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## **The Hidden Connections**

A Science For Sustainable Living

### **4 Life and Leadership in Organizations**

In recent years, the nature of human organizations has been discussed extensively in business and management circles in response to a wide-spread feeling that today's businesses need to undergo fundamental transformations. Indeed, organizational change has become a dominant theme in the management literature, and numerous business consultants offer seminars on "change management."

Over the past ten years, I have been invited to speak at quite a few business conferences, and at first I was very puzzled when I encountered the strongly felt need for organizational change. Corporations seemed to be more powerful than ever; business was clearly dominating politics; and the profits and shareholder values of most companies were rising to unprecedented heights. Things seemed to be going very well indeed for business, so why was there so much talk about fundamental change?

However, as I listened to the conversations among business executives at these seminars, I soon began to see a different picture. Top executives are under enormous stress today. They work longer hours than ever before, and many of them complain that they have no time for personal relationships and experience little satisfaction in their lives in spite of increasing material prosperity. Their companies may look powerful from outside, but they themselves feel pushed around by global market forces and insecure in the face of turbulences they can neither predict nor fully comprehend.

The business environment of most companies today changes with incredible speed. Markets are rapidly being deregulated, and never-ending corporate mergers and acquisitions impose radical cultural and structural changes on the organizations involved — changes that go beyond people's learning capabilities and overwhelm both individuals and organizations. As a result, there is a deep and pervasive feeling among managers that no matter how hard they work, things are out of control.

#### complexity and change

The root cause of this deep malaise among business executives seems to be the

enormous complexity that has become one of the foremost characteristics of present-day industrial society. At the beginning of this new century, we are surrounded by massively complex systems that increasingly permeate almost every aspect of our lives. These are complexities that were difficult to imagine only half a century ago – global trading and broadcast systems, instant worldwide communication via ever more sophisticated electronic networks, giant multinational organizations, automated factories, and so on.

The amazement we feel in contemplating these wonders of industrial and informational technologies is tinged by a sense of uneasiness, if not outright discomfort. Even though these complex systems continue to be hailed for their increasing sophistication, there is a growing recognition that they have brought with them a business and organizational environment that is almost unrecognizable from the point of view of traditional management theory and practice.

As if that were not alarming enough, it is becoming ever more apparent that our complex industrial systems, both organizational and technological, are the main driving force of global environmental destruction, and thus the main threat to the long-term survival of humanity. To build a sustainable society for our children and future generations, we need to fundamentally redesign many of our technologies and social institutions so as to bridge the wide gap between human design and the ecologically sustainable systems of nature.<sup>1</sup>

This means that organizations need to undergo fundamental changes, both in order to adapt to the new business environment and to become ecologically sustainable. This double challenge is urgent and real, and the recent extensive discussions of organizational change are fully justified. However, in spite of these extensive discussions and some anecdotal evidence of successful attempts to transform organizations, the overall track record is very poor. In recent surveys, CEOs reported again and again that their efforts at organizational change did not yield the promised results. Instead of managing new organizations, they ended up managing the unwanted side effects of their efforts.<sup>2</sup>

At first glance, this situation seems paradoxical. When we look around in our natural environment, we see continuous change, adaptation, and creativity; and yet, our business organizations seem to be incapable of dealing with change. Over the years, I have come to realize that the roots of this paradox lie in the dual nature of human

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<sup>1</sup> See pp. 214ff. below.

<sup>2</sup> See Wheatley and Kellner-Rogers (1998).

organizations.<sup>3</sup> On the one hand, they are social institutions designed for specific purposes, such as making money for their shareholders, managing the distribution of political power, transmitting knowledge, or spreading religious faith. At the same time, organizations are communities of people who interact with one another to build relationships, help each other, and make their daily activities meaningful at a personal level.

These two aspects of organizations correspond to two very different types of change. Many CEOs are disappointed about their efforts to achieve change in large part because they see their company as a well-designed tool for achieving specific purposes, and when they attempt to change its design they want predictable, quantifiable change in the entire structure. However, the designed structure always intersects with the organization's living individuals and communities, for whom change cannot be designed.

It is common to hear that people in organizations resist change. In reality, people do not resist change; they resist having change *imposed on them*. Being alive, individuals and their communities are both stable *and* subject to change and development, but their natural change processes are very different from the organizational changes designed by "reengineering" experts and mandated from the top.

To resolve the problem of organizational change, we first need to understand the natural change processes that are embedded in all living systems. Once we have that understanding, we can begin to design the processes of organizational change accordingly and to create human organizations that mirror life's adaptability, diversity, and creativity.

According to the systemic understanding of life, living systems continually create, or recreate, themselves by transforming or replacing their components. They undergo continual structural changes while preserving their web-like patterns of organization.<sup>4</sup> Understanding life means understanding its inherent change processes. It seems therefore that organizational change will appear in a new light when we understand clearly to what extent and in what ways human organizations are alive. As organizational theorists Margaret Wheatley and Myron Kellner-Rogers put it, "Life is the best teacher about change."<sup>5</sup>

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<sup>3</sup> My understanding of the nature of human organizations and the relevance of the systems view of life to organizational change has been shaped decisively by extensive collaboration with Margaret Wheatley and Myron Kellner-Rogers, with whom I conducted a series of seminars on self-organizing systems at Sundance, Utah, during 1996-97.

<sup>4</sup> See p. 8 above.

<sup>5</sup> Wheatley and Kellner-Rogers (1998).

What I am proposing, following Wheatley and Kellner-Rogers, is a systemic solution to the problem of organizational change, which, like many systemic solutions, solves not only that problem but also several others. Understanding human organizations in terms of living systems, i.e. in terms of complex nonlinear networks, is likely to lead to new insights into the nature of complexity, and thus help us deal with the complexities of today's business environment.

Moreover, it will help us design business organizations that are ecologically sustainable, since the principles of organization of ecosystems, which are the basis of sustainability, are identical to the principles of organization of all living systems. It would seem, then, that understanding human organizations as living systems is one of the critical challenges of our time.

There is an additional reason why the systemic understanding of life is of paramount importance in the management of today's business organizations. Over the last few decades we have seen the emergence of a new economy that is shaped decisively by information and communication technologies. In this new economy, the processing of information and creation of scientific and technical knowledge are the main sources of productivity.<sup>6</sup> According to classical economic theory, the key sources of wealth are natural resources (land in particular), capital, and labor. Productivity results from the effective combination of these three sources through management and technology. In today's economy, both management and technology are critically linked to knowledge creation. Increases in productivity do not come from labor, but from the capacity to equip labor with new capabilities, based on new knowledge. Thus "knowledge management," "intellectual capital," and "organizational learning" have become important new concepts in management theory.<sup>7</sup>

According to the systems view of life, the spontaneous emergence of order and the dynamics of structural coupling, which results in the continual structural changes that are characteristic of all living systems, are the basic phenomena underlying the process of learning.<sup>8</sup> Moreover, we have seen that the creation of knowledge in social networks is a key characteristic of the dynamics of culture.<sup>9</sup> Combining these insights and applying them to organizational learning enables us to clarify the conditions under which learning and knowledge creation take place and derive important guidelines for the management of today's knowledge-oriented organizations.

