

Learning Organizations: A Primer for Group Facilitators

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Abstract

Learning organizations are able to grow and successfully adapt to changing environments, and group facilitators have a key role as change agents in the process. This paper draws heavily from the work of Peter M. Senge (1990a, 1990b, 1994, 1999), who describes learning organizations as consisting of four core disciplines: personal mastery, mental models, team learning and shared vision. In addition, Senge introduced a fifth concept of systems thinking. The work of several other management scientists is discussed in relation to the learning organization attributes identified by Senge, and the role of facilitators in creating organizational change is highlighted.

Keywords

learning organizations, organizational change, change strategies, organizational development, personal mastery, mental models, team building, teamwork, team learning, systems thinking, system dynamics, group dynamics, group model building, decision conferences.

Introduction

The last decade has seen the emergence of the learning organization, a new mode of organizational functioning (Senge, 1990a; Senge 1990b, Senge, Kleiner, Roberts, Ross & Smith, 1994; Senge, Kleiner, Roberts, Ross, Roth & Smith, 1999). With many traditional organizations striving to become learning organizations, top managers were left searching for ways to change employee perceptions as well as approaches to task completion. This paper builds on the belief that not only do facilitators possess exactly the values and intrinsic skills required to help facilitate the transformation needed for organizations to become learning organizations, but that most successful transformations will indeed be conducted by external facilitators (Sandelands, 1999).

We highlight Heron's (1999) definition of a facilitator as "a person who has the role of empowering participants to learn in an experimental group" (p. 1). Heron goes on to explain that an experimental group is one where learning takes place through an active and aware involvement of the whole person. As will become clear, the transformation needed in organizational members to create the learning organization involves the development and learning of the whole person with skills in

accordance with Senge's (1990a) vision. We also concur with Schwarz (1994) when he specifies group facilitation as "the process by which a person who is acceptable to all members of the group, substantively neutral, and has no decision-making authority intervenes to help a group improve the way it identifies and solves problems and makes decisions, in order to increase the group's effectiveness" (p. 18).

Organizational learning involves individual learning, and those who make the shift from traditional organizational thinking to learning organizations develop the ability to think critically and creatively (Schon, 1975).¹ Organizational learning is about people and how they work together to achieve personal and organizational goals. Many times achieving goals means making changes that require creative thinking and problem solving. As previously stated, we believe these skills are in agreement with the values and assumptions embedded in group facilitation. Values held by practitioners include "wanting to create change, to positively impact people and organizations, enhance the effectiveness and profitability of organizations, [to] learn and grow, and exercise power and influence" (French & Bell, 1995, p. 77).

As with other change processes, becoming a learning organization can be aided by coaching, guidance, and consultation. In order to learn as a team, to practice systems thinking, and to develop shared vision, people in the organization must meet, share information, develop goals, and plan together. In other words, a learning organization depends on effective meetings. A group facilitator can play an important role in helping the group overcome learning barriers and move toward becoming a creative organization and a competent one where high standards, principled leadership, and a collaborative climate are a way of life.

Group facilitation is often the necessary process that allows organizations to learn how to learn and to learn how to change. Ross and Roberts (1999) recommend using external facilitators paired with internal facilitators to effect change through group work in learning organizations. As Ross and Roberts note, “External facilitators are more comfortable helping people work with unfamiliar techniques, and more apt to ask the dumb questions that reveal contradictions or difficult issues. They provide outside perspective” (p.90).

Tim Savino of Harley-Davidson says that his company uses outside facilitators with the learning teams because “these people bring technical expertise and process skills” (Senge et al, 1999, p. 92). Of course, internal facilitators are critical as well when learning teams get together because they bring an understanding of the organization and its culture and politics to the process.

In order to be effective in the role of change-agent coach, it can be helpful for the group facilitator to understand the building of a learning organization. This paper presents a primer for facilitators to use as an introduction to learning organizations. It is organized according to the five disciplines that Peter Senge (1990a) says are the core disciplines in building the learning organization: personal mastery, mental models, team learning, shared vision, and systems thinking.² Even though the paper makes liberal use of Senge’s pervasive ideas, it also refers to the work of others such as Chris Argyris (1991, 1993, 1999, 2000), Juanita Brown (1994), Charles Handy (1994, 1995, 1998), Jon Katzenbach, and Douglas Smith (1993). What these writers have in common is a belief in the ability of people and organizations to change and become more effective, and that change requires open communication and empowerment of community members as well as a culture of collaboration. Those also happen to be the characteristics of a learning organization.

The emphasis of the paper is on reviewing the five disciplines, but it also puts them into context for facilitators. Being an introduction, it probably does not fulfill the needs of facilitators who may already be helping an organization as they grow into a learning organization. But it does shed light on the concept of facilitating organizational learning for those new to the idea.

Also, we believe it will stimulate dialog and thought on the matter, possibly opening an avenue for the exchange of practical experiences. Facilitators may need to prepare further to facilitate successfully on the topic, but this paper may serve as a roadmap to that further development.

Personal Mastery

Personal mastery is what Senge describes as one of the core disciplines needed to build a learning organization. Personal mastery applies to individual learning, and Senge says that organizations cannot learn until their members begin to learn. Personal mastery has two components. First, one must define what one is trying to achieve (a goal). Second, one must have a true measure of how close one is to the goal (Senge, 1990a).

It should be noted that the word “goal,” in this context, is not used the same way it normally is in management. Managers have been conditioned to think in terms of short-term and long-term goals. Long-term goals for the American manager are often something to be achieved in the next three to five years. In personal mastery, the goal, or what one is trying to achieve, is much further away. It may take a lifetime to reach it, if one ever does (Senge, 1990a). Vision is a more accurate word for it. In a videotape that Senge (1995) prepared on personal mastery, the idea of lifelong learning is represented by the story of Antonio Stradivarius, whose quest was a particular musical sound that could be produced by a violin. Stradivarius spent his entire life in the pursuit of that sound, making constant refinements to the violins he crafted, producing instruments that are considered outstanding to this day. No one will ever know if Stradivarius was fully satisfied with his last violin. Senge would say that Stradivarius was not satisfied because of his obsession with continually trying to improve on the sound. Senge refers to the process of continual improvement as “generative learning” (1990a).

