned to follow, we have a power struggle on our hands. Incessant squabbles paralyze the network. Leading and following is a dance; step on as few toes as possible, please. Heed the motto that Hyatt Hotels put on its T-shirts: "Teamnet: It's an attitude."

THE HIERARCHY AND THE LOWER-ARCHY

5. Teamnets are naturally clumpy and clustered.

Contrary to popular belief, a network is not two-dimensional. Small groups, forming and re-forming, make up big networks. Even the smallest networks carry out work in subgroups of ones, twos, or threes.

The word "teamnet" carries connotations of this multilevel reality: networks of teams of people.

Groups within groups nest internally in some teamnets. Arthur Andersen & Co.'s Business Systems Consulting group (BSC), head-quartered in Boston, comprises 765 consultants spread throughout the world in 80 locations housing 2 to *45* people, each helping small to medium-sized businesses install technology networks to meet business needs. The teams are local; the network is global. BSC, in turn, is part

of Arthur Andersen's Audit and Business Advisory Services group, which reports to the managing partner—CEO of Arthur Andersen & Company, S.C., the main partnership that holds both Arthur Andersen and Andersen Consulting.

Externally, teamnets are open organizations that evolve along with their environments. So it is equally important to consider the larger context. Teamnets may be part of a larger enterprise or part of an industry, market, or movement—a hierarchy of levels.

We tend to network at our own level, where it is easiest to establish peer relationships, ignoring the other levels at our peril.

Warnings: From No Uplinks to No Downlinks

It's easy to lose touch with the hierarchy, but it's very dangerous. Many a promising teamnet effort has succeeded briefly, then shriveled and died because it lacked links to the senior levels of the company or to the stakeholder opinion leaders. In one dramatic case involving two companies, the vendor's executive committee killed a huge deal at the last minute because it was not briefed on the project until the moment of final decision. Often, problems with the hierarchy show up late in a change process rather than earlier, when there is still time to address them. Remember: the hierarchy always has the last word.

It is just as dangerous to forget the ground floor, where work takes place, the people at the operating levels who support the network's activities. The people on the front lines of production, such as Harry Brown's hourly work force in Erie, Pennsylvania, and those in services, such as at the front desk of the Marriott in Jacksonville, Florida, need to network. Customers and suppliers need involvement up and down the line rather than simply as passive recipients in a situation where only a salesperson and a purchaser communicate. Change is killed just as effectively from below as from above. When people on the front line are out of touch, they shield themselves from innovations launched from above, which causes unintended side effects.

UP THE ORGANIZATIONAL SCALE

New organizations are erupting at every level—from very small groups to global networks. Companies are furiously experimenting and learning, creating a profusion and confusion of management innovations. It's all happening at the boundary between the Industrial and Information ages.
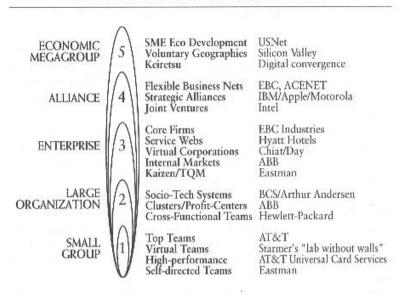
A massive shift has been underway for half a century. From its zenith, the Industrial Age descends while the Information Age ascends. Decade by decade, the pace of change has been picking up.

While they work an honored spirit, some "new" ideas simply fix what appears to be broken. They are like the people who drew ever more complex epicycles to make Ptolemy's predictions work in spite of new astronomical data that completely refuted the Ptolemaic universe. Some people only look backward as the end of an age challenges their power. Sometimes their solutions are very elaborate and work well—for a while.

Other "new" ideas are different, stimulated by authentic changes. Their goal is to fit form to new, constantly changing functions. They have many names, but all share a common set of network characteristics reflected in the Five Teamnet Principles. Networked organizations can comprise hierarchies and bureaucracies, or function within them with infinite variations.