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<sup>6</sup> See Castells (1996), p. 17; see also pp. 100ff. below.

<sup>7</sup> See Chawla and Renesch (1995), Nonaka and Takeuchi (1995), Davenport and Prusak (2000).

<sup>8</sup> See pp. 11 and 30 above.

<sup>9</sup> See p. 77 above.

## metaphors in management

The basic idea of management, underlying both its theory and practice, is that of steering an organization in a direction consistent with its goals and purposes.<sup>10</sup> For business organizations, these prominently include financial goals, and thus, as management theorist Peter Block points out, the chief concerns of management are the definition of purpose, the use of power, and the distribution of wealth.<sup>11</sup>

In order to steer an organization effectively, managers need to know in some detail how it functions, and since the relevant processes and patterns of organization can be very complex, especially in today's large corporations, managers have traditionally used metaphors to identify broad overall perspectives. Organizational theorist Gareth Morgan has analyzed the key metaphors used to describe organizations in an illuminating book, *Images of Organization*. According to Morgan, "The medium of organization and management is metaphor. Management theory and practice is shaped by a metaphorical process that influences virtually everything we do."<sup>12</sup>

The key metaphors discussed by Morgan include organizations as machines (with the focus on control and efficiency), as organisms (development, adaptation), as brains (organizational learning), as cultures (values, beliefs), and as systems of government (conflicts of interest, power). From the point of view of our conceptual framework, we see that the organism and brain metaphors address the biological and cognitive dimensions of life, respectively, while the culture and government metaphors represent various aspects of the social dimension. The main contrast among all those metaphors is between the metaphor of organizations as machines and that of organizations as living systems.

My intent is to go beyond the metaphorical level and see to what extent human organizations can literally be understood as living systems. Before doing so, however, it will be useful to review the history and main characteristics of the machine metaphor. The view of human organizations as machines is an integral part of the much broader mechanistic paradigm that was formulated by Descartes and Newton in the seventeenth century and has dominated our culture for several hundred years, during which it has shaped modern Western society and has significantly influenced the rest of the world.<sup>13</sup>

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<sup>10</sup> See de Geus (1997a), p. 154.

<sup>11</sup> Block (1993), p. 5.

<sup>12</sup> Morgan 1998, p. xi.

<sup>13</sup> See Capra (1982); Capra (1996), pp. 19ff.

The view of the universe as a mechanical system composed of elementary building blocks has shaped our perception of nature, of the human organism, of society, and thus also of the business organization. The first mechanistic theories of management were the so-called "classical management theories" of the early twentieth century, in which organizations were designed as assemblages of precisely interlocking parts – functional departments such as production, marketing, finance, and personnel – linked together through clearly defined lines of command and communication.<sup>14</sup>

This view of management as engineering, based on precise technical design, was perfected by Frederick Taylor, an engineer whose "principles of scientific management" provided the cornerstone of management theory during the first half of the twentieth century. As Gareth Morgan points out, Taylorism in its original form is still alive in numerous fast-food chains around the world. In these mechanized restaurants that serve hamburgers, pizzas, and other highly standardized products, "work is often organized in the minutest detail on the basis of designs that analyze the total process of production, find the most efficient procedures, and then allocate these as specialized duties to people trained to perform them in a very precise way. All the thinking is done by the managers and designers, leaving all the doing to the employees."<sup>15</sup>

The principles of classical management theory have become so deeply ingrained in the ways we think about organizations that for most managers the design of formal structures, linked by clear lines of communication, coordination, and control, has become almost second nature. We shall see that this largely unconscious embrace of the mechanistic approach to management is one of the main obstacles to organizational change today.

To appreciate the profound impact of the machine metaphor on the theory and practice of management, let us now contrast it with the view of organizations as living systems, still at the level of metaphor for the time being. Management theorist Peter Senge, who has been one of the main proponents of systems thinking and of the idea of the "learning organization" in American management circles, has put together an impressive list of implications of these two metaphors for organizations. To heighten the contrast between them, Senge characterizes one as a "machine for making money" and the other as a "living being."<sup>16</sup>

A machine is designed by engineers for a specific purpose and is owned by someone who is free to sell it. This is exactly the mechanistic view of organizations. It

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<sup>14</sup> See Morgan (1998), pp. 21ff.

<sup>15</sup> Morgan (1998), pp. 27-28.

<sup>16</sup> Senge (1996); see also Senge (1990).

implies that a company is created and owned by people outside the system. Its structure and goals are designed by management or by outside experts and are imposed on the organization. If we see the organization as a living being, however, the question of ownership becomes problematic. "Most people in the world," Senge notes, "would regard the idea that one person owns another as fundamentally immoral."<sup>17</sup> If organizations were truly living communities, buying and selling them would be the equivalent of slavery, and subjecting the lives of their members to predetermined goals would be seen as dehumanizing.

To run properly, a machine must be controlled by its operators, so that it will function according to their instructions. Accordingly, the whole thrust of classical management theory is to achieve efficient operations through top-down control. Living beings, on the other hand, act autonomously. They can never be controlled like machines. To try and do so is to deprive them of their aliveness.

Seeing a company as a machine also implies that it will eventually run down, unless it is periodically "serviced" and rebuilt by management. It cannot change by itself; all changes need to be designed by someone else. To see the company as a living being, by contrast, is to realize that it is capable of regenerating itself and that it will naturally change and evolve.

"The machine metaphor is so powerful," Senge concludes, "that it shapes the character of most organizations. They become more like machines than living beings because their members *think* of them that way."<sup>18</sup> The mechanistic approach to management has certainly been very successful in increasing efficiency and productivity, but it has also resulted in widespread animosity toward organizations that are managed in machine-like ways. The reason for that is obvious. Most people resent being treated like cogs in a machine.

When we look at the contrast between the two metaphors – machine versus living being – it is evident why a management style guided by the machine metaphor will have problems with organizational change. The need to have all changes designed by management and imposed upon the organization tends to generate bureaucratic rigidity. There is no room for flexible adaptations, learning, and evolution in the machine metaphor, and it is clear that organizations managed in strictly mechanistic ways cannot survive in today's complex, knowledge-oriented, and rapidly changing business environment.

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<sup>17</sup> Senge (1996).

<sup>18</sup> Senge (1996).

