A small number of researchers have long been interested in organizational
learning. Scholars sought to understand how organizations learn behaviorally
over time from experience (March and Olsen 1975) and showed how cultures
are created and maintained that prevent learning (Argyris and Schön 1978,
1996). They described organizations as having a collective memory, and looked
at ways in which information was acquired, stored, retrieved, and managed
(Huber 1991). But it is only in the last decade that interest in organizational
learning has grown exponentially. Businesses and individuals are seeking ways to
cultivate learning proactively as they make the transition to a knowledge-
intensive era. This chapter explores the idea of a learning organization and the
dynamics of collective learning within and across work units. It also describes
ways in which adult educators can facilitate such learning for the system as a
whole, and for individuals within the system.

The Learning Organization

People have found the idea of a learning organization to be inspiring, yet difficult
to implement. It frequently involves deep change in the mind sets of people as
well as the culture of organizations and societies. Such change does not occur
overnight. Yet, the fortunes of companies rise and fall quickly; people hold jobs
for increasingly shorter periods of time; and leaders are expected to make their
mark within quarterly reporting periods. As Rifkin (1995) has noted, the very
nature of jobs is changing. People no longer work for the same organization for
their entire career. As often as not, employees telecommute or use technology to
communicate regularly with people around the world. Knowledge bases outgrow
themselves in extremely short time frames, and people find their expertise rapidly
challenged.

Definition

The learning organization is one response to these changes. The concept empha-
sizes the following (Gephart, Marsick, and Van Buren 1997; Marsick and
Watkins 1998):

1. **Continuous learning at the systems level.** Individuals are expected to learn
frequently and to share their learning in ways that enable the larger system to
learn. This involves more than one level of learning (individuals, teams, orga-
nization as a whole) but it may not always include everyone and may not
always involve all possible levels.

2. **Knowledge generation and sharing.** Employees are called upon to think in
new ways; critically in order to identify assumptions; and collaboratively
through dialogue with one another about work. Value is placed on creating,
capturing, and moving knowledge rapidly and fluidly so that people who need it
can access and use it quickly.
3. **Systemic thinking capacity.** Employees are asked to think systemically in order to see linkages and feedback loops.

4. **Greater participation and accountability by a larger percentage of employees.** Ideas and information should emerge from those who have something to contribute, regardless of their position in the organization. Increased accountability demands new learning.

5. **Culture and structure of rapid communication and learning.** Learning is rewarded, supported, and promoted from the top down and through various reward systems. At least on paper, people are expected to take calculated risks, experiment, learn from their mistakes, and share information freely across boundaries.

Table 1 reflects similarities and differences among different ways in which this concept has been operationalized, some of which are next discussed.

<table>
<thead>
<tr>
<th><strong>Models Agree</strong></th>
<th><strong>Models Disagree</strong></th>
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<tbody>
<tr>
<td>Continuous Learning at Systems Level</td>
<td>... about how much responsibility lies with the individual or organization for initiation, resource allocation, planning and assessment.</td>
</tr>
<tr>
<td>... that people need to learn continuously throughout the lifespan to keep up with the changing nature of work and new careers.</td>
<td>... about the degree of emphasis placed on learning vs. performance, and the way in which people help each other learn on the job.</td>
</tr>
<tr>
<td>... that work should be structured to allow experimentation and learning from mistakes within reasonable limits of safety and risk.</td>
<td>... about the relative emphasis on single-loop or double-loop learning because of different views of leaders, industry factors, and an organization’s maturity/life stage.</td>
</tr>
<tr>
<td>Knowledge Generation and Sharing</td>
<td>... about what information is needed by whom and for what purposes; technology’s role; location of knowledge within individuals (expertise) or within systems (public sharing)</td>
</tr>
<tr>
<td>... that innovation is needed, which typically involves double-loop or generative learning that involves questioning assumptions behind work and the structure/culture of the organization.</td>
<td>... about who needs this capacity (e.g., managers vs. shop floor) and the radius of systemic thinking out beyond the organization.</td>
</tr>
<tr>
<td>... that structures and systems are needed to ensure that knowledge is captured and shared for use by entire organization.</td>
<td>... about the extent and type of participation recommended for people at different levels or functions.</td>
</tr>
<tr>
<td>Systemic Thinking Capacity</td>
<td>... that people must think systemically about the impact of their decisions and work elsewhere in and on the system, and over time.</td>
</tr>
<tr>
<td>Greater Participation by Employees</td>
<td>... that people must participate more fully in work design and decision making and take more responsibility for both results and learning.</td>
</tr>
</tbody>
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Table 1: Areas of Agreement and Disagreement among Learning Organization Models
Selected Models of Practice

