Managerial Learning Laboratories: An Action Research Project for Group Learning

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Abstract

The purpose of this paper is two fold. The first is to structure the thinking and theories about managerial learning laboratories as held by the MIT Organizational Learning Center. The second purpose is to go beyond the utilization of management flight simulators and redefine those theories based on the experience of implementing five managerial learning laboratories with a group of sales professionals. The group learning literature is used to frame some of the results from the case study and to generate new models aimed at increasing the effectiveness of managerial learning laboratories as group learning settings.

The paper can be viewed as an iteration of action-research, where active participation of the researcher in the problem situation is followed by reflection and learning from the process. The lessons are then used to update the theories that gave origin to the action.

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1. INTRODUCTION

As organizational systems become more complex an increasing number of managerial decisions are being tackled by groups. Indeed, most significant tasks in organizations are undertaken by groups as they are believed to provide better results and more innovative solutions than individuals (Hackman and Morris, 1975). In fields like sports and the performing arts, groups develop capabilities through continually moving between a world of practice and a world of performance (Senge, 1990). However, with the exception of some physical team-building exercises, managerial groups typically have no opportunity to work together and to develop skills at the group level in a safe 'practice' environment.

One application for the management flight simulators built by system dynamicists (Diehl, 1992; Kreutzer, Gould and Kreutzer, 1993; Sterman, 1988) has been the creation of practice settings to enhance the learning of individuals and managerial teams (Bakken, Gould and Kim, 1992; Graham and Senge, 1990; Kim, 1989). In these settings, it is argued (Senge, 1990), groups of managers will be able to experiment with their decisions and analyze the implications of those decisions in an environment where the cost of making mistakes has been all but eliminated. Through controlled experimentation the group members will be able to develop a shared understanding of the task at hand and the skills necessary to work as a group. The name of managerial learning laboratories (MLL) has been adopted for these settings because they permit the experimental testing of underlying theories and managerial policies and strategies (Senge, 1991). If MLL's are effective, groups[1] will not only learn how to deal with a particular business issue but will also become better at learning. It is worth clarifying that by managerial learning laboratories is meant a group setting for reflection and practice that might be aided by computer-based simulators. This paper does not address settings where knowledge is elicited from a group for model construction (Lane, 1992; Richardson, Andersen et al., 1992; Vennix and Gubbels, 1992).

From the above description, it is clear that the level of analysis to assess the impact of MLL's is at the group level, and that more than individual interactions with the management flight simulator are necessary to create group learning. It is surprising, therefore, to find that the development of practice fields and flight simulators has been based on individual learning models, and that the assessment of their effectiveness has been done at the individual level (Bakken, Gould and Kim, 1992; Kim, 1989; Langley, 1993). With the exception of Action Science principles (Isaacs and Senge, 1992), no other specific guidelines have been given for the design of group learning settings.
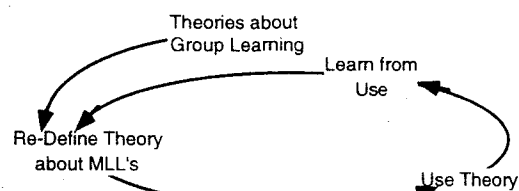

Figure 1

The purpose of this paper is twofold. The first is to structure the thinking and theories about MLL's as held by the MIT Organizational Learning Center (OLC). The second purpose is to go beyond the utilization of management flight simulators and update and redefine those theories based on the experience of implementing five MLL's. The group learning literature is used to inform and frame some of the results from the case study and to generate new models aimed at increasing the effectiveness of MLL's as group learning settings. The paper can be viewed as an iteration of action-research (Foster, 1972), where active participation of the researcher in the problem situation is followed by reflection and learning from the process (Figure 1). The lessons are then used to update the theories that gave origin to the action (Argyris, Putnam and Smith, 1985). Further validation of some of the lessons derived through this process could be achieved through ethnographic studies or interviews with the participants.

To set the context for this discussion, the next section describes the premises of a learning laboratory, the process envisioned for articulation during the MLL session, and the results expected from the process. Section three presents a case study where some of these principles were tested in a series of

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[1] The label 'group' will be used throughout this paper to signify that the participants of a managerial learning laboratory might or might not be part of a management team with a specific task.

five MLL's held over a period of ten months with a group of sales professionals. Section four explains some of the unexpected results obtained in the case study through a model for group learning found in the literature. The paper concludes with thoughts on directions for future research on the design of group learning settings.