Peter Senge published his juxtaposition of the two metaphors in a foreword to a remarkable book, titled *The Living Company*.<sup>19</sup> Its author, Arie de Geus, a former Shell executive, approached the question of the nature of business organizations from an interesting angle. In the 1980s, De Geus directed a study for the Shell Group to examine the question of corporate longevity. He and his colleagues looked at large corporations that had existed for over a hundred years, had survived major changes in the world around them, and were still flourishing with their corporate identities intact.

The study analyzed 27 such long-lived corporations and found that they had several key characteristics in common.<sup>20</sup> This led De Geus to conclude that resilient, long-lived companies are those that exhibit the behavior and certain characteristics of living entities. Essentially, he identifies two sets of characteristics. One is a strong sense of community and collective identity around a set of common values; a community in which all members know that they will be supported in their endeavors to achieve their own goals. The other set of characteristics is openness to the outside world, tolerance for the entry of new individuals and ideas, and consequently a manifest ability to learn and adapt to new circumstances.

De Geus contrasts the values of such a learning company, whose main purpose is to survive and thrive in the long run, with those of a conventional "economic company," whose priorities are determined by purely economic criteria. He asserts that "the sharp difference between these two definitions of a company – the economic company definition and the learning company definition – lies at the core of the crisis managers face today."<sup>21</sup> To overcome the crisis, he suggests, managers need to "shift their priorities, from managing companies to optimize capital to managing companies to optimize people."<sup>22</sup>

### social networks

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<sup>19</sup> De Geus (1997a).

<sup>20</sup> See De Geus (1997a), p. 9.

<sup>21</sup> De Geus (1997a), p. 21.

<sup>22</sup> De Geus (1997a), p. 18. It is a great pity that Shell, apparently, paid very little attention to this exhortation from one of its top executives. After its environmentally disastrous oil extraction in Nigeria during the early 1990s and the subsequent tragic execution of Ken Saro-Wiwa and eight other Ogoni freedom fighters, an independent investigation took place, headed by Professor Claude Aké, director of Nigeria's Center for Advanced Social Studies. According to Aké, Shell continued to display the insensitive and arrogant attitude that is typical of multi-national oil companies. He was baffled, Aké said, by the corporate culture of the oil companies. "Frankly," he mused, "I would have expected a much more sophisticated corporate strategy from Shell." (*Manchester Guardian Weekly*, December 17, 1995)

For De Geus, it does not matter very much whether the "living company" is simply a useful metaphor, or whether business organizations are actually living systems, as long as managers *think* of a company as being alive and change their management style accordingly. However, he also urges them to choose between the two images of the "living company" and the "economic company," which seems rather artificial. A company is certainly a legal and economic entity, and in some sense it also seems to be alive. The challenge is to integrate these two aspects of human organizations. In my view, it will be easier to meet this challenge if we understand exactly in what way organizations are alive.

Living social systems, as we have seen, are self-generating networks of communications.<sup>23</sup> This means that a human organization will be a living system only if it is organized as a network or contains smaller networks within its boundaries. Indeed, in recent years networks have become a major focus of attention not only in business but also in society at large and throughout a newly emerging global culture.

Within a few years, the Internet has become a powerful global network of communications, and many of the new Internet companies act as interfaces between networks of customers and suppliers. The pioneering example of this new type of organizational structure is Cisco Systems, a San Francisco company that is the largest provider of switches and routers for the Internet but for many years did not own a single factory. What Cisco does essentially is produce and manage information through its web site by establishing contacts between suppliers and customers and by providing expert knowledge.<sup>24</sup>

Most large corporations today exist as decentralized networks of smaller units. In addition, they are connected to networks of small and medium businesses that serve as their subcontractors and suppliers, and units belonging to different corporations also enter into strategic alliances and engage in joint ventures. The various parts of those corporate networks continually recombine and interlink, cooperating and competing with one another at the same time.

Similar networks exist among nonprofit and nongovernmental organizations (NGOs). Teachers in schools and between schools increasingly interconnect through electronic networks, which also include parents and various organizations providing educational support. Moreover, "networking" has been one of the main activities of political grassroots organizations for many years. The environmental movement, the

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<sup>23</sup> See p. 73 above.

<sup>24</sup> See *Business Week*, September 13, 1999.

human rights movement, the feminist movement, the peace movement, and many other political and cultural grassroots movements have organized themselves as networks that transcend national boundaries.<sup>25</sup>

In 1999, hundreds of these grassroots organizations interlinked electronically for several months to prepare for joint protest actions at the meeting of the World Trade Organization (WTO) in Seattle. The "Seattle Coalition" was extremely successful in derailing the WTO meeting and in making its views known to the world. Its concerted actions, based on network strategies, have permanently changed the political climate around the issue of economic globalization.<sup>26</sup>

These recent developments make it evident that networks have become one of the most prominent social phenomena of our time. Social network analysis has become a new approach to sociology, which is employed by numerous scientists to study social relationships and the nature of community.<sup>27</sup> Turning to a larger scale, sociologist Manuel Castells argues that the recent information technology revolution has given rise to a new economy, structured around flows of information, power, and wealth in global financial networks. Castells also observes that throughout society, networking has emerged as a new form of organization of human activity, and he has coined the term "network society" to describe and analyze this new social structure.<sup>28</sup>

### communities of practice

With the new information and communication technologies, social networks have become all-pervasive, both within and beyond organizations. For an organization to be alive, however, the existence of social networks is not sufficient; they need to be networks of a special type. Living networks, as we have seen, are *self-generating*. Each communication creates thoughts and meaning, which give rise to further communications. In this way, the entire network generates itself, producing a common context of meaning, shared knowledge, rules of conduct, a boundary, and a collective identity for its members.

Organizational theorist Etienne Wenger has coined the term "communities of practice" for these self-generating social networks, referring to the common context of meaning rather than to the pattern of organization through which the meaning is

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<sup>25</sup> See Cohen and Rai (2000).

<sup>26</sup> See pp. 198 ff. below.

<sup>27</sup> See Wellman (1999).

<sup>28</sup> Castells (1996); see also p. 116 below.

generated. "As people pursue any shared enterprise over time," Wenger explains, "they develop a common practice, that is, shared ways of doing things and relating to one another that allow them to achieve their joint purpose. Over time, the resulting practice becomes a recognizable bond among those involved."<sup>29</sup>

Wenger emphasizes that there are many different kinds of communities, just as there are many different kinds of social networks. A residential neighborhood, for example, is often called a community, and we also speak of the "legal community," or the "medical community." However, these are generally not communities of practice with the characteristic dynamics of self-generating networks of communications.

Wenger defines a community of practice as characterized by three features: mutual engagement of its members, a joint enterprise, and, over time, a shared "repertoire" of routines, tacit rules of conduct, and knowledge.<sup>30</sup> In terms of our conceptual framework, we see that the mutual engagement refers to the dynamics of a self-generating network of communications, the joint enterprise to the shared purpose and meaning, and the shared repertoire to the resulting coordination of behavior and creation of shared knowledge.