The gap that exists between where one is currently functioning and where one wants to be is referred to as “creative tension.” Senge illustrates this with the image of a rubber band pulled vertically between two hands. The hand on the top represents where one wants to be, and the hand on the bottom represents where one currently is. The tension on the rubber band as it is pulled between the two hands is what gives the creative drive. Creativity results when one is so unsatisfied with the current situation that one is driven to change it. Another aspect of personal mastery is that one has a clear concept of current reality. A person must be able to see reality without biases or misconceptions, and if one has an accurate view of reality, one will see constraints that are present. The creative individual knows that life involves working within constraints and will not waver in trying to achieve the vision. Creativity may involve using the constraints to one’s advantage (Senge, 1990a).

Handy (1995) has a similar concept of reality in his “wheel of learning.” The wheel consists of four quadrants: questions, ideas, tests, and reflection. The metaphor of the wheel makes one think of motion. What keeps the wheel moving is:

- Subsidiarity: Giving away power to those closest to the action.
- Clubs and congresses: Places and opportunities for meeting and talking.
- Horizontal fast tracks: Horizontal career-tracks that rotate people through a variety of different jobs in the new, flattened organization.
- Self-enlightenment: Individual responsibility for one's own learning.
- Incidental learning: Treating every incident as a case study from which learning can occur.
- Leadership: The driver of the wheel should be the leader of the organization, who sets the example for others to follow.

Individuals who practice personal mastery experience other changes in their thinking. They learn to use both reason and intuition to create. They become systems thinkers who see the interconnectedness of everything around them and, as a result, they feel more connected to the whole. It is exactly this type of individual that one needs at every level of an organization for the organization to learn (Senge, 1990a). Traditional managers have always thought that they had to have all the answers for their organization. The managers of the learning organization leave the responsibility for developing most of those answers to their staffs. The job of the manager in the learning organization is to be the teacher or coach who helps unleash the creative energy in each individual. In the end organizations learn through the synergy of the individual learners (Senge, 1990b).

So the question is what role do facilitators have in personal mastery? Their job in this instance might be part good listener and part coach with a healthy dose of questioner in the mix. As in any group meeting, the facilitator must be attuned to the mood and the words of the group and be prepared to monitor and adjust according to where the conversation leads. In the case of the need for personal mastery, through sensitive questioning and the ability to understand the organization's goals and mission, the facilitator can help individuals within a group see where their own need for quality in their work aligns with the organization's aspirations.

Coaching can be very helpful for groups that are new to the organizational learning process, and the ability to coach is a natural outgrowth of group facilitation skills. Pilot groups are

established in organizations in order to start the learning process, but the progress made by the groups often stalls without encouragement and help. As Senge says, “Without quality coaching, guidance, and support, pilot groups began to flounder” (Senge, et al, 1999, p.103). Internal or external facilitators can serve as coaches for pilot groups, who often rely on this coaching before they ever accomplish anything significant.

For a facilitator, coaching still means facilitating and not advice giving, however. As argued by Schwarz (1994), facilitators are experts in group process, who intervene to make the group more effective, but not to influence its decisions. Facilitators themselves can practice personal mastery, by working on their continual improvement of this coaching skill. Argyris (2000) also warns that advice can be flawed, and there is a problem of “skilled unawareness” among those receiving the advice that can make professional advice ineffective (p. 48). On the other hand, coaching can help the individual with both personal mastery and creating mental models.

Mental Models

Mental models are the second of Senge's five disciplines for the learning organization (Senge, 1990a). Much of the work involving mental models comes from Chris Argyris and his colleagues at Harvard University. A mental model is one's way of looking at the world. It is a framework for the cognitive processes of our mind. In other words, it determines how we think and act. A simple example of a mental model comes from an exercise described in *The Fifth Discipline Fieldbook* (Senge, et al, 1994, p. 236). In this exercise, pairs of conference participants are asked to arm wrestle. They are told that winning in arm wrestling means the act of lowering their partner's arm to the table. Most people struggle against their partner to win. Their mental model is that there can be only one winner in arm wrestling and that this is done by lowering their partner's arm more times than their partner can do the same thing to them. Argyris contends that these people have a flawed mental model.

An alternative model would present a framework where both partners could win. If they stop resisting each other, they can work together flipping their arms back and forth. The end result is that they can both win and they can win many more times than if they were working against each other (Senge, et al, 1994). Argyris (1999) says that most of us have a common, underlying theory of action that is flawed. He says that everyone has theories of action, which are a set of rules that we use for our own behaviors as well as to understand the behaviors of others. However, people don't usually follow their stated action theories. The way they really behave can be called their “theory-in-use”. It is usually to:

1. be in control,
2. minimize losing and maximize winning,
3. suppress negative feelings, and
4. act rationally (p. 303).

Argyris (1999) labels this as Model I behavior. When a problem is detected in an organization, people practicing Model I behavior correct the problem and then continue as before. He calls this single-loop learning. Fulmer and Keys say it is “maintenance learning or getting better at what we already know how to do” (p.26).

People act this way to avoid embarrassment or threat. Argyris (1991) says that most people practice defensive reasoning, and because people make up organizations, those organizations also do the same thing. So at the same time the organization is avoiding embarrassment or threat, it is also avoiding learning. Learning only comes from seeing the world the way it really is. Argyris (1993) believes that we arrive at our actions through what he calls the “ladder of inference.” First, one observes something i.e., a behavior, a conversation, etc., and that becomes the bottom rung of a ladder. One then applies his or her own theories to the observation. That results in the next rung on the ladder. Subsequent rungs on the ladder are assumptions we

make, conclusions we draw, beliefs we come to have about the world, and finally the action we decide to take. As we climb farther up the ladder, we are becoming more abstract in our thoughts. Unfortunately, our flawed mental models usually cause us to make mistakes in this process of abstraction, and we end up with inappropriate actions. This entire process becomes a loop. We generalize our beliefs and assumptions to the next situation we encounter and use them to filter the data that we are willing to consider. Hence, every time we start up the ladder for a new situation, we are handicapped from the beginning (Argyris, 1993; Senge, et al, 1994).