2. MANAGERIAL LEARNING LABORATORIES

MLL's vary from project to project in the Organizational Learning Center. There is, however, a set of core assumptions and principles that remain consistent throughout applications of the process. This section captures those common elements of the theory of MLL's.

Premises. The main premise of the MLL is that the best way to learn is through experience and the continuous confrontation of theories with the real world. As participants of a MLL observe the consequences of their actions, they are capable of creating new explanations on how the world around them functions. Life is an ongoing process of action and reflection; thus we are continuously learning, and our images of the world are ever-changing and volatile.

Lewin's model of experiential learning (Kolb, 1984) captures the set of activities that need to be performed to achieve learning under the above premises. The same model, with a different set of labels (Kofman, 1992), has been embraced by the OLC researchers as their main learning theory. Following is a brief description of these activities as adopted by the OLC:

> **Observation.** (Concrete Experience). Perception of the 'facts' about current conditions, views of knowledgeable actors in the system, and related data.
> **Assessment.** (Reflection on Observations). Interpretation of these facts. What sense do we make of them? What are our guiding hypotheses in diagnosing the present situation and constructing strategies for improvement?
> **Design.** (Forming Abstract Concepts). Generation of change strategies based on the existing hypotheses about the present situation and identification of data to be gathered to assess the consequences of changes to be implemented. What are our assumptions underlying these proposals? How would we propose they could be implemented?
> **Implementation.** (Testing Concepts). Making the proposed changes. This also involves establishing appropriate data gathering processes to aid subsequent observation and assessment, leading to further improvement in design.

Not included in these descriptions is the updating of the knowledge base (memory or mental models) that occurs during the assessment phase—where the recently observed data is interpreted—and the design phase—where new hypotheses or explanations to make sense of the data are being constructed.

The second premise on which MLL's rest is that collective learning presupposes open communication and a protocol for conversations that allows for the continuous questioning and testing of assumptions and mental models. The driving principle is to encourage inquiry instead of advocacy (Argyris, 1985) and to encourage participants to explore different interpretations of the situation by engaging in a 'double-loop learning' mode that enables the updating of the assumptions held by each participant (Argyris and Schön, 1978). Specific 'communication tools' are thought to be useful for this process–e.g., ladder of abstraction (Hayakawa and Hayakawa, 1990), left-hand column cases (Argyris, Putnam and Smith, 1985), KJ diagrams (Kawakita, 1982), dialog (Isaacs, 1993). Some guidance on how to use this tools in a Learning Lab setting have been articulated by Isaacs and Senge (1992).

Process. In many ways the MLL approach is similar to the Action-Learning (Raetlin and LeBien, 1993) and Action-Reflection Learning (Marsick, Cederholm et al., 1992) models of the training literature. In all three approaches, a set of managers work together on a problematic issue and, through the problem solving process, generate new learning for the participants. MLL's differ from the other two approaches in that they explicitly provide a
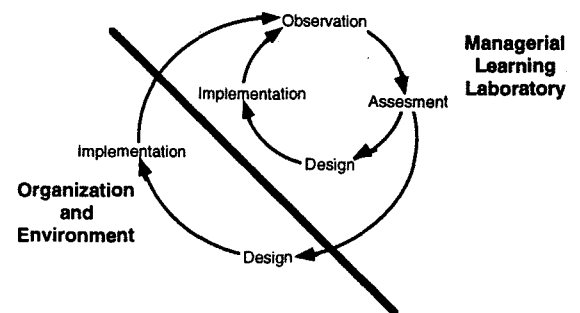

Figure 2

'virtual world' where experimentation is encouraged, and the response of the system to a particular set of decisions can be explored immediately by compressing the response time and eliminating confounding factors found in the real world. The role played by this 'virtual world' is that of 'short circuiting' the feedback from the complex-and-slow-to-react environment (Figure 2) thus allowing to explore the implications of some decisions.