The generation of a common context of meaning, shared knowledge, and rules of conduct are characteristic of what I called the "dynamics of culture" in the preceding pages.<sup>31</sup> This includes, in particular, the creation of a boundary of meaning and hence of an identity among the members of the social network, based on a sense of belonging, which is the defining characteristic of community. According to Arie de Geus, a strong feeling among the employees of a company that they belong to the organization and identify with its achievements — in other words, a strong sense of community — is essential for the survival of companies in today's turbulent business environment.<sup>32</sup>

In our daily activities, most of us belong to several communities of practice — at work, in schools, in sports and hobbies, or in civic life. Some of them may have explicit names and formal structures, others may be so informal that they are not even identified as communities. Whatever their status, communities of practice are an integral part of our lives. As far as human organizations are concerned, we can now see that their dual nature as legal and economic entities, on the one hand, and communities of people on the other, derives from the fact that various communities of practice invariably arise and develop within the organization's formal structures. These are

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<sup>29</sup> Wenger (1996).

<sup>30</sup> Wenger (1998), pp. 72ff.

<sup>31</sup> See pp. 76ff. above.

<sup>32</sup> De Geus (1997b).

informal networks – alliances and friendships, informal channels of communication (the "grapevine"), and other tangled webs of relationships – that continually grow, change, and adapt to new situations. In the words of Etienne Wenger,

Workers organize their lives with their immediate colleagues and customers to get their jobs done. In doing so, they develop or preserve a sense of themselves they can live with, have some fun, and fulfill the requirements of their employers and clients. No matter what their official job description may be, they create a practice to do what needs to be done. Although workers may be contractually employed by a large institution, in day-to-day practice they work with – and, in a sense, for – a much smaller set of people and communities.<sup>33</sup>

Within every organization, there is a cluster of interconnected communities of practice. The more people are engaged in these informal networks, and the more developed and sophisticated the networks are, the better will the organization be able to learn, respond creatively to unexpected new circumstances, change, and evolve. In other words, the organization's aliveness resides in its communities of practice.

### the living organization

In order to maximize a company's creative potential and learning capabilities, it is crucial for managers and business leaders to understand the interplay between the organization's formal, designed structures and its informal, self-generating networks.<sup>34</sup> The formal structures are sets of rules and regulations that define relationships between people and tasks, and determine the distribution of power. Boundaries are established by contractual agreements that delineate well-defined subsystems (departments) and functions. The formal structures are depicted in the organization's official documents – the organizational charts, bylaws, manuals, and budgets that describe the organization's formal policies, strategies, and procedures.

The informal structures, by contrast, are fluid and fluctuating networks of communications.<sup>35</sup> These communications include nonverbal forms of mutual

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<sup>33</sup> Wenger (1998), p. 6.

<sup>34</sup> I am grateful to Angelika Siegmund for extended discussions of this topic.

<sup>35</sup> It should be noted, however, that not all informal networks are fluid and self-generating. For example, the well-known "old boys networks" are informal patriarchal structures that can be very rigid and may exert considerable power. When I speak of "informal structures" in the following paragraphs, I refer to continually self-generating networks of communications, or communities of practice.

engagement in a joint enterprise through which skills are exchanged and shared tacit knowledge is generated. The shared practice creates flexible boundaries of meaning that are often unspoken. The distinction of belonging to a network may be as simple as being able to follow certain conversations, or knowing the latest gossip.

Informal networks of communications are embodied in the people who engage in the common practice. When new people join, the entire network may reconfigure itself; when people leave, the network will change again, or may even break down. In the formal organization, by contrast, functions and power relations are more important than people, persisting over the years while people come and go.

In every organization, there is a continuous interplay between its informal networks and its formal structures. Formal policies and procedures are always filtered and modified by the informal networks, which allow workers to use their creativity when faced with unexpected and novel situations. The power of this interplay becomes strikingly apparent when employees engage in a "work-to-rule" protest. By working strictly according to the official manuals and procedures, they seriously impair the organization's functioning. Ideally, the formal organization recognizes and supports its informal networks of relationships and incorporates their innovations into its structures.

To repeat, the aliveness of an organization — its flexibility, creative potential, and learning capability — resides in its informal communities of practice. The formal parts of the organization may be "alive" to varying degrees, depending on how closely they are in touch with their informal networks. Experienced managers know how to work with the informal organization. They will typically let the formal structures handle the routine work and rely on the informal organization to help with tasks that go beyond the usual routine. They may also communicate critical information to certain people, knowing that it will be passed around and discussed through the informal channels.

These considerations imply that the most effective way to enhance an organization's potential for creativity and learning, to keep it vibrant and alive, is to support and strengthen its communities of practice. The first step in this endeavor will be to provide the social space for informal communications to flourish. Some companies may create special coffee counters to encourage informal gatherings; others may use bulletin boards, the company newsletter, a special library, off-site retreats, or online chat rooms for the same purpose. If widely publicized within the company so that support by management is evident, these measures will liberate people's energies, stimulate creativity, and set processes of change in motion.

## learning from life

The more managers know about the detailed processes involved in self-generating social networks, the more effective they will be in working with the organization's communities of practice. Let us see, then, what kinds of lessons for management can be derived from the systemic understanding of life.<sup>36</sup>

A living network responds to disturbances with structural changes, and it chooses both *which* disturbances to notice and *how* to respond.<sup>37</sup> What people notice depends on who they are as individuals, and on the cultural characteristics of their communities of practice. A message will get through to them not only because of its volume or frequency, but because it is meaningful to them.

We are dealing here with a crucial difference between a living system and a machine. A machine can be controlled; a living system can only be disturbed. Mechanistically oriented managers tend to hold on to the belief that they can control the organization if they understand how all its parts fit together. Even the daily experience that people's behavior contradicts their expectations does not make them doubt their basic assumption. On the contrary, it compels them to investigate the mechanisms of management in greater detail in order to be able to control them.

The systemic understanding of life, by contrast, implies that human organizations can never be directed; they can only be disturbed. In other words, organizations cannot be controlled through direct interventions, but they can be influenced by giving impulses rather than instructions. To change the conventional style of management accordingly requires a shift of perception that is anything but easy, but it also brings great rewards. Working with the processes inherent in living systems means that we do not need to spend a lot of energy to move an organization. There is no need to push, pull, or bully it to make it change. Force, or energy, are not the issue; the issue is meaning. Meaningful disturbances will get the organization's attention and will trigger structural changes.

Giving meaningful impulses rather than precise instructions may sound far too vague to managers used to striving for efficiency and predictable results. However, it is well known that intelligent, alert people rarely carry out instructions exactly to the letter. They always modify and reinterpret them, ignore some parts and add others of

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<sup>36</sup> See Wheatley and Kellner-Rogers (1998).