Argyris (1991) believes that people can be taught to see the flaws in their mental models. One way to do this is to practice the left-hand column technique. Below is a sample of a conversation from a real group meeting. The right-hand column includes the dialogue of the group members and the facilitator. The left-hand column includes the facilitator’s thoughts and feelings as the meeting was occurring.

Facilitator’s Thoughts & Feelings	The Conversation
Wow. She’s not liking what I’ve got them doing.	Barbara: Why are we doing this?
I think this stuff is not very exciting. And they’ve done this kind of stuff before, and it goes nowhere. Without their boss here, it’s rather futile. It’s another [useless] exercise. Plus, they have such reservations about working for him.	Facilitator: This is the process we laid out given the purpose and goals of the day. Is there another suggestion you have for achieving our vision?
They won’t tell the truth. I wonder how many of them really have had it, too.	Barbara: Well, we seem to not be getting anywhere. Maybe it’s just me and my mood today. I’m not sure what this is going to do for us.
I’d like to tell them I wanted their boss to do the ‘undiscussibles’ and he vetoed it saying they can talk about anything with me. But that would be turning against him and doing so in his absence. Not good karma to do that. But, they might trust me more. Nah! Can’t trust them!	Facilitator: what could I do to make it more useful?
Oh boy, now they won’t want to use me as a facilitator in their organizations, if they think I can’t handle them. Maybe I should have talked to them each one-on-one to build more trust. Too late for that now!!	Barbara: I don’t know, you’re the facilitator. I just know I have so many things to do and I don’t think this is getting us where we need to go.
They participated in saying what to do today, and the agenda reflects that. Why is she acting like she wants no part of it?	Facilitator: We built the agenda around deliverables that everyone agreed to. Is this not reflecting what you thought we’d do?
Their boss was so late in getting back to me, he didn’t finalize the agenda until 3 days before, which didn’t give them much time. Everything always is so rushed around there! Maybe she didn’t look at the agenda. Probably not. But I can’t blame them, since they are so overworked and undervalued. And I know Barbara particularly wants to get a re-org going, so maybe we’re not moving fast enough for her on that right now.	Barbara: No, no. maybe it's just me. I can't see this getting us anywhere.

Let's see what anyone else thinks. Moe had suggested this overall flow, which I adjusted, so what is he thinking?	Facilitator: How about the rest of you?
They are defending me, but I somehow don't completely buy it!	Moe: Well this is a process that takes time and I think we need to play it out.
I think I need a break myself to see what to do now. They are just going through this rote-like, although some of them seem to be engaged or enjoying it a bit. They did, after all, do a pretty good job on their vision posters, which showed some commitment on their part.	Facilitator: Well let's try to finish this piece and break for lunch and see how we do.

Table 1: Senge's (1990a, p. 196) left-hand column technique applied to facilitators (Schwarz, 2000)

Argyris (1999) maintains that true learning occurs when the left-hand and right-hand columns begin to match. Once one has been trained in this technique, one can do it mentally during a conversation to assess what is being said. As a culture, we have to learn to say what we think and to take criticism without being on the defensive. People and organizations learn by recognizing mistakes and correcting them. No progress can be made if we pretend that the mistakes never happened.

Research performed by Argyris (1999) shows that Model II behavior is more effective. Predictions that flow from this model are:

- if individuals hold as governing values (1) valid information, (2) informed choice, and (3) personal responsibility to monitor one's effectiveness; and
- if they accompany these governing values with action strategies of advocating, evaluating, and attributing that are crafted to satisfy³ the governing values (e.g., craft the action in ways that encourage inquiry and testing of the validity and effectiveness of these strategies);
- then, they create consequences that facilitate learning (single-or double-loop) and that reduce organizational defensive routines in ways that the reduction persists (p. 305).

Double-loop learning "...is basically asking if we are doing the right thing" (Fulmer & Keys 1998, p. 26). It causes the organization to do more than just maintenance. The organization rethinks its set of values and begins to learn.

What an organization needs is "actionable knowledge." This is Argyris' (1993) phrase for a new set of mental models. These models would be validated through research and would be a series of if-then statements that would say something like: "...if you act in such and such a way, the following will likely occur" (pp. 2-3).

Actionable knowledge and mental models are hard to come by, though, in organizations where communication is limited and trust is shaky. In order for true innovation to happen people must come together and talk about the big goals of the organization and how day-to-day tasks carry out the goals and organizational mission. "You have to make sure that the goals of people at many levels of the organization are aligned, and that people get to know each other, before you can expect them to build trust," says Kanter (2000, p. 33).

Building trust through communication can be a major goal of facilitators working with groups that strive to be learning organizations. Facilitators can encourage work teams to talk openly and honestly, but opening up real communication can be a challenge in an organization where mixed messages are business as usual. Success on grounded communication, though, can break through barriers so that work teams can develop mental models that will lead to team learning.

Team Learning

A team, say Robbins and Finley (1995), is "people doing something together" (p. 10). It could be a baseball team or a research team or a rescue team. It isn't what a team does that makes it a team; it is a fact that they do it together. A workplace team is more than a work group, i.e. "a number of persons, usually reporting to a common superior and having some face-to-face interaction, who have some degree of interdependence in carrying out tasks for the purpose of achieving organizational goals" (French and Bell, p. 169).

A workplace team is closer to what is called a self-directed work team or SDWT, which can be defined as follows: "A self-directed work team is a natural work group of interdependent employees, who share most, if not all, the roles of a traditional supervisor" (Hitchcock and Willard, 1995, p. 4). Since teams usually have team leaders or managers, sometimes called coaches, the definition used by Katzenbach and Smith seems the most widely applicable: "A team is a small group of people

(typically fewer than twenty) with complementary skills committed to a common purpose and set of specific performance goals. Its members are committed to working with each other to achieve the team's purpose and hold each other fully and jointly accountable for the team's result" (p. 21). The focus is on the human side of organizations. It is believed that individuals who have some control over how their work is done will be more satisfied and perform better. This is called empowerment. Put these empowered individuals together into teams and the results will be extraordinary. French and Bell put it this way:

...work teams are the building blocks of organizations. A second fundamental belief is that teams must manage their culture, processes, systems, and relationships, if they are to be effective. Theory, research, and practice attest to the central role teams play in organizational success (p. 87).