Safeguard Scientifics, Inc., a networking partnership of companies, that work together turns this idea into strategy. "In the challenging business environment of the next decade, the ability to network effectively, both within the corporate organization and externally with other companies, will be a key strategic element to increased competitiveness and greater productivity," says the company's annual report.[6]

Teamnets appear all along the organizational scale—from very small internal units to macroeconomic groups that interest nations.[7]

ECONOMIC MEGAGROUP	5	SME Eco Development Voluntary Geographies Keiretsu	USNet Silicon Valley Digital convergence
ALLIANCE	4	Flexible Business Nets Strategic Alliances Joint Ventures	EBC, ACENET IBM/Apple/Motorola Intel
ENTERPRISE	3	Core Firms Service Webs Virtual Corporations Internal Markets Kaizen/TQM	EBC Industries Hyatt Hotels Chiat/Day ABB Eastman
LARGE ORGANIZATION	2	Socio-Tech Systems Clusters/Profit-Centers Cross-Functional Teams	BCS/Arthur Andersen ABB Hewlett-Packard
SMALL GROUP	1	Top Teams Virtual Teams High-performance Self-directed Teams	AT&T Starmer's "lab without walls" AT&T Universal Card Services Eastman

THE LARGE LIFE OF THE SMALL GROUP

Many small groups, but not all, have teamnet characteristics. The academic discipline of "social network analysis" studies life's informal small groups and extended networks of associations, the "sea of social relationships" in which we all are embedded. Business is both awash in informal networks of small groups and replete with hierarchical and bureaucratic small groups that run solely by commands, controls, and procedures. Usually these are formal organizational units with standard operating procedures.

Increasingly, however, networked small groups are appearing as part of the formal management structure. Small, goal-oriented, peer-based, richly linked, multileadered *teams* are the most common prescription for leading-edge management in the 21st century.

Procter & Gamble has been using *self-directed teams* since the 1960s; Cummins Engine began experimenting in the 1970s. Saturn is

General Motors's company-within-a-company that built a culture of empowered teams and lean hierarchy from day one. Eastman Chemical Company uses a self-directed team to run its senior manufacturing management function, as well as hundreds of others at all levels.

High-performance teams call out the best in people as they combine innovative management approaches with information technologies. In these efforts, careful attention to how teamnet principles affect both people and technology reaps great rewards. AT&T Universal Card Services has developed an approach called "loose-tight": loose guidelines for a team empowered to take action, with a tight focus on goals and results.

Virtual small teams span the globe for the electronically enabled, like those in computer scientist/cardiologist Frank Starmer's "lab without walls." These new kinds of instantly interacting but physically distributed groups are both formal and informal. One of Bell Northern's R&D labs extends from several sites in North America to several in China; each Monday morning, Ottawa time, all dozen members participate in a conference call. Hints of the power of the new media to spawn informal social networks appear everywhere— from the news groups and chat channels of the Internet to the burgeoning commercial services like America Online to the countless bulletin boards catering to every need and locality.

Teams exist at all levels, from top to bottom. Where there is change, teams are often not far behind. ABB's functional units are fading as people organize into "Target-Oriented Teams," emphasizing their purpose. Sixteen TOTs exist among 200 employees in one of ABB's Swedish companies. The TOTs are organized into profit centers, and the profit centers, in turn, are organized into companies. Small teams run what's left of the headquarters staff at the company and country levels of this $30 billion behemoth. Only five levels away from the TOTs sits CEO Percy Barnevik, who is part of an executive *top team* of 13 that meets every three weeks to set global strategy.

We asked Gosta Lundqvist, one of five change agents on the corporate staff that serves ABB's 100 Swedish companies, what happened to the specific functions, such as engineering, sales, and marketing. He waved his hand and said nonchalantly, "They just went away."