<sup>37</sup> See pp. 30-31 above.

their own making. Sometimes, it may be merely a change of emphasis, but people always respond with new versions of the original instructions.

This is often interpreted as resistance, or even sabotage, but it can be interpreted quite differently. Living systems always choose what to notice and how to respond. When people modify instructions, they respond creatively to a disturbance, because this is the essence of being alive. In their creative responses, the living networks within the organization generate and communicate meaning, asserting their freedom to continually recreate themselves. Even a passive, or "passive aggressive," response is a way for people to display their creativity. Strict compliance can only be achieved at the expense of robbing people of their vitality and turning them into listless, disaffected robots. This consideration is especially important in today's knowledge-based organizations, in which loyalty, intelligence, and creativity are the highest assets.

The new understanding of the resistance to mandated organizational change can be very powerful, as it allows us to work *with* people's creativity, rather than ignore it, and, indeed, to transform it into a positive force. If we involve people in the change process right from the start, they will "choose to be disturbed," because the process itself is meaningful to them. According to Wheatley and Kellner-Rogers,

We have no choice but to invite people into the process of rethinking, redesigning, restructuring the organization. We ignore people's need to participate at our own peril. If they're involved, they will create a future that already has them in it. We won't have to engage in the impossible and exhausting tasks of 'selling' them the solution, getting them 'to enroll,' or figuring out the incentives that might bribe them into compliant behaviors.... In our experience, enormous struggles with implementation are created every time we *deliver* changes to the organization rather than figuring out how to involve people in their creation.... [On the other hand,] we have seen implementation move with dramatic speed among people who have been engaged in the design of those changes.<sup>38</sup>

The task, then, is to make the process of change meaningful to people right from the start, to get their participation, and to provide an environment in which their creativity can flourish.

Offering impulses and guiding principles rather than strict instructions evidently amounts to significant changes in power relations, changes from domination and control to cooperation and partnerships. This, too, is a fundamental implication of the

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<sup>38</sup> Wheatley and Kellner-Rogers (1998).

new understanding of life. In recent years, biologists and ecologists have begun to shift their metaphors from hierarchies to networks and have come to realize that partnership – the tendency to associate, establish links, cooperate, and maintain symbiotic relationships – is one of the hallmarks of life.<sup>39</sup>

In terms of our previous discussion of power, we could say that the shift from domination to partnership corresponds to a shift from coercive power, which uses threats of sanctions to assure adherence to orders, and compensatory power, which offers financial incentives and rewards, to conditioned power, which tries to make instructions meaningful through persuasion and education.<sup>40</sup> However, even in traditional organizations, the power embodied in the organization's formal structures is always filtered, modified, or subverted by communities of practice that create their own interpretations, as orders come down through the organizational hierarchy.

### organizational learning

With the critical importance of information technology in today's business world, the concepts of knowledge management and organizational learning have become a central focus of management theory. The exact nature of organizational learning has been the subject of an ardent debate. Is a "learning organization" a social system capable of learning, or is it a community that encourages and supports the learning of its members? In other words, is learning only an individual or also a social phenomenon?

Organizational theorist Ilkka Tuomi reviews and analyzes recent contributions to this debate in a remarkable book, *Corporate Knowledge*, in which he proposes an integrative theory of knowledge management.<sup>41</sup> Tuomi's model of knowledge creation is based on earlier work by Ikujiro Nonaka, who introduced the concept of the "knowledge-creating company" into management theory and has been one of the main contributors to the new field of knowledge management.<sup>42</sup> Tuomi's own views on organizational learning are very compatible with the ideas developed in the preceding pages. Indeed, I believe that the systemic understanding of reflective consciousness and social networks can contribute significantly to clarifying the dynamics of organizational learning.

According to Nonaka and his collaborator Hirotaka Takeuchi,

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<sup>39</sup> See Capra (1996), pp. 34-35.

<sup>40</sup> See p. 78 above.

<sup>41</sup> Tuomi (1999).

<sup>42</sup> See Nonaka and Takeuchi (1995).

In a strict sense, knowledge is created only by individuals....  
Organizational knowledge creation, therefore, should be understood as a process that 'organizationally' amplifies the knowledge created by individuals and crystallizes it as a part of the knowledge network of the organization.<sup>43</sup>

At the core of Nonaka and Takeuchi's model of knowledge creation lies the distinction between explicit and tacit knowledge, which was introduced by philosopher Michael Polanyi in the 1980s. Whereas explicit knowledge can be communicated and documented through language, tacit knowledge is acquired through experience and often remains intangible. Nonaka and Takeuchi argue that, although knowledge is always created by individuals, it can be brought to light and expanded by the organization through social interactions in which tacit knowledge is transformed into explicit knowledge. Thus, while knowledge creation is an individual process, its amplification and expansion are social processes that take place *between* individuals.<sup>44</sup>

As Tuomi points out, however, it is really impossible to separate knowledge neatly into two different "stocks." For Polanyi, tacit knowledge is always a precondition for explicit knowledge. It provides the context of meaning from which the knower acquires explicit knowledge. This unspoken context, also known as "common sense," which arises from a web of cultural conventions, is well-known to researchers in artificial intelligence as a major source of frustration. It is the reason why, after several decades of strenuous effort, they have still not succeeded in programming computers to understand human language in any significant sense.<sup>45</sup>

In a human organization, then, tacit knowledge is the context of meaning that is created by the dynamics of culture resulting from a network of (verbal and nonverbal) communications within a community of practice. Organizational learning, therefore, is a social phenomenon, because the tacit knowledge on which all explicit knowledge is based is generated collectively. Moreover, cognitive scientists have come to realize that even the creation of explicit knowledge has a social dimension because of the intrinsically social nature of reflective consciousness.<sup>46</sup> Hence, the systemic understanding of life and cognition shows clearly that organizational learning has both individual and social aspects.

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<sup>43</sup> Nonaka and Takeuchi (1995), p. 59.

<sup>44</sup> See Tuomi (1999), pp. 323ff.

<sup>45</sup> See Winograd and Flores (1991), pp. 107ff.

<sup>46</sup> See pp. 45ff. above.

These insights have important implications for the field of knowledge management. They make it clear that the widespread tendency to treat knowledge as an entity that is independent of people and their social context – a "thing" that can be replicated, transferred, quantified, and traded – will not improve organizational learning. As Margaret Wheatley puts it, "If we want to succeed with knowledge management, we must attend to human needs and dynamics.... Knowledge [is not] the asset or capital. People are."<sup>47</sup>

The systems view of organizational learning reinforces the lesson we have learned from the understanding of life in human organizations: the most effective way to enhance an organization's learning potential is to support and strengthen its communities of practice. In an organization that is alive, knowledge creation is natural and sharing what we have learned with friends and colleagues is humanly satisfying. To quote Wheatley once more: "Working for an organization that is intent on creating knowledge is a wonderful motivator, not because the organization will be more profitable, but because our lives will feel more worthwhile."<sup>48</sup>

### the emergence of novelty

If the aliveness of an organization resides in its communities of practice, and if creativity, learning, change, and development are inherent in all living systems, how do these processes actually manifest in the organization's living networks and communities? To answer this question, we need to turn to a key characteristic of life that we have already encountered several times in the preceding pages – the spontaneous emergence of new order. The phenomenon of emergence takes place at critical points of instability that arise from fluctuations in the environment, amplified by feedback loops.<sup>49</sup> Emergence results in the creation of novelty that is often qualitatively different from the phenomena out of which it emerged. The constant generation of novelty – "nature's creative advance," as the philosopher Alfred North Whitehead called it – is a key property of all living systems.