Although teams have to manage their own culture, processes, systems and relationships, and ultimately be accountable for their own results (or lack of results), they can still ask for help. Facilitators can help teams understand how their work relates to goals and to the system as a whole, and what the reasonable contributions and expectations might be for each individual within a team. When people are clear on how they can contribute, they are much more likely to be solid team members and to feel both connected and empowered in their work. It is the inability to ask for help that halts progress in many organizations, according to Senge et al, (1999). Brenneman (1999) suggests that "[w]hen a sufficient clarity of goals, roles, and expectations is established, including making people clearly accountable for the learning and performance of their subordinates, then learning is virtually automatic" (p. 389).

Characteristics of Successful Teams

Interventions are divided into two basic groups: (diagnosis and action) or (process). Team building is one type of process intervention. French and Bell consider teams and work groups to be the "fundamental units of organizations" and the "key leverage points for improving the functioning of the organization" (p. 171). A number of writers have studied teams, looking for the characteristics that make them successful. Larson and LaFasto (1989) looked at high-performance groups as diverse as a championship football team and a heart transplant team and found eight characteristics that are always present. They are listed below:

- A clear, elevating goal
- A results-driven structure
- Competent team members

- Unified commitment
- A collaborative climate
- Standards of excellence
- External support and recognition
- Principled leadership (p. 26).

How does a group become a high-performance team? Lippitt (1982) maintains that groups operate on four levels: organizational expectations, group tasks, group maintenance, and individual needs. Maintenance-level activities include encouraging by showing regard for others, expressing and exploring group feelings, compromising and admitting error, gatekeeping to facilitate the participation of others, and setting standards for evaluating group functioning and production (p. 9).

Lippitt defines teamwork as the way a group is able to solve its problems. Teamwork is demonstrated in groups by: (a) "...the group's ability to examine its process to constantly improve itself as a team," and (b) "the requirement for trust and openness in communication and relationships." The former is characterized by group interaction, interpersonal relations, group goals, and communication. The latter is characterized by a high tolerance for differing opinions and personalities (pp. 207-208).

Team Building and Team Learning

Senge (1990a) considers the team to be a key learning unit in the organization. According to Senge, the definition of team learning is:

...the process of aligning and developing the capacity of a team to create the results its members truly desire. It builds on the discipline of developing shared vision. It also builds on personal mastery, for talented teams are made up of talented individuals (p. 236).

He describes a number of components of team learning. The first is dialogue. Drawing on conversations with physicist, David Bohm, Senge (1990a) identifies three conditions that are necessary for dialogue to occur:

1. All participants must "suspend their assumptions;"
2. all participants must "regard one another as colleagues;"and
3. there must be a facilitator (at least until teams develop these skills), "who holds the context of the dialogue."

Bohm asserts that "hierarchy is antithetical to dialogue, and it is difficult to escape hierarchy in organizations" (pp. 243-248).

Suspending all assumptions is also difficult, but is necessary to reshape thinking about reality. Before a team can learn, it must become a team. In the 1960s, Tuckman identified four stages that teams had to go through to be successful. They are:

- **Forming:** When a group is just learning to deal with one another, a time when minimal work gets accomplished.
- **Storming:** A time of stressful negotiation of the terms under which the team will work together, a trial by fire.
- **Norming:** A time in which roles are accepted, team feeling develops, and information is freely shared.
- **Performing:** When optimal levels are finally realized—in productivity, quality, decision making, allocation of resources, and interpersonal interdependence (p. 390).

Tuckman asserts that no team goes straight from forming to performing. “Struggle and adaptation are critical and difficult, but very necessary parts of team development” (Robbins and Finley, p. 187). To promote group interaction facilitators often use activities or games that require groups to work cooperatively (Ukens, 1997).

Team learning is a team skill that can be learned. Practice is gained through dialogue sessions, learning laboratories, and microworlds (Senge, 1990a, p. 245). Microworlds are computer-based microcosms of reality, in which one learns by experimentation. An example is SimCity, in which one literally builds a city, making all the decisions and learning the consequences of those decisions. Simulation is a tool for learning how things work, and just as important, how things might work differently.

Team Practices

Roberts (1994) declares that team learning is not team building, describing the latter as creating courteous behaviors, improving communication, becoming better able to perform work tasks together, and building strong relationships (p. 355). Just as teams pool their knowledge and then examine it from many different angles, so have the practitioners shared their different perspectives and experiences. One such “strategist” is Juanita Brown, who has coached organizations on innovative ways to involve employees. Looking back on groups with which she has worked, she recounts those experiences where team building turned into team learning. She draws inspiration from the community development movement and from the study of voluntary organizations (Brown and Issacs, 1994).

Brown relates a case study of the San Francisco Foundation, a funder of worthy causes throughout the Bay area, to show how an organization used the delightful problem of an extremely

large bequest to change itself from a traditional organization into an innovative one. Hired as a long-range planning consultant, Brown organized six Commitment to the Community input sessions. What staff members heard was that this foundation didn’t belong to the Distribution Committee or to the staff; it belonged to the community as a kind of community development bank and community members wanted “damm good care” taken of it. They learned that every meeting agenda should be subject to change, that there was too much structure in meetings, and that people can learn from each other. (Sibbert & Brown, 1986).

Brown in her role as a facilitator stresses the importance of dialogue as follows: “Strategic dialogue is built on the operating principle that the stakeholders in any system already have within them the wisdom and creativity to confront even the most difficult challenges.” The “community of inquiry” can extend beyond employees to include unions, customers, suppliers, and other stakeholders, becoming a “dynamic and reinforcing process which helps create and strengthen the “communities of commitment” which Fred Kofman and Peter Senge emphasize lie at the heart of learning organizations capable of leading the way toward a sustainable future” (Bennet and Brown, 1995, p. 167).