MAKING A LARGE ORGANIZATION SEEM SMALL

It is surprisingly easy to build temporary teamnets within and between bureaucracies. Most companies today routinely form *cross-functional teams,* whether they call them that or not. Here the purpose is palpable and the need to cooperate across boundaries for the good of the whole is clear. Departments, functional groups, or agencies send representatives, draw up charters, and appoint a leader. The team segments its work through task leaders and proceeds, often with breathless speed, until it accomplishes its mission. Then it disbands.

These one-at-a-time anomalies are true teamnets—and great learning environments. The challenge, however, is to fully realize the power of cross-boundary work internally. Toyota Motor Company is world renowned for its ability to plan and manage horizontal relationships and processes across all functions. Hewlett-Packard, an acknowledged U.S. leader, set up companywide "councils" of cross-functional efforts that are themselves coordinated through a Product Generation Process Council.

Many companies find that there is a "natural size" for self-reliant organizational units. W.L. Gore & Associates, the $1 billion maker of Gore-Tex, regards 150—200 people as a roughly optimal size for the manufacturing facilities that populate their "lattice organization." Parts of British Petroleum and General Electric Canada form *cluster organizations,* units large enough to maintain their own administrative apparatus and small enough to be responsive to customers. D. Quinn Mills's research suggests that 30—50 people is an effective size range for these units.[8]

Stories of pioneering, derring-do megaprojects carried out at the speed of light across continents reach back only a few years. One example is Digital Equipment Corporation's globally distributed teamnet in the late 1980s, code-named Calypso, that built its state-of-the-art midrange computer in record time, earning billions of dollars for the company. Once a bold new concept, *social-technical systems* reflects what is now a mainstream effort to relate organizational change to emerging technologies. The objective is to ensure greater

freedom for the individual (social) while increasing collective produc-tivity (technical).

THE ELEGANTLY NETWORKED ENTERPRISE

Teamnets appear in various guises at the whole-enterprise (company/ corporate) level. Even small firms operate through smaller internal components. Enterprise teamnets are also the crossroads for a great variety of external relationships and partnerships.

Some enterprises, more than others, vividly demonstrate the network form as a whole, though all incorporated organizations are to some degree teamnets (e.g., connected components, multilevel, purpose-directed). Eastman Chemical Company is an example of a 21st-century quality organization that is succeeding today. It got there by practicing the Japanese principle of *kaizen. Kaizen,* literally "continuous improvement involving everyone,"[9] is a companywide, total quality management system that, when fully deployed, is a teamnet. Improvement involves every part of the company at all times.

The use of *internal markets* is one astonishingly creative way to bust bureaucracy and empower internally independent organizations. ABB, known for its extremely lean bureaucracies and flat hierarchies, is a world-class exemplar of this strategy. The principle is simple: any internal unit is free to buy and sell *externally* as well as *internally.* This practice eliminates a welter of internal rules, procedures, and transfer prices. It offers enormous autonomy within organizations and ensures that people throughout the enterprise experience market realities.

The advantage of internal markets, Gifford and Elizabeth Pinchot write, is that they take "decisions a bureaucracy would bungle" and turn "them over to the cutting intelligence of marketplace choice."[10] In the words of William Halal, management professor at George Washington University, "[I]nternal markets are replacing hierarchy. "11

Virtual corporationsl[2] allow companies to radically alter their way of doing business without extensive new investment. For example, Chiat/Day, a leading advertising firm, joins its nine offices, using 700

Macintosh computers in the United States, Canada, and England, and clients and vendors, including their travel agent, with a sophisticated e-mail network. "(W)e intend ... to become a virtual agency," said Steve Alburty, management information system director. "We're getting rid of all our desks. We'll be working from home or client sites, our office space will be shrunk to a third of its current size, and what's left will mostly be converted to meeting rooms."[13]

Some organizations, such as *service webs,* are distributed by their very nature—spread-out organizations composed of semiautonomous units. Hyatt Hotels is a management company for more than 100 hotels, each with a separate set of owners and expectations. Professional service firms are spreading out as they hasten to adapt to the pace of change engulfing their businesses. Most of the Big 6 accounting firms and many consulting companies—already highly distributed corporate designs with local offices around the world and partnership power structures—have been reorganizing to include cross-boundary organizations (e.g., KPMG Peat Marwick's lines of business) and teams to serve market segments and customers.