In a human organization, the event triggering the process of emergence may be an offhand comment, which may not even seem important to the person who made it but is meaningful to some people in a community of practice. Because it is meaningful to them, they choose to be disturbed and circulate the information rapidly through the

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<sup>47</sup> Wheatley (2001).

<sup>48</sup> Wheatley (1997).

<sup>49</sup> See p. 11 above.

organization's networks. As it circulates through various feedback loops, the information may get amplified and expanded, even to such an extent that the organization can no longer absorb it in its present state. When that happens, a point of instability has been reached. The system cannot integrate the new information into its existing order; it is forced to abandon some of its structures, behaviors, or beliefs. The result is a state of chaos, confusion, uncertainty, and doubt; and out of that chaotic state a new form of order, organized around new meaning, emerges. The new order was not designed by any individual but emerged as a result of the organization's collective creativity.

This process involves several distinct stages. To begin with, there must be a certain openness within the organization, a willingness to be disturbed, in order to set the process in motion; and there has to be an active network of communications with multiple feedback loops to amplify the triggering event. The next stage is the point of instability, which may be experienced as tension, chaos, uncertainty, or crisis. At this stage, the system may either break *down*, or it may break *through* to a new state of order, which is characterized by novelty and involves an experience of creativity that often feels like magic.

Let us take a closer look at these stages. The initial openness to disturbances from the environment is a basic property of all life. Living organisms need to be open to a constant flow of resources (energy and matter) to stay alive; human organizations need to be open to a flow of mental resources (information and ideas), as well as to the flows of energy and materials that are part of the production of goods or services. The openness of an organization to new concepts, new technologies, and new knowledge is an indicator of its aliveness, flexibility, and learning capabilities.

The experience of the critical instability that leads to emergence usually involves strong emotions – fear, confusion, self-doubt, or pain – and may even amount to an existential crisis. This was the experience of the small community of quantum physicists in the 1920s, when their exploration of the atomic and subatomic world brought them into contact with a strange and unexpected reality. In their struggle to comprehend this new reality, the physicists became painfully aware that their basic concepts, their language, and their whole way of thinking were inadequate for describing atomic phenomena. For many of them, this period was an intense emotional crisis, as described most vividly by Werner Heisenberg:

I remember discussions with Bohr which went through many hours till very late at night and ended almost in despair; and when at the end of the

discussion I went alone for a walk in the neighboring park I repeated to myself again and again the question: Can nature possibly be so absurd as it seemed to us in these atomic experiments?<sup>50</sup>

It took the quantum physicists a long time to overcome their crisis, but in the end the reward was great. From their intellectual and emotional struggles emerged deep insights into the nature of space, time, and matter, and with them the outlines of a new scientific paradigm.<sup>51</sup>

The experience of tension and crisis before the emergence of novelty is well known to artists, who often find the process of creation overwhelming and yet persevere in it with discipline and passion. Marcel Proust offers a beautiful testimony of the artist's experience in his masterpiece *In Search of Lost Time*:

It is often simply from want of the creative spirit that we do not go to the full extent of suffering. And the most terrible reality brings us, with our suffering, the joy of a great discovery, because it merely gives a new and clear form to what we have long been ruminating without suspecting it.<sup>52</sup>

Not all experiences of crisis and emergence need to be that extreme, of course. They occur in a wide range of intensities, from small sudden insights to painful and exhilarating transformations. What they have in common is a sense of uncertainty and loss of control that is, at the very least, uncomfortable. Artists and other creative people know how to embrace this uncertainty and loss of control. Novelists often report how their characters take on lives of their own in the process of creation, as the story seems to write itself; and the great Michelangelo gave us the unforgettable image of the sculptor chipping away the excess marble to let the statue emerge.

After prolonged immersion in uncertainty, confusion, and doubt, the sudden emergence of novelty is easily experienced as a magical moment. Artists and scientists have often described these moments of awe and wonder when a confused and chaotic situation crystallizes miraculously to reveal a novel idea or a solution to a previously intractable problem. Since the process of emergence is thoroughly nonlinear, involving multiple feedback loops, it cannot be fully analyzed with our conventional, linear ways of reasoning, and hence we tend to experience it with a sense of mystery.

In human organizations, emergent solutions are created within the context of a

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<sup>50</sup> Quoted in Capra (1988), p. 20.

<sup>51</sup> See Capra (1975).

<sup>52</sup> Proust (1921).

particular organizational culture, and generally cannot be transferred to another organization with a different culture. This tends to be a big problem for business leaders who, naturally, are very keen on replicating successful organizational change. What they tend to do is replicate a new structure that has been successful without transferring the tacit knowledge and context of meaning from which the new structure emerged.

### emergence and design

Throughout the living world, the creativity of life expresses itself through the process of emergence. The structures that are created in this process – biological structures of living organisms as well as social structures in human communities – may appropriately be called "emergent structures." Before the evolution of humans, all living structures on the planet were emergent structures. With human evolution, language, conceptual thought, and all the other characteristics of reflective consciousness came into play. This enabled us to form mental images of physical objects, to formulate goals and strategies, and thus to create structures by design.

We sometimes speak of the structural "design" of a blade of grass or an insect's wing, but in doing so we use metaphorical language. These structures were not designed; rather, they were formed during the evolution of life and survived through natural selection. They are emergent structures. Design requires the ability to form mental images, and since this ability, as far as we know, is limited to humans and the other great apes, there is no design in nature at large.

Designed structures are always created for a purpose and embody some meaning.<sup>53</sup> In non-human nature, there is no purpose or intention. We often tend to attribute a purpose to the form of a plant or the behavior of an animal. For example, we would say that a flower has a certain color to attract honey bees, or that a squirrel hides its nuts in order to have a storage of food in winter. But these are anthropomorphic projections that ascribe the human characteristic of purposeful action to non-human phenomena. The colors of flowers and the behavior of animals have been shaped through long processes of evolution and natural selection, often in coevolution with other species. From the scientific point of view, there is neither purpose nor design in nature.<sup>53a</sup>

This does not mean that life is purely random and meaningless, as the mechanistic neo-Darwinist school of thought would have it. The systemic

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<sup>53</sup> See p. 81 above.