Peter Senge (1990) popularized a phenomenon that many were struggling to "name" when he wrote *The Fifth Discipline*. Senge's formula for creating the learning organization includes fostering personal mastery, helping teams learn together, creating shared vision, understanding mental models, and linking these components through systems thinking. He described a new kind of leader who is able to model and facilitate such learning. Many large manufacturing companies have worked with Senge and his associates through a learning laboratory to experiment with change initiatives that grow out of his model. Roth and Kleiner (2000), for example, document their use in the launch of a new car.

Senge describes the way in which the "pull" to a new future state enables creative tension that leads to innovation. Visioning the future also enables individuals to mesh their individual goals around a commonly agreed purpose. Arie deGeus, an early associate of Senge, takes an ecological view of systems learning that grows out of a 40-year career with Royal Dutch Shell. DeGeus (1997) identified characteristics of long-lived companies: a core sense of identity and values, tolerance of unconventional thinking and of experimentation, and a financial policy that shepherds resources to allow for flexibility. He also pioneered scenario planning, an approach to inventing the present by working backwards from descriptive, research-based prognoses of the future.

DiBella and Nevis (1998) point out that organizations have always learned and that it is better to enhance these preferences than to introduce new ones. However, most learning organization models, like Senge's, embody normative practices that their creators have identified through research, benchmarking of leading companies, and their own work. Watkins and Marsick (1993, 1996), for example, identified core practices at the individual, group, and organizational levels: (1) creating continuous learning opportunities; (2) promoting inquiry and dialogue; (3) encouraging collaboration and team learning; (4) creating systems to capture and share learning; (5) empowering people toward a collective vision; (6) connecting the organization to its environment; and (7) providing strategic leadership for learning. Subsequent survey research with a diagnostic assessment tool has supported the links between these interventions and performance impact (Selden, Watkins, Valentine, and Marsick 1998; Yang, Watkins, and Marsick 1998). This model shares characteristics with that of Redding and Catalanello (1994) on speed, depth, and breadth of learning; and the thinking of Pedler, Burgoyne, and Boydell (1991) on how companies learn to sustain and develop themselves and their people over time.
Organizational learning speaks to a dynamic process that is sometimes difficult to see or measure. A recent vein of literature speaks to the tangible outcomes of that process: knowledge as a product, its creation and management within the system, and its contribution to knowledge outcomes that are captured through the idea of intellectual capital.

Measures for intellectual capital grew out of dissatisfaction with conventional economic measures of value. Many of the assets brought to an organization today reside in intangibles that are the result of knowledge resident in people or systems and products that they create. In the manufacturing age, these intangibles were often identified as “good will.” In today’s knowledge era, intellectual capital is most frequently described as having three components (Stewart 1997; Sveiby 1997): human capital, structural capital, and customer capital. Human capital resides in the people who work in a system themselves with all of their knowledge, experience, and capacity to grow and innovate. Structural capital is what remains behind when people leave the premises: systems, policies, processes, tools, or intellectual property that become property of the system itself. Customer capital is the system of relationships that an organization has with its clients irrespective of the people who work there or the structural capital that is in place.

The intellectual property literature underpins the creation of “the balanced scorecard” (Kaplan and Norton 1996) that measures human, structural, and customer capital along with financial capital and tangible assets. The benefits of measurement are offset by a tendency to value only that which is measured, even though the literature on innovation that gave birth to the idea of intellectual capital touts the advantages of creativity that grows outside such boundaries. Measurements oriented to standardization ironically suppress the diversity they are intended to encourage.

Much of the literature on knowledge management is dominated by the design of information technology. People are encouraged to store what they know in electronic databases and share this information with others in the firm. Davenport and Prusak (1998) take a middle ground between design of technology and concern for the nature of what is communicated. However, knowledge management systems often fall into the trap of building technology to manage bits of data and information. Companies are surprised when people do not use these systems as a resource. Building a culture conducive to knowledge and learning is far more important than information storage, retrieval, and transfer.