Shared Vision

A shared vision begins with the individual, and for the individual, it is held as a vivid mental image. Throughout history there are many examples of people who have had a strong vision. One example is John Brown with his vision of a holy war to free the slaves, which culminated in his attack on Harpers Ferry, Virginia, in 1859.

According to WordNet⁴, a vision is a vivid mental image that is graphic, lifelike and very important to us. It is held within our hearts. The vision is most often a long-term goal, something that can be a leading star for the individual. The shared vision of an organization must be built of the individual visions of its members. What this means for the leader in the learning organization is that the organizational vision must not be created by the leader; rather, the vision must be created through interaction with the individuals in the organization. Only by combining the individual visions and the development of these visions in a common direction can the shared vision be created. The leader's role in creating a shared vision is to share the vision with the employees. This should not be done to force that vision on others but rather to encourage others to share their vision too. Based on these visions, the organization's vision should evolve.

It would be naive to expect that the organization can change overnight from having a vision that is communicated from the top to one where the vision evolves from the visions of all the people in the organization. The organization will have to go through major change for this to happen, and this is where group

facilitation can play an important role. Facilitators can help groups and organizations deal with organizational change or transformation. They can help mold organizational leadership, by mentoring high level managers and CEOs. They can facilitate group processes and discussions leading to a shared vision. Bryson's *Strategic Planning for Public and Nonprofit Organizations* (1995) is an excellent example of the resources facilitators bring to the table when dealing with issues and challenges involved in pursuing a shared organizational vision.

Reflections on shared vision bring up the question of whether each individual in the organization must share the rest of the organization's vision. The answer is no, but the individuals who do not share the vision might not contribute as much to the organization. How can someone start to share the rest of the organization's vision? Senge (1990a) stresses that visions cannot be sold. For a shared vision to develop, members of the organization must enroll in the vision. The difference between selling the vision and enrolling in the vision is that through enrollment the members of the organization choose to participate.

John Brown had a vision of freeing the slaves. Clearly, if the slaves had truly preferred to stay enslaved, John Brown's vision of liberation could not exist. The slaves' sense of shared vision made it possible for them to die by Brown's side, but they did not die for Brown; they died for a shared vision.

Systems Thinking

In the October 17, 1994 issue of Fortune magazine, Brian Dumaine named Peter M. Senge: "Mr. Learning Organization." Why is it that in a field with so many distinguished contributors, Senge was referred to as the "intellectual and spiritual champion" (p. 147)? The reason is probably because Senge injected into this field an original and powerful paradigm called "systems thinking", a paradigm premised upon the primacy of the whole.

Humankind has succeeded over time in conquering the physical world and in developing scientific knowledge by adopting an analytical method to understand problems. This method involves breaking a problem into components, studying each part in isolation, and then drawing conclusions about the whole. According to Kofman and Senge (1995), this sort of linear and mechanistic thinking is becoming increasingly ineffective to address modern problems (p. 18). This is because, today, most important issues are interrelated in ways that defy linear causation.

Alternatively, circular causation—where a variable is both the cause and effect of another—has become the norm, rather than the exception. For example, the state of the economy affects unemployment, which in turn affects the economy. The world

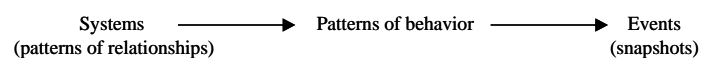
has become increasingly interconnected, and causal feedback loops now dominate the behavior of the important variables in our social and economic systems. Thus, fragmentation is now a distinctive cultural dysfunction of society⁵. In order to understand the source of and the solutions to complex problems, linear and mechanistic thinking must give way to non-linear and organic thinking, more commonly referred to as systems thinking—a way of thinking where the primacy of the whole is acknowledged. Kofman and Senge add:

The defining characteristic of a system is that it cannot be understood as a function of its isolated components. First, the behavior of the system doesn't depend on what each part is doing but on how each part is interacting with the rest ... Second, to understand a system we need to understand how it fits into the larger system of which it is a part ... Third, and most important, what we call the parts need not be taken as primary. In fact, how we define the parts is fundamentally a matter of perspective and purpose, not intrinsic in the nature of the 'real thing' we are looking at (p. 27).

Senge (1990a) identified some learning disabilities associated with the failure to think systemically. He classified them under the following headings:

- I am my position
- The enemy is out there
- The illusion of taking charge
- The fixation on events
- The parable of the boiled frog⁶
- The delusion of learning from experience (pp. 17-23).

Although each of these contains a distinct message, one can illustrate how traditional thinking can undermine real learning by following up on one example: "the fixation on events." According to Senge (1990a), fragmentation has forced people to focus on snapshots to distinguish patterns of behavior over time in order to explain past phenomena or to predict the future.⁷ This is essentially the treatment used in statistical analysis and econometrics, when trying to decipher patterns of relationship (structure). However, this is not how the world really works. The causes of behavior are the interactions between the elements of the system's structure. In diagrammatic form:



It is commonly recognized that the power of statistical models is limited to explaining past behavior, or to predicting future trends *as long as there is no significant change in the pattern of behavior observed in the past*. These models have little to say about changes made in a system until new data can be collected and a new model is constructed. Thus, basing problem solving upon past events is, at best, a reactive effort.

On the other hand, systems modeling is fundamentally different. Once the behavior of a system is understood to be a function of the structure and of the relationships between the elements of the system, the system can be artificially modified and, through simulation, we can observe whether the changes made result in the desired behaviors. Therefore, systems thinking, coupled with modeling, constitutes a generative (rather than adaptive) learning instrument. Thus, according to Senge (1990a):

Generative learning cannot be sustained in an organization if people's thinking is dominated by short-term events. If we focus on events, the best we can ever do is predict an event before it happens so that we can react optimally. *But we cannot learn to create* (p. 22).