<sup>53a</sup> See Capra (2000).

understanding of life recognizes the pervasive order, self-organization, and intelligence manifest throughout the living world, and, as we have seen, this realization is completely consistent with a spiritual outlook on life.<sup>54</sup> However, the teleological assumption that purpose is inherent in natural phenomena is seen as a human projection, because purpose is a characteristic of reflective consciousness, which does not exist in nature at large.<sup>55</sup>

Human organizations always contain both designed and emergent structures. The designed structures are the formal structures of the organization, as described in its official documents. The emergent structures are created by the organization's informal networks and communities of practice. The two types of structures are very different, as we have seen, and every organization needs both kinds.<sup>56</sup> Designed structures provide the rules and routines that are necessary for the effective functioning of the organization. They enable a business organization to optimize its production processes and to sell its products through effective marketing campaigns. Designed structures provide stability.

Emergent structures, on the other hand, provide novelty, creativity, and flexibility. They are adaptive, capable of changing and evolving. In today's complex business environment, purely designed structures do not have the necessary responsiveness and learning capability. They may be capable of magnificent feats, but since they are not adaptive, they are deficient when it comes to learning and changing, and thus liable to be left behind.

The issue is not one of discarding designed structures in favor of emergent ones. We need both. In every human organization there is a tension between its designed structures, which embody relationships of power, and its emergent structures, which represent the organization's aliveness and creativity. As Margaret Wheatley puts it, "The difficulties in organizations are manifestations of life asserting itself against the powers of control."<sup>57</sup> Skillful managers understand the interdependence between design and emergence. They know that in today's turbulent business environment, their challenge is to find the right balance between the creativity of emergence and the stability of design.

### two kinds of leadership

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<sup>54</sup> See pp. 59ff. above.

<sup>55</sup> See pp. 64-65 above.

<sup>56</sup> I am grateful to Morten Flatau for extensive discussions of this point.

<sup>57</sup> Wheatley (1997).

Finding the right balance between design and emergence seems to require the blending of two different kinds of leadership. The traditional idea of a leader is that of a person who is able to hold a vision, to articulate it clearly, and to communicate it with passion and charisma. It is also a person whose actions embody certain values that serve as a standard for others to strive for. The ability to hold a clear vision of an ideal form, or state of affairs, is something that traditional leaders have in common with designers.

The other kind of leadership consists in facilitating the emergence of novelty. This means creating conditions rather than giving directions, and using the power of authority to empower others. Both kinds of leadership have to do with creativity. Being a leader means creating a vision; it means going where nobody has gone before. It also means enabling the community as a whole to create something new. Facilitating emergence means facilitating creativity.

Holding a vision is central to the success of any organization, because all human beings need to feel that their actions are meaningful and geared toward specific goals. At all levels of the organization, people need to have a sense of where they are going. A vision is a mental image of what we want to achieve, but visions are much more complex than concrete goals and tend to defy expression in ordinary, rational terms. Goals can be measured, while vision is something qualitative and much more intangible.

Whenever we need to express complex and subtle images, we make use of metaphors, and thus it is not surprising that metaphors play a crucial role in formulating an organization's vision.<sup>58</sup> Often, the vision remains unclear as long as we try to explain it, but suddenly comes into focus when we find the right metaphor. Thus the ability to express a vision in metaphors, to articulate it in such a way that it is understood and embraced by all, is an essential quality of leadership.

To facilitate emergence effectively, community leaders need to recognize and understand the different stages of this fundamental life process. As we have seen, emergence requires an active network of communications with multiple feedback loops. Facilitating emergence means first of all building up and nurturing networks of communications in order to "connect the system to more of itself," as Wheatley and Kellner-Rogers put it.<sup>59</sup>

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<sup>58</sup> See pp. 55-56 above.

<sup>59</sup> Wheatley and Kellner-Rogers (1998).

In addition, we need to remember that the emergence of novelty is a property of open systems, which means that the organization needs to be open to new ideas and new knowledge. Facilitating emergence includes creating that openness – a learning culture in which continual questioning is encouraged and innovation is rewarded. Organizations with such a culture value diversity and, in the words of Arie de Geus, "tolerate activities in the margin: experiments and eccentricities that stretch their understanding."<sup>60</sup>

Leaders within the organizational hierarchy often find it difficult to establish the feedback loops that increase the organization's connectedness. They tend to turn to the same people again and again – usually the most powerful in the organization, who often resist change. Moreover, chief executives often feel that, because of the organization's traditions and past history, certain delicate issues cannot be addressed openly.

In those cases, one of the most effective approaches for a leader may be to hire an outside consultant as a "catalyst." Being a catalyst means that the consultant is not affected by the processes she helps to initiate, and thus is able to analyze the situation much more clearly. Here is how Angelika Siegmund, cofounder of Corphis Consulting in Munich, Germany, describes this work:

One of my main activities is to act as feedback facilitator and amplifier. I don't design solutions but facilitate feedback; the organization takes care of the contents. I analyze the situation, reflect it back to management, and make sure that every decision is immediately communicated through a feedback loop. I build up networks, increase the organization's connectivity, and amplify the voices of employees who would otherwise not be heard. As a consequence, the managers begin to discuss things that would normally not be discussed, and thus the organization's ability to learn increases. In my experience, a powerful leader plus a skilled outside facilitator is a fantastic combination that can bring about incredible effects.<sup>61</sup>

The experience of the critical instability that precedes the emergence of novelty may involve uncertainty, fear, confusion, or self-doubt. Experienced leaders recognize these emotions as integral parts of the whole dynamics and create a climate of trust and mutual support. In today's turbulent global economy this is especially important, because people are often in fear of losing their jobs as a consequence of corporate

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<sup>60</sup> De Geus (1997b).

<sup>61</sup> Angelika Siegmund, personal communication, July 2000.

mergers or other radical structural changes. This fear generates a strong resistance to change, and hence building trust is essential.

The problem is that people at all levels of the organization want to be told what concrete results they can expect from the change process, while managers themselves do not know what will emerge. During this chaotic phase, many managers tend to hold things back rather than communicating honestly and openly, which has the effect that rumors fly and nobody knows what information to trust.

In this situation, the generation of trust is an essential quality of leadership. Good leaders will tell their employees openly and often which aspects of the change have been established and which are still uncertain. They will try to make the process transparent, even though the results cannot be known in advance.

During the change process some of the old structures may fall apart, but if the supportive climate and the feedback loops in the network of communications persist, new and more meaningful structures are likely to emerge. When that happens, people often feel a sense of wonder and elation, and now the leader's role is to acknowledge these emotions and provide opportunities for celebration.