For example, a nationwide survey by Consultants News of 82 consulting groups nationwide (Reimus 1997) showed that the consulting firms that create knowledge management systems are grappling with the same information technology challenges as are their clients. Some 60% of these firms did not maintain an active best practices database. One in three firms did not use groupware for collaboration. Less than 25% used the Internet for internal communication, and at least 25% believed that technology provided only a slight competitive advantage, at best. The biggest challenge in the use of technology was persuading consultants to collaborate and share knowledge. This was followed by the challenges of main-
taining the currency and usefulness of information; ensuring security and confidentiality of the database; and providing for consistency and timeliness of data management, storage, and retrieval.

Synthesizing Concepts

Although views on learning and knowledge creation vary, one can identify core features across them. In 1995, more than 20 researchers and practitioners who had developed models of the learning organization and diagnostic instruments joined in a discussion of their work under the auspices of the American Society for Training and Development. Gephart, Marsick, and Van Buren (1997) developed The Learning Organization Assessment Framework (LOAF) based on a review of the literature and an analysis of selected diagnostic instruments. Participants assessed their models against this framework. Essential components of LOAF were identified: levels of learning (individual, team, and organization); a set of facilitating organizational systems that support learning; and change management factors. Relevant facilitating systems center on these factors: vision and strategy; leadership and management; culture and structure; and practices related to communication, information and knowledge management, performance management and support, and the use of technology.

Scholars often caution against a one-size-fits-all approach to creating the learning organization. Experience suggests that these interventions involve complex, interactive changes among people and subsystems within a social unit. Organizational learning is like an intricately designed rug or wall hanging with many patterns in many colors. When threads are adjusted in one part of the fabric, they affect the composition, fit, and balance of the pattern in another part of the weave. It is not enough to install a checklist of practices that might work in one organization but do not fit with another. One needs to take a closer look at the nature of the learning process itself.

Organizational Learning Process

We begin with a view of organizational learning developed by Argyris and Schön (1978, 1996), who in turn drew on the work of John Dewey (1938) on learning from experience, and of Kurt Lewin (1935) on the interaction of people with their environments as they modify their behavior. Individuals inquire into issues on behalf of the organization. Their learning is fueled by doubt or some other mismatch between expectations and reality, and their goals and actions are often directed by unexamined values and beliefs that shape and limit their interpretation. When they are successful, people seldom look further into the links between actions and outcomes. The feedback they receive suggests they acted appropriately. But when results are not anticipated, then people are more likely to reflect on the causes of their errors. If they reflect on tactics without examining the original way in which they interpreted the challenge, they engage in what Argyris and Schön (1978, 1996) call single-loop learning. If they delve more deeply into the way their values, beliefs, and assumptions caused them to frame the problem, they may engage in double-loop learning. Single-loop learning typically leads to incremental changes; double-loop learning is more likely to lead to further questions that reframe one’s understanding of the entire situation.
We adopt the view that reality is socially constructed (Schwandt 1994). As Mezirow (1991) suggests, people make meaning of situations they encounter by filtering new impressions through prior frames of reference that are influenced by society’s collective understandings and norms. They reinterpret and sometimes call into question these viewpoints. They engage in what Karl Weick (1995) calls sensemaking to construct plausible explanations of surprises they encounter, often after the fact. Based on the work of George Herbert Mead (1934), among others, “Sensemaking is understood as a process that is (1) grounded in identity construction, (2) retrospective, (3) enactive of sensible environments, (4) social, (5) ongoing, (6) focused on and by extracted cues, and (7) driven by plausibility rather than accuracy” (p. 17).

As Argyris and Schön (1996) point out, organizations are social constructions. People are appointed, or are otherwise “anointed” by followers, to act on behalf of a system. Under the right conditions, when they learn, they take their learning back to the system. Systems learning cannot occur unless the system as a whole is adequately prepared to absorb and use this learning so that it becomes shared, easily accessed, and productively employed in the service of the system’s agreed-upon vision. People have no reason to collaborate unless they share a common purpose, which may be more or less explicit, that ties them together in a relatively committed and permanent fashion for the sake of common goals, and that enables them to develop shared rules for organizational life. DiBella and Nevis’s (1998) differentiation of organizational from individual learning, then, succinctly summarizes its nature: “First, new skills, attitudes, values, and behaviors are created or acquired over time. . . . Second, what is learned becomes the property of some collective unit. . . . Third, what is learned remains within the organization or group even if individuals leave” (pp. 25-26) [original italics].