The Fifth Discipline, A Metanoia

Systems thinking represents a major leap in the way people are used to thinking. It requires the adoption of a new paradigm. Although some say there is no such thing as a learning organization, one can articulate a view of what it would stand for.⁸ In this sense, a learning organization would be an entity which individuals “would truly like to work within and which can thrive in a world of increasing interdependency and change” (Kofman & Senge, p. 32). According to Senge (1990a), systems thinking is critical to the learning organization, because it represents a new perception of the individual and of one's world:

At the heart of a learning organization is a shift of mind—from seeing ourselves as separate from the world to connected to the world, from seeing problems as caused by someone or something 'out there' to seeing how our own actions create the problems we experience. A learning organization is a place where people are continually discovering how they create their reality and how they can change it (pp. 12-13).

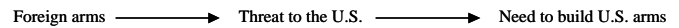
Systems thinking requires learning new skills and mastering new tools. Plus, it requires that not just one, but many organizational members acquire them. Thus, Kofman and Senge refer to learning organizations as “communities of commitment.”

Systems Thinking Skills and Tools

At the foundation of systems thinking is the identification of circles of causality or feedback loops. These loops may be

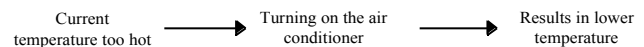
reinforcing or balancing, and they may contain delays. But before we “close” the loops to distinguish among these new terms, let's examine two examples of flawed (or incomplete) thinking that take into account only partial relationships between elements of systems.

The first example is a unilateral perception of the arms race.⁹ The word-and-arrow diagram below illustrates, from the point of view of an American, the logic behind building U.S. armaments:



The diagram can be read as follows: The more foreign arms, the greater the threat to the United States and, thus, the greater the need to build U.S. arms to defend the country from these potential aggressors. This open-loop view suggests that U.S. arms are a defensive response to the threat posed by other nations: “If only the other nations would reduce their armaments, then so would the United States.”

The second example has to do with adjusting the temperature in a room during a hot summer:



For all of us who know about the developments of the Cold War, or who have experienced first-hand the extremely cold temperatures inside movie theaters in mid-July, it is no surprise that these two perceptions tell only part of the story. Yet, if asked to tell the whole story, many of us would draw alternative open-loop diagrams instead of complementing these. Over time, systems thinkers developed conventions to illustrate relationships and to capture the whole story in just one diagram, using feedback loops. Moreover, they found it useful to distinguish between stories such as the ones told above, by identifying the class of systems the story belongs to.

Reinforcing Feedback

The arms race is an example of reinforcing (or positive or amplifying) feedback. Not only do more foreign arms increase U.S. arms, but more U.S. arms also tend to provoke increases in foreign arms. One reinforces the other:

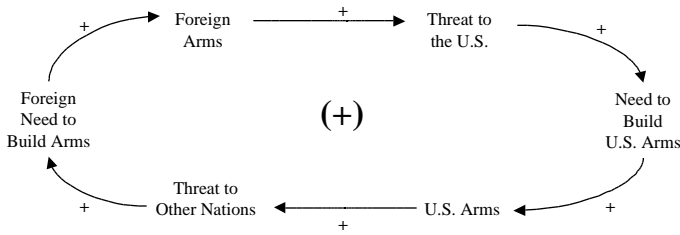


Figure 1: A system's view of the arms race.

Although reinforcing feedback is commonly labeled as positive or amplifying, this does not carry any value judgment. It simply means that a change in one part of the system causes a change in another part of the system, which in turn, amplifies the change in the first. Things do not always have to grow either. For example, a reduction in foreign arms will reduce the threat to Americans, which will probably cause a reduction in U.S. arms, which is likely to lead to further reductions in foreign arms (since U.S. threat to foreign nations is reduced). By itself, reinforcing feedback leads to either exponential growth or decay.

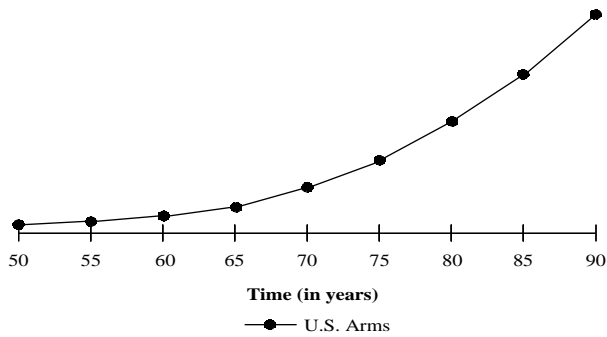


Figure 2: Exponential growth example from arms race.

Balancing Feedback

Air-conditioning a room to bring down its temperature is a classic example of balancing (negative or controlling) feedback:¹⁰

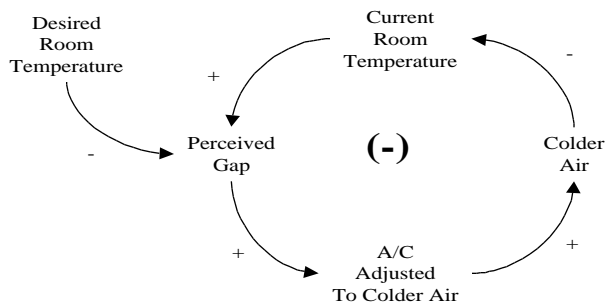


Figure 3: A system's view for setting the air conditioner.

If the perceived gap is positive, i.e., current room temperature is greater than desired room temperature; the air conditioner is adjusted upwards to increase the flow of colder air, thus reducing the gap. This is a balancing system because more adjustment means less of a gap, not more (i.e., the effect of the original change is balanced, as opposed to amplified). The leverage point in this system is the desired room temperature. If it is set too low, as seems to be the case in shopping malls and movie theaters, the resulting room temperature may be too low for the casual wear people tend to use during the summer. By itself, balancing feedback leads to goal-seeking behavior.