Leaders who facilitate emergence need to be aware of the detailed dynamics of all these stages. In the end, they need to be able to recognize emergent novelty, articulate it, and incorporate it into the organization's design. Not all emergent solutions will be viable, however, and hence a culture fostering emergence must include the freedom to make mistakes. In such a culture, experimentation is encouraged and learning is valued as much as success.

Since power is embodied in all social structures, the emergence of new structures will always change power relations. Indeed, the process of emergence in communities is also a process of collective empowerment. Leaders who facilitate emergence use their own power to empower others. The result may be an organization in which both power and the potential for leadership are widely distributed. This does not mean that several individuals assume leadership simultaneously, but that different leaders step forward when they are needed to facilitate various stages of emergence. Experience has shown that it usually takes years to develop this kind of distributed leadership.

It is sometimes argued that the need for coherent decisions and strategies requires an ultimate seat of power. However, many business leaders have pointed out that coherent strategy emerges when senior executives are engaged in an ongoing process of conversation. In the words of Arie de Geus, "Decisions grow in the topsoil of formal and informal conversation – sometimes structured (as in board meetings and the budget process), sometimes technical (devoted to implementation of specific plans

or practices), and sometimes ad hoc."<sup>62</sup>

Understanding human organizations as clusters of living communities leads us to the conclusion that the art of management — of steering an organization along its path — involves creating meaningful disturbances and facilitating the emergence of novelty. Different situations will require different kinds of leadership. Sometimes, informal networks and feedback loops will have to be established; at other times people will need firm frameworks with definite goals and time frames within which they can organize themselves. An experienced leader will assess the situation, take command if necessary, but then be flexible enough to let go again. It is evident that such leadership requires a wide variety of skills, so that many paths for action are available.

### bringing life into organizations

Bringing life into human organizations by empowering their communities of practice not only increases their flexibility, creativity, and learning potential, but also enhances the dignity and humanity of the organization's individuals, as they connect with those qualities in themselves. In other words, the focus on life and self-organization empowers the self. It creates mentally and emotionally healthy working environments in which people feel that they are supported in striving to achieve their own goals and do not have to sacrifice their integrity to meet the goals of the organization.

The problem is that human organizations are not only living communities but are also social institutions designed for specific purposes and functioning in a specific economic environment. Today that environment is not life-enhancing but is increasingly life-destroying. The more we understand the nature of life and become aware of how alive an organization can be, the more painfully we notice the life-draining nature of our current economic system.

When shareholders and other outside bodies assess the "health" of a business organization, they generally do not inquire about the aliveness of its communities, the integrity and well-being of its employees, or the ecological sustainability of its products. They ask about profits, shareholder value, market share, and other economic parameters; and they will apply any pressure they can to assure quick returns on their investments, irrespective of the long-term consequences for the organization, the well-being of its employees, or of its broader social and environmental impacts.

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<sup>62</sup> De Geus (1997a), p. 57.

These economic pressures are applied with the help of ever more sophisticated information and communication technologies, which have created a profound conflict between biological time and computer time. New knowledge arises, as we have seen, from chaotic processes of emergence that take time. Being creative means being able to relax into uncertainty and confusion. In most organizations this is becoming increasingly difficult, because things move far too fast. People feel that they have hardly any time for quiet reflection, and since reflective consciousness is one of the defining characteristic of human nature, the resulting effects are profoundly dehumanizing.

The enormous workload of today's executives is another direct consequence of the conflict between biological time and computer time. Their work is increasingly computerized, and as computer technology progresses, these machines work faster and faster and thus save more and more time. What to do with that spare time becomes a question of values. It can be distributed among the individuals in the organization – thus creating time for them to reflect, organize themselves, network, and gather for informal conversations – or the time can be extracted from the organization and turned into profits for its top executives and shareholders by making people work more and thus increasing the company's productivity. Unfortunately, most companies in our much-acclaimed information age have chosen the second option. As a consequence, we see enormous increases in the corporate wealth at the top, while thousands of workers are fired in the continuing mania for downsizing and corporate mergers, and those remaining (including the top executives themselves) are forced to work harder and harder.

Most corporate mergers involve dramatic and rapid structural changes for which people are totally unprepared. Acquisitions and mergers are undertaken partly because large corporations want to gain entry into new markets and buy knowledge or technologies developed by smaller companies (in the mistaken belief that they can short-circuit the learning process). Increasingly, however, the main reason for a merger is to make the company bigger and thus less susceptible to being swallowed itself. In most cases, a merger involves a highly problematic fusion of two different corporate cultures, which seems to bring no advantages in terms of greater efficiency or profits, but produces protracted power struggles, enormous stress, existential fears, and thus deep distrust and suspicions about structural change.<sup>62a</sup>

It is evident that the key characteristics of today's business environment – global competition, turbulent markets, corporate mergers with rapid structural changes,

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<sup>62a</sup> See *The Economist*, July 22, 2000.

increasing work loads, and demands for “24-7” accessibility through e-mail and cell phones – combine to create a situation that is highly stressful and profoundly unhealthy. In this business climate it is often difficult to hold on to the vision of an organization that is alive, creative, and concerned about the well-being of its members and of the living world at large. When we are under stress, we tend to revert to old ways of acting. When things fall apart in a chaotic situation, we tend to take hold and assume control. This tendency is especially strong among managers, who are used to getting things done and are attracted to the exercise of control.

Paradoxically, the current business environment, with its turbulences and complexities and its emphasis on knowledge and learning, is also one in which the flexibility, creativity, and learning capability that come with the organization's aliveness are most needed. This is now being recognized by a growing number of visionary business leaders who are shifting their priorities toward developing the creative potential of their employees, enhancing the quality of the company's internal communities, and integrating the challenges of ecological sustainability into their strategies. Because of the need for continuous change management in today's turbulent environment, the "learning organizations" managed by this new generation of business leaders are often very successful in spite of present economic constraints.<sup>63</sup>

In the long run, organizations that are truly alive will be able to flourish only when we change our economic system so that it becomes life-enhancing rather than life-destroying. This is a global issue, which I shall discuss in some detail in the following pages. We shall see that the life-draining characteristics of the economic environment in which today's organizations have to operate are not isolated, but are invariably consequences of the "new economy" that has become the critical context of our social and organizational life.

This new economy is structured around flows of information, power, and wealth in global financial networks that rely decisively on advanced information and communication technologies.<sup>64</sup> It is shaped in very fundamental ways by machines, and the resulting economic, social, and cultural environment, not surprisingly, is not life enhancing but life-degrading.

The new global economy has triggered a great deal of resistance, which may well coalesce into a worldwide movement to change the current economic system by organizing its financial flows according to a different set of values and beliefs. The

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<sup>63</sup> See, for example, Petzinger (1999).

<sup>64</sup> See Castells (1996); see also pp. 121 ff. below.

systemic understanding of life makes it clear that in the coming years such a change will be imperative not only for the well-being of human organizations, but also for the survival and sustainability of humanity as a whole.