**Systems and Chaos Theory**

Open systems and chaos theory help to further understanding of how organizational learning differs from individual learning. At the heart of open systems theory is the notion of feedback. Scientists discovered that systems could become self-regulating through feedback loops. Feedback loops can run counter to an original force, and thus be self-balancing; or they can lead to runaway feedback through self-reinforcing loops in the same direction. Feedback loops enable a system to self-organize, that is, communicate within, and thereby, learn from and correct mistakes, and reorganize itself so that it lives. According to Capra (1996), self-organizing systems have three key features:

1. Survival does not depend solely on the “requisite variety” of the system itself (p. 85). New structures and modes of behavior are constantly being created through development and learning. Life’s tendency is to create novelty, and its innovations may or may not adapt to changing conditions.
2. Self-organizing occurs in open systems that are stable in their structure even though energy and matter are constantly flowing through them. New structures and behaviors can evolve when the system is at a point far from equilibrium.
3. Patterns of interaction within systems are not linear, and are highly interconnected. This characteristic leads Capra to describe systems using the metaphor of a “web of life.”
Systems theory suggests that complexity increases as the unit of analysis grows larger—from a molecule to a cell to a tissue to an organ to an organism. Each higher level has properties because of its pattern of relationships that do not show up at a lower level.

Chaos theory shows that “random disturbances can produce unpredictable events and relationships that reverberate throughout a system, creating novel patterns of change... despite all of the unpredictability, coherent order always emerges out of the randomness and surface chaos (Morgan 1997, p. 262). Chaos theory helps to understand what happens when systems move so far from equilibrium that they become “structurally unstable” at critical “bifurcation points... in the system’s evolution where a fork suddenly appears and the system branches off in a new direction” (Capra 1996, p. 136). A t critical points of instability far from equilibrium, new forms of organization can evolve due to amplifying runaway feedback loops that catapult the system in new directions. The new form that a system will take at bifurcation points cannot be predicted:

At the bifurcation point the system can “choose”-the term is used metaphorically—from among several possible paths, or states. Which path it will take will depend on the system's history and on various external conditions and can never be predicted. There is an irreducible random element at each bifurcation point. (Capra 1996, p. 183)

Open systems and chaos theory are derived from the biological and physical sciences and cannot be applied literally to human systems. But many theorists draw on these theories to explain learning, complexity, and interactivity in organizations. Self-organization is driven by feedback loops. Human systems also experience feedback through language and patterns of symbolic communication. Human systems involve interactive patterns of relationships. In the open systems model, the learning of one person or group affects that of others; they are mutually interdependent.

Chaotic change is enhanced by a move in organizations to decentralize so that people and units can more easily respond to flux in the environment. Knowledge can be freely accessed in organizations that reflect a chaos model, but at the same time, the individual can count on less help from the system in choosing and weighing the ideas that might be of greatest value to an unpredictable future. Control gives way to emergent design. People must be trusted to act on their best judgment, even if consequences are not fully predictable; people learn from what they do, assess outcomes, and adjust their course in alignment with a common vision.

**Foci for Enhancing Organizational Learning**

Three interactive foci can be identified from this discussion for enhancing organizational learning. First, critical reflection can provide people and systems with the ability to enhance what is an otherwise tacit, experiential learning process. Second, collaboration can provide avenues for building joint knowledge. Third,
Learning Organizations

Communication provides for feedback loops across the system. Many conditions affect the ability of an organization to learn. One that stands out is the quality of the organization’s social capital.

Critical Reflection

The heart of organizational learning is a collective process of learning from experience. Learning from experience may be tacit or not highly conscious (Polanyi 1967) and acquired primarily through trial and error, observation, modeling, and socialization. Lave and Wenger (1991) describe this process as situated learning or legitimate peripheral participation. The tacit nature of experiential learning can dilute or distort lessons learned. People may not recognize what they know and they may not fully understand the reasons for success or failure. They also become blind to points of view that fall outside their value system and perspective. Making learning explicit helps people to recognize and analyze experience. Marsick and Volpe’s (1999) review of informal learning studies suggests that learning is enhanced through conscious attention to goals and turning points, awareness of disjunctures and triggers for change in the environment, an inductive mindset, and reflective skills.