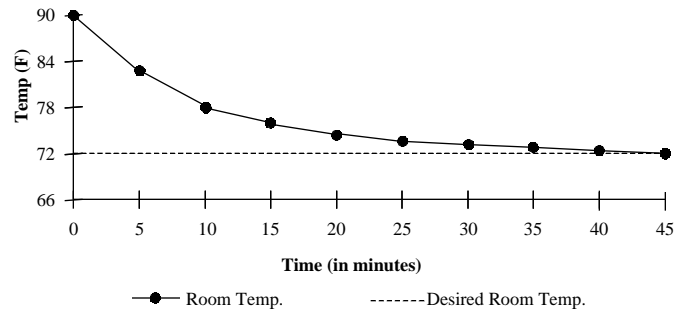


Figure 4: Goal-seeking behavior: example with air conditioner.

Delays

The time dimension is another factor that tricks people who fail to think systemically. For example, because it takes time to build up foreign arms, an American may not perceive that action as resulting from a response to increases in U.S. arms, but rather as an independent aggressor's initiative. Thus, a more accurate representation of the arms race would be:

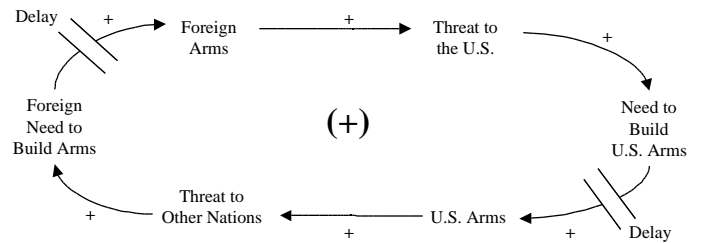


Figure 5: A system's view of the arms race with delays.

Sound systems thinking requires the utilization of a combination of reinforcing and balancing feedback loops and the accurate identification of delays. Complex systems are composed of multiple feedback loops laid upon one another. Often, the behavior of the variables in these systems can only be

understood through simulation. But, before we discuss simulation, let's recognize the existence of certain archetypal structures which are commonly found, and for which behaviors are already somewhat well understood.

System Archetypes

A number of classes of system structures are found commonly in a variety of settings. They have been studied, and their patterns of behavior and leverage points have been identified. Senge discusses them in *The Fifth Discipline* (1990a):

- Balancing process with delay
- Limits to growth
- Shifting the burden
- Eroding goals
- Escalation
- Success to the successful
- Tragedy of the commons
- Fixes that fail
- Growth and underinvestment (pp. 378-390)

The arms race discussed previously could be used as an example of the “escalation” archetype if we told the story using two balancing feedback loops, instead of just one large reinforcing feedback loop:

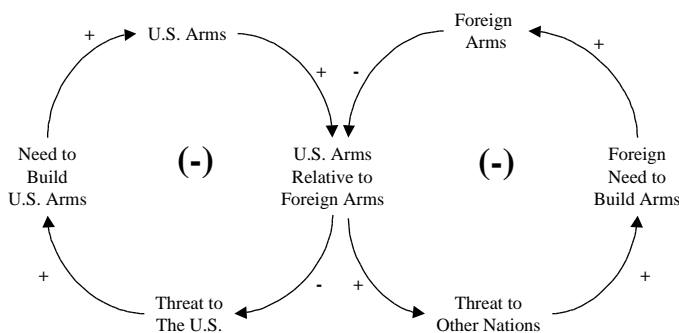


Figure 6: Arms race as an illustration of the “escalation” archetype.

The management principle derived from it is to look for a way for both sides to win since continued competition would lead to great costs and inefficiencies (Senge, 1990a, p. 384).

When system archetypes apply, it becomes easy to focus on high leverage points and to identify and avoid symptomatic solutions to real problems. This is because the analysis that serves as the foundation for the archetypes has already been done. On the other hand, when the systems under study are more complex because they are composed of a combination of structures, it becomes important to build models and to simulate to confirm assumptions about behavior.¹¹

Modeling and Simulation¹²

Model building involves the mathematical formulation of mental models about the interrelationships between important elements in a complex system, for the purpose of examining the behavior of the variables of interest. A great deal of modeling training, and experience is required to build good models, even simple ones. Usually, when modeling work is required, skilled modelers are involved in the analysis to serve as the interface between those who know the system (the clients), and the modeling technology. Rohrbaugh (2000) describes how modeling and simulation have been useful, in decision conferencing and in improving decision making by management groups. He describes a model building approach grounded upon a *team* of facilitators, and the utilization of facilitation *scripts*.¹³

Formal models serve the function of a learning laboratory for managers. In the case described by Rohrbaugh, a flight-simulator (or micro-world) was built as an interface to the system dynamics model. Other examples of computer simulation micro-worlds are People Express, Boom & Bust, and Fish Banks.¹⁴ The objective of these micro-worlds is to help users understand the nature of the system at hand, and to extract lessons about how to improve the conditions of the system, or how to avoid problems inherently associated with the systems because of the nature of their structures.¹⁵

Organizational Learning

If we embrace the idea that systems thinking can improve individual learning, by inducing people to focus on the whole system, and by providing individuals with skills and tools to enable them to derive observable patterns of behavior from the systems they see at work. Then, the next step is to justify why systems thinking is even more important to organizations. Here, the discipline of systems thinking is clearly interrelated with the other disciplines, especially with mental models, shared vision, and team learning.

Patterns of relationships (or systems) are derived from people's mental models—their perceptions about how the relevant parts of a system interact with one another. However, different people have different perceptions about what the relevant parts of any one system are, and how they interact with one another. In order for organizational learning to occur, individuals in the

organization must be willing and prepared to reveal their individual mental models, contrast them to one another, discuss the differences, and come to a unified perception of what that system really is.

This alignment of mental models can be referred to as developing a shared vision. It is possible that mere discussion among individuals may lead them to a shared vision but, because problems are often too complex, usually this exercise requires the aid of some skills and tools developed by systems thinkers. Whether simple or elaborate frameworks are used (from word-and-arrow diagrams to computer simulation), they are essential instruments to developing a shared vision.