Finally, *core firms,* like EBC Industries, with both vendor and cus-tomer partnerships, are inventing new structures to enhance their competitiveness. Traditional core—supplier configurations have a giant core and small, isolated, scrambling suppliers, but in the EBC network, purpose and personal relationships identify the center. Connections go directly from member to member, node to node, not necessarily through the core. Big companies like Chrysler are doing the same thing. "Chrysler and its suppliers are a virtual enterprise," President Robert A. Lutz told *The Wall Street Journal.*[14]

ALLIANCES, NOT MERGERS, THANKS

Links among companies proliferate as business speeds up and goes global. *Joint ventures* are a traditional form of partnership, a minimal network, in which two or more companies form a separate corporate entity that they jointly own. The most successful such ventures, such as the 60 or so created by Corning, Inc., reflect all five teamnet

principles: clear purposes; independence not only among the partners but also of the created company; rich relationships to exploit the complementary capabilities of each party; multiple leaders (at least three sets); and many levels and boundaries to climb over and through in all the interacting enterprises.

Intel, the microprocessor manufacturer, is generating most of its new business in joint ventures: with Microsoft to create a telephone linking standard; with Microsoft and General Instrument to build an interactive TV-top cable converter; and with, among others, BellSouth, Bell Atlantic, Ameritech, Siemens, and Alcatel.'[5]

The dominant business phenomenon of the 1990s is networking, a much more flexible and fluid mode than its predecessors. It contrasts with the merger mania of the 1980s and the traditional industrial response of gobbling up the competition and getting bigger. We are witnessing an explosion of new, large-scale, multicorporate networks that offer both cooperation and competition in a veritable zoo of *strategic alliances*. Such alliances are true networks in which the independence of members is as clear and unquestioned as the inappropriateness of hierarchy. With the independence of members and multiple leadership as basic premises, the trick lies in creative development of joint purposes and voluntary relationships.

Two-party alliances are still the norm, but multimember alliances are becoming increasingly common. Small businesses are also engaging in this fast-growing trend to ally in a big way. *Flexible business networks* are taking hold throughout the world, including in the United States, some stimulated by government funds, countless others started by the companies themselves.'[6] These small company alliances offer a remarkable demonstration of the economic value of business links among independent companies.

BEYOND ALLIANCES: MEGAGROUPS

Beyond the reach of individual firms are massive conglomerations of economic activity that are to some degree integrated and focused. These very-large-scale entities are likely to acquire increasing

importance in the future. Known in Japan as *keiretsu,* they are linkages among a large number of firms in diverse industries anchored by a major bank or manufacturer. Massive webs of strategic alliances are now appearing elsewhere on the global stage. Global "digital keiretsu"—the 18 companies that swirl around Toshiba, for example[17]—are shaping the future convergence of computers, telecommunications, and media.

AnnaLee Saxenian's study of the contrasting fates of Route 128 in Massachusetts and Silicon Valley in California underscores the enormous importance of a regional business culture conducive to the formation of networks. These *voluntary geographies* are gaining ground as people take a more consciously regional and ecological view of their businesses.

Small and medium-sized enterprise economic development, based on thousands of flexible business networks, is one of the most promising approaches for improving our myriad engines of job growth. USNet, a private, nonprofit initiative funded through defense conversion grant money and state matching grants, provides services to a consortium of 15 states that encourage these networks.

In short, teamnets surface at all levels of organizations. While some networks demonstrate the five teamnet principles better than others, all reflect the principles to some degree. They are changing businesses and organizations of all sizes everywhere.