Nonaka and Takeuchi (1995) describe an interactive, spiral, iterative process of organizational learning that balances tacit and explicit knowing. Through socialization, tacit knowledge is created through sharing of experiences, mental models, and skills. Knowledge is then drawn out and made explicit so that ideas can be built into archetypes, and tested through new product development. New ideas are explicitly shared throughout the organization, across levels and other boundaries, so that they can be externalized and experimented with in other parts of the company. Finally, the newly evolved ideas are again internalized so that they become resocialized.

Learning is deeper when people question underlying values and assumptions that distort their understanding (Brookfield 1991; Cranton 1994; Mezirow 1991). Argyris and Schön (1978, 1996) help people analyze their tacit experience using a critical incident case analysis process. People are helped to uncover tacit assumptions and to map the way these beliefs have unconsciously influenced actions and results. They use double-loop learning to redesign their actions and practice skills of inquiry.

Critical reflection can transform people and organizations, but it is not common in the workplace. The process itself demands that people work from a model of free and informed choice and that they are able to engage in dialogue with one another regardless of status or position in the hierarchy. Individuals may not think in ways that enable them to raise these kinds of questions (Kegan 1994). Even when they do, organizations are not typically safe places for public critique even when they have adopted a commitment to organizational learning. As the work of Argyris and Schön (1996) over the years attests, some leaders have begun to create cultures that are more open to critical thinking, but organizational life, by its very nature, often pushes members toward conformity. The expression of
differences feeds opportunities for critical questioning, yet true and full valuing of diversity is still a challenge in organizational life (Thomas 1999).

**Collaboration**

Learning cannot be collectively owned unless knowledge is shared. Research on group learning (Imel 1996) helps to explain collaborative dynamics that have been researched elsewhere by social psychologists (Johnson and Johnson 1994, 2000). Kasl, Marsick, and Dechant (1997) and Brooks (1994) have studied the dynamics of group learning. They found that individuals cross boundaries to gather new ideas, information, and mental models that they bring into a group. Members, who enter the engagement with an original frame of reference, can use these new perspectives to challenge their original viewpoints, which leads to reframing by individuals, subgroups, or the entire group. Reframing can focus on content or tasks, on the way in which members solve problems, or on the basic premises that underlie their definition of the situation. Reframing typically leads to experimentation and trial and error. Through an iterative cycle, the group makes sense of the challenge by integrating perspectives, which leads to mutual construction of new knowledge. This research also identified conditions within the group that affect its ability to learn and conditions within the organization that influence whether or not group learning leads to organizational learning. The ability of groups to collaborate is clearly affected by power dynamics and the culture of the organization. These group learning models have been validated in other studies (Carkhuff 1999; Gavan 1996; John 1995; Oxford 1998).

Collaborative dynamics are at the heart of several “action technologies” (Brooks and Watkins 1994): action research, action learning, action science, action inquiry and collaborative inquiry. Articles in a recent special edition of *Management Learning* edited by Raelin (1999) describe similarities and differences among these approaches. Action technologies have roots in theories of social interdependence, participatory research and decision making, and democracy even though the environments in which they are practiced may be controlling, hierarchical, and nonparticipatory in nature. Each approach has its own body of research, although many studies are fugitive research done in action settings but not published in journals. Interventions are typically focused on data-based action rather than theory generation.

Action technologies advocate experimentation that is social, learning based, and iterative. Whatever the unique features of each approach, people always get together in groups to address real challenges. They collect information about the challenge and intervene to resolve it. They might apply their learning primarily to their own experience, or they might intervene in systems. They monitor results and bring these results back to the group for further reflection and experimentation. All of these approaches involve reflection and action, learning from experience, and the use of strategies that help people to become more aware of the way in which they think and draw inferences. These approaches can engage people in deeper analysis of their own biography and the assumptions that cause them to think and act as they habitually do. Learning does not always become organizational in nature, even when this is the intent (Yorks et al. 1998).
Communication

Communication is the lifeblood of organizational learning. However, its quality may be far more important than how much of it occurs. Concerns about communication often point to a host of deeper problems, such as unsatisfactory relationships among people, barriers around gender or race, or the inability to identify and resolve conflicting points of view. "Silos" created by reporting lines make it difficult to reach the right people at the right time. Technology makes information transmission easy, but it also makes it hard to judge accuracy and sort through volume. Commenting on the latter, Robert Johansen, President of the Institute for the Future, noted at a seminar at the Columbia Business School that the future will be decided by ignorance management rather than knowledge management: making choices about what information should simply be ignored.