When a group of individuals who share a system also share a vision about how the components of that system interact with one another, then team learning becomes possible. First, they learn from one another in the process of sharing their different perspectives. There are many organizational problems that can be solved simply by creating alignment. For example, cooperation is a lesson that is often learned by people who recognize that they belong to different interdependent parts of the same system. Second, people learn together by submitting their shared vision to testing. When complex dynamics exist, a robust shared vision allows organizational members to examine assumptions, search for leverage points, and test different policy alternatives. This level of learning often requires simulation. However, if the problems faced by the organization are among commonly observed patterns that have been previously studied, archetypal solutions may be available to deal with them more quickly and easily.

Conclusion

Throughout this paper we have tried to highlight the importance of the participation of skilled facilitators in exercising each of the disciplines. The facilitators' role, however, will depend upon the needs presented. Group facilitators bring to the tasks inherent capabilities, but the facilitator interested in applying the specific skills and tools offered in the learning organization literature will need to do one of the following. They may want to master the specific tools and skills themselves, or possessing working knowledge, they may want to team up with experts in this field, as in the decision conferencing example provided by Rohrbaugh.

In any case, there remains the challenge to the group facilitator of how to apply these concepts. Senge et al (1994) tried to answer the question, "What do we do on Monday morning?" first with *The Fifth Discipline Fieldbook* (p.5) and now with *The Dance of Change* (1999), which is subtitled *The challenge of sustaining momentum in learning organizations*. With the latter book efforts to provide practical guidance continue. Argyris, the "father of organizational learning," (Fulmer & Keys, p. 21) believes that researchers must be of help to practitioners, that all

social science research must be actionable. In the second edition of his famous book, *On Organizational Learning*, (p. 415-431), Argyris presents his "maps for action."

The goal of the authors in this paper was not to identify all of the important sources for mastering skills and tools related to the learning organization framework. But, rather to highlight the importance of the learning organization framework that brings together disciplines often treated separately. The concept of the learning organization arises out of ideas long held by leaders in group facilitation, organization development, systems thinking, and system dynamics. In describing the learning organization and its principles, this paper posits that facilitators are ready to take on the challenge of transforming traditional organizations into learning organizations. This becomes especially clear in the writings of Webne-Behrman (1998), who suggests that the core values of facilitation stem from the belief that people are capable of solving problems they encounter as long as they are empowered. Learning organizations hold the same beliefs and provide employees with the tools to actually solve problems to the best of their abilities and for the best of the whole organization.

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Notes

¹ This is the earliest reference found to organizational learning

² Because Senge is so influential in the field of learning organizations, his book *The Fifth Discipline* is cited here frequently. All references to it are indicated in parentheses as his 1990a work.

³ Rational behavior limits alternatives explored, so “optimizing is replaced by satisficing” according to March & Simon, p.169.

⁴ Online Lexical Database by researchers at Princeton, based on the *Oxford English Dictionary* (1928).

⁵ Kofman and Senge argue that fragmentation is a cultural dysfunction of society because it is a byproduct of its past success (p. 17).

⁶ If a frog is placed in a pot of boiling water, it will jump out. But if it is put in warm water that is gradually heated, the frog will just get groggy and eventually boiled. This is apparently a myth debunked some time ago by Fast Company’s consulting Debunking Unit. See <http://www.fastcompany.com/online/01/frog.html>.

⁷ One may argue that the excessive focus on snapshots (events) has obscured attention to the distinction of patterns of behavior over time, i.e., that the snapshots are being treated as discrete and disconnected rather than elements in a time series. In this case, in order to detect the pattern, one has to abandon (or overcome) the “event-itis” and take a longer look. System dynamicists propose, as one of the first exercises in problem elicitation, the drawing of “reference modes” (patterns of behavior over time) for the key “problem” variables (Saeed, 1998). They usually argue for a longer time frame to compensate for the client’s tendency to focus on the recent past or future.

⁸ Kofman and Senge argue that “organizational learning” has become the latest buzzword in management, and that there is no such thing as a “learning organization” (p.31). Instead, the term

represents a category created in language, and something of a vision for creating a new type of organization (p.32).

⁹ The arms race example was extracted from Senge (1990a, pp. 69-73).

¹⁰ The diagram and the graph presented in the text (Figures 3 and 4) were assembled by the authors. However, the thermostat case can be traced back to at least 1948 (Wiener, pp. 96-97). It can also be found in the book that lay the foundation to the field known today as System Dynamics (Forrester, p. 15) as well as a recent text by Sterman (2000, pp. 785-786).

¹¹ Archetypes are condensed versions of systems analyses. The fact that they are condensed and widely applicable presents both a virtue and a potential vice. The risk presented is that the less experienced systems thinker may unfittingly apply an archetype to a particular case, or wrongly interpret it. A more severe problem may occur, if the archetypes are introduced in ways that suggest to people that conclusions about complex systems can be drawn solely and directly from applying archetypes, without actual modeling and simulation. Sterman (1994) presents a strong argument that only through simulation can we learn “in and about complex systems.” Moreover, some experienced modelers argue that model formulation and simulation are always needed, because systems thinking alone (i.e., “mental stimulation”) cannot correctly link structure to behavior, even in reasonably simple systems (Peterson & Eberlein, 1994).

¹² Systems modeling and simulation are the subject of System Dynamics, founded by Jay W. Forrester in the early 1960s. For more information see Richardson (1996). For a discussion binding system dynamics and systems thinking, see the special issue edited by Richardson, Wolstenholme, and Morecroft.

¹³ See also Richardson and Andersen (1995), and Andersen and Richardson (1997).

¹⁴ Each of these micro-worlds captures the dynamics of different systems, with different behaviors, leverage points, principles, and lessons. For example, the People Express flight-simulator is based upon a case of “limits to growth.” The Boom & Bust game, on the other hand, deals with the oscillatory dynamics of the business cycle. Fish Banks is modeled after the “tragedy of the commons” problem. For more information, see <http://web.mit.edu/jsterman/www/> and <http://www.unh.edu/ipssr/Lab/FishBank.html>.

¹⁵ There is a commonly used micro-world that is not computer based called The Beer Distribution Game. This board game is a role-playing simulation of a supply chain, and it illustrates an oscillatory system (Sterman, 2000, p. 684). It is available from

the System Dynamics Society. For more information, see www.systemdynamics.org.

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