Systems and chaos theory points to the need for effective communication processes and systems in order to provide frequent, high-quality feedback: both general feedback from the changing environment and specific feedback among people. The success of organizational learning turns on the ability of people to communicate with others about the meaning of clues in the environment. Constructivist communication involves opportunities for meaning making and sensemaking (Weick 1995). Whether talking via technology or in person, people need skills and freedom to engage freely in critical inquiry and to welcome divergent views that can help them to see how their understanding is incomplete or inaccurate. However, the culture of most organizations, and the societies in which they function, lead people to fear open testing of their ideas and to find themselves punished when they inevitably make mistakes.

Feedback is key to individual learning, but it is also critical for learning across levels within organizations (Crossan, Lane, and White 1999). Nonaka and Takeuchi’s (1995) model reflects the centrality of frequent, frank and open feedback, much of which takes place in cross-functional, cross-level groups created specifically for the purpose of innovation and knowledge creation.

Social Capital

People are not likely to critically reflect, collaborate, and communicate without a modicum of trust. Social capital theory provides a theoretical base from which to understand this. Fukuyama (1999) defines social capital as follows:

A set of informal values or norms shared among members of a group that permits cooperation among them. If members of the group come to expect that others will behave reliably and honestly, then they will come to trust one another. Trust is like a lubricant that makes the running of any group or organization more efficient. (p. 16)

Social capital can be used for destructive or constructive purposes. All groups have social capital, but they differ in their "radius of trust" (ibid., p. 17), that is, the range of people who can be trusted as one moves out from the family toward social units in which people participate voluntarily or by reason of birth.
Loyalty to the family usually prevails over loyalty to other groups. The radius of trust differs by the nature of the social group as well as the sociocultural context.

Organizational learning functions best when the system is built upon a strong base of positive social capital. Ideally, both individuals and the system benefit from mutual learning. However, the integration of what individuals know into a collective whole involves negotiation of mutual interests. Inevitably, conflicts arise over different points of view. Power dynamics often supercede the full consideration of different points of view.

As has been argued by many critics of today’s workplace, organizations may not merit a high degree of trust. Rapid change has unfrozen the bonds of loyalty and refashioned the social contract in the workplace (Rifkin 1995). On the one hand, change has freed some people to take advantage of many new opportunities. But opportunity privileges some groups and not others (Hake 1999). Welton (1995) describes the way in which oppressive forces in institutions impinge on the lifeworld of individuals. Sennett (1998) revisits research conducted a quarter of a century ago with Jonathan Cobb about working-class Americans. He reflects on the way in which the new capitalism makes it difficult for employees to create a meaningful narrative of their lives around work. Brooks (1994), Schied et al. (1997), Darrah (1995, 1996), and Garrick (1998) have uncovered dynamics of exploitation in their research in organizations. Power dynamics have shifted in favor of those with knowledge capital, but power dynamics will never be eliminated from the workplace. If anything, the uncertainty that accompanies rapid change has intensified the political nature of organizational life.

Facilitating Learning for the Organization as a System

The goals that individuals might have for themselves are seldom fully consistent with the needs of the organization. Adult educators must therefore think through the conflicts that are inherent in their role because they do serve two masters: the individuals who comprise the organization, each of whom has his/her own needs; and the system as a whole, which cannot logically meet everyone’s need and therefore must engage in negotiation of interests. Adult educators can work with both constituencies, though conflicts do occur and they may need to work differently with either individuals or the organization as a whole. To what should adult educators attend as they help systems learn? The literature reviewed here suggests that the adult educator attend to the environment, to choice, and to culture and systems in organizations.

Attending to Environment

Much of what occurs when a system is far from equilibrium is due to random chance. Runaway feedback loops send rapid signals in many directions. At this point, it is difficult to predict which environmental factors will influence the direction that the system will take. “A tiny random fluctuation, often called ‘noise,’ can induce the choice of path” (Capra 1996, p. 191). Greater attention to the environment will provide clues to where one can influence systems change.
The rapidly changing environment is both the container for learning and often the stimulus for learning. Individuals make sense of the changing environment on behalf of the system and act on their interpretations. Learning happens when the system is helped to reflect on its interpretations and actions, draw conclusions, and use these conclusions to guide next steps.

Adult educators can play a central role in this kind of learning by identifying and working selectively with people who learn on behalf of the system. This includes people in power, although as chaos theory suggests, people have knowledge throughout different levels of the organization. Effective leaders of learning organizations know how to tap into this knowledge and engage people in change regardless of their level in the hierarchy. Adult educators can advocate for bringing people with diverse views more fully into decision making and knowledge generation.

Action technologies are an effective tool for engaging the entire system in learning. Many tools used in action technologies can be integrated into regular work practices. Action scientists, for example, help people to examine their ladders of inference for faulty assumptions, to map the links between assumptions and actions and outcomes, and to see the systemic consequences of their behavior (Argyris and Schönh 1978, 1996; Marsick and Watkins 1999; Watkins and Marsick 1993). Strategies developed by Fisher and Torbert (1995) teach skills for examining one’s thinking and communication patterns through action inquiry. Action learning can foster reflective learning and critical questioning (Yorks, O’Neil, and Marsick 1999). Collaborative inquiry helps people to develop capabilities around dialogue and shared inquiry (Bray et al. 2000; Reason 1994).

Attending to Choice

Choices around learning and change do exist, though they are not necessarily highly conscious and we do not always have full control over them. As Capra (1996) has identified, current “choices” are likely to be influenced by past choices, or our personal and social life history. Adult educators can help individuals and systems choose to reflect consciously, and sometimes critically, on feedback in light of past experience and present or future direction.

Adult educators need to create safe laboratories within which people, individually and collectively, can critically examine personal habits and choices. One-on-one coaching provides this kind of safety. Educators who have worked with action technologies have devised strategies for working with people in groups to examine past experience and choices. They balance respect for privacy and personal control of learning with the value gained when a larger group of people share more deeply about their experience. A good example is the organizational life history (Roth and Kleiner 2000) in which interventionists help people and groups depict and critically analyze the dynamics of change that they undergo during specific challenges or crises. Senge and his colleagues have identified many tools that can be used in helping people examine assumptions that underlie individual and collective choices (Senge et al. 1994, 1999). Mezirow and Associates (1990) and Cranton (1994) have identified strategies for transformative learning that can likewise be helpful in this regard.
Attending to the Organization

The biggest barrier to using new learning in the system is a resistant organizational culture. People feel they cannot openly discuss variant views, challenge others, communicate across boundaries, take risks, and share knowledge without being penalized in some way. Cultures do not change overnight, but they can be moved in new directions, practice by practice. Culture change involves examination of values and beliefs and new ways of acting that are reinforced by changes in rewards and recognition, learning practices, and performance support. Learning organization interventions often begin with a few simple steps that are strategically placed and aligned with organizational priorities (Marsick and Watkins 1999; Watkins and Marsick 1993, 1996). The biggest gains come when leaders themselves model tolerance for diverse views, willingness to take risks, and other learning practices.

Adult educators may not have access to top leadership in organizations, and as a result, often find it easier to intervene around learning and development practices. They help organizations clarify valued capabilities, provide tools and methods so that individuals can assess themselves against these needs, and lobby for access to resources. Resources include time, money, learning options, and the attention of other people in the organization who can provide feedback and share their expertise. If a person is to engage in continuous learning, the organization then needs to provide appropriate incentives and rewards, link the new learning to work, and support efforts to use the learning to make changes elsewhere in the organization (Marsick and Watkins 1999).

Action technologies can be used to engage the entire system in change. Space does not permit an elaborate discussion of the design of these strategies, but they share characteristics of chaos and systems theory in that multiple stakeholders are engaged with others in the solution of real problems. Many new roles emerge for the adult educator in these kinds of interventions. For example, O’Neil identified characteristics of the new role of the Learning Coach in action learning interventions based on observation and interviews with coaches in the United States, England, and Sweden (Yorks, O’Neil, and Marsick 1999). Learning Coaches are skilled at group dynamics, understand organizational dynamics, and frame their work using systems thinking. They have keen powers of observation and are skilled at giving feedback and asking deep questions that stimulate further thinking. They help individuals and the group learn from the task at hand through discovery, experimentation, and reflection on their experiences.

Facilitating Learning for the Individuals in the System

Organizational literature makes it clear that individual learning alone is not enough to effect learning across the system. Yet Senge’s (1990) evocation of the excitement of personal mastery may well have generated enthusiasm for the broader concept. Organizations can not learn unless people notice, use, and share ideas, practices, and thinking of others. Organizations increasingly benefit when individuals are encouraged and supported in a wide range of learning opportunities (Marsick and Watkins 1999; Watkins and Marsick 1993, 1996). The instru-
mental rationale for this position is echoed in the logic that Johnsonville Foods used when they began their learning journey. Ralph Stayer, then the President of Johnsonville Foods, and Linda Honold, an internal organizational development consultant, assumed that people would take their learning habits to work. They believed that increased appreciation for personal learning releases a wealth of energy and innovative ideas.

However, even though organizations increasingly encourage autonomy around work and learning, managers make decisions that often limit a person’s freedom to develop and to share knowledge. If individuals find this to be unnecessarily or unbearably exploitative—and it can become so—their choices are to find employment elsewhere, or to work from within, perhaps jointly with others through unions, to make changes in the social contract.

**Meshing Individual and Organizational Learning**

Adult educators can help individuals mesh their learning with that of the entire system. The literature on group learning and action technologies describe ways in which the individual can cross boundaries to gather fresh perspectives and challenge their own and one another’s thinking in light of new information. People can be helped to probe assumptions they individually hold or have bought into through what is often known as groupthink (Janis 1982). Dialogue and inquiry skills developed in action science enhance an individual’s ability to check whether others hold the views they assume to be true (Dixon 1996; Marsick and Watkins 1999; Watkins and Marsick 1993). Conflict needs to be brought to the surface and effectively managed so that the merits of alternative views can be considered.

Adult educators can also help individuals to test the waters around safety in the group and in the organization before plunging into actions that might ultimately harm them. Despite assertions to the contrary, organizations of any kind seldom welcome everyone’s ideas equally or enthusiastically. Although the learning organization does encourage individuals to challenge the system, it also shows that cultures are often not ready to embrace such challenge. Adult educators must work skillfully and wisely with people to make sound decisions about their challenges.

As Sennett (1998) points out, individuals need help in making sense of the rapidly changing environment and in creating a narrative about their work lives that is meaningful to them. Organizations are not likely to take up this mandate; they expect people to do this on their own time, and at least in this point in history, have little investment in retaining employees over long periods of time. Organizations let people go or encourage them to leave when they burn out or cannot, for whatever reason, update their skills as demanded. Some people may turn to personal development workshops for assistance, but many do not have access to these or have not thought about themselves as in need of such help.

Adult educators can play a key role in developing approaches to helping people rethink the meaning of their lives. One effective strategy is the use of life history to help people review and rethink their experiences (Dominice 1990).
Summary

This chapter synthesizes literature on learning organizations. Individuals and groups learn, and when conditions and systems are well designed, their learning can be shared across the organization and incorporated into its practices, beliefs, policies, structure and culture. Organizational learning is a dynamic process through which people co-construct knowledge. Chaos theory emphasizes the opening up of the system to innovation during turbulent times (Capra 1996). Greater awareness and attention to the environment provides clues to sensemaking. Even though people, individually and collectively, pay more attention to the environment, they may not have the time, capability or resources for systematic consideration of what they are taking in and how they are processing it. Chaos theory recognizes that past history often decides future directions unless there is an intervention, whether random or planned, that shifts the focus of change. Greater understanding of self, and the way in which assumptions influence choices and decisions, assists in interpretation of the environment. Communication makes it easier to give and receive feedback. Collaboration fosters sharing of knowledge across boundaries. Adult educators can help people to manage and direct systems-level learning more consciously, even though organizations are not always designed to support critical inquiry by everyone in the system. They can focus on points of sensitivity for the individual and the organization related to meaning making and to the design of both individual and systems learning.

Finally, as Hake (1999) advises, adult educators need to be advocates for those individuals who fall between the cracks as opportunities open for some people but close more rapidly for others. Adult educators can advocate for policy and legislation to address these gaps. In today's global environment, the field needs activists who counteract the ability of global companies to make policies de facto across the boundaries of nation states.

Several key questions remain. How can educators remain aware of the larger societal context for organizational learning? Do they raise questions in organizations when they find that people are unfairly treated? And how do they develop their own capacity and perspective as they work with large social change projects? Some of these questions are further explored in the next chapter.