> "We see the Lab as a place where managers and staff gather to generate clearer shared
> understandings, build collaborative capabilities for reflection, and generate imaginative,
> well thought-out changes in management structures and practices. ... Particular Learning
> Lab sessions should be designed around the O-A-D-I cycle. ... This suggests an overall
> image of a 'wheel within a wheel': the learning cycle playing out within the Learning
> Laboratory, which in turn is part of the larger 'macro' learning cycle of implementing and
> studying actual organization changes." (Oliva and Senge, 1993, p. 2).

Experience with this learning model reveals that the process can break down in any of the phases of the cycle as predicted by Hedberg (1981). These breakdowns can impede the net effectiveness of the group's learning. The design strategy for the MLL has been to provide tools and methods to help the group avoid each of those difficulties. Table 1 summarizes the main difficulties that a group might have in each stage of the learning cycle and the tools that are being used to avoid them.

Phase of Learning Cycle	Potential difficulties (Breakdowns in the learning process)	Tools to overcome difficulties[2]
Observation	- Biased perception - Jumping to conclusions - Unfounded judgments	- Ladder of Inference - Left hand Column - Awareness of Mental Models - Affinity Diagrams (KJ's)
Assessment	- Bounded rationality - Limited capability to understand dynamic issues	- Causal Loop Diagrams - Systems Archetypes - SD models - Management Flight Simulators
Design	- Wrong Intervention - Unintended consequences of interventions - No possibility to observe the impact of interventions	- Leverage points in Archetypes - Analysis of Intervention - SD models - Management Flight Simulators
Implementation	- Lack of 'buy in' from different sectors in the company - Company politics	- Shared Vision

Table 1

Overall, the learning laboratory can be conceptualized as a setting that creates the following conditions for a group: *Reflective setting:* an environment for reflection, theory building and the design of desirable futures and experiments to test their implementation. *Microcosm of reality:* a place with enough technical and social similitude to the performance field where experiments can be conducted in a safe environment and their implications observed and assessed.

Results. The expected outcome of a MLL's process is for it to become an 'innovation in infrastructure' towards the learning organization (Senge, Roberts et al., Forthcoming), i.e., for the group to adopt the process as a regular way of doing business. The practice field metaphor becomes fully implemented and groups regularly take time off-line to reflect on and solve their problems. It is

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[2] For a full description of these tools and methods see Senge (1990) and Oliva (1993).

expected that participants in MLL's will continuously reshape the way they perceive their problems and the way they work, through this process of reflection and practice.

In all the implementations that the OLC has done to date, the tools and design principles for MLL's have been directed towards overcoming difficulties in the individual learning process. A clear understanding of individual learning is necessary for any attempt towards team learning, but a group of individuals learning together does not ensure group learning. Although there are clear expectations of what is to happen as an outcome of the MLL process, it is still necessary to clarify what is meant by group learning.

There is not much in the literature about group or team learning per se, and little agreement when it comes to a definition of collective, group or organizational, learning. While some organizational researchers consider the acquisition of knowledge as learning (Duncan and Weiss, 1979; Fiol and Lyles, 1985), others postulate that learning has occurred only if there has been some change in behavior (Argyris and Schön, 1978; Levitt and March, 1988). Some authors have recognized that knowledge acquisition might not always modify behavior, and have opted for a definition of learning in terms of behavior *potentiality* (Huber, 1991).

The literature also argues that individuals, not groups or organizations, are the only entities who can learn and belong to a system of learning which exchanges what is learned (Duncan and Weiss, 1979; James, Joyce and Slocum, 1988). Regardless if the definition of learning is taken to be a change of insight or a change of behavior, all the organizational learning theories argue that it is a change in the base of collective cognitive structures that causes learning at the organizational level. It is the common cognitive structures what influence member's understanding and shared meaning. Kim (1993) has developed a framework in which individual learning is linked to organizational learning through the updating and sharing of individual mental models. In his framework, mental models consist of behavioral skills, 'know-how,' and cognitive structures, 'know-why.' He argues that the output of learning is shared mental models which create new possibilities for action.

3. THE CORP A PILOT PROJECT
This section describes a specific application of the MLL's principles stated above in the context of a Pilot Project currently pursued by the OLC and Corp A–a pseudonym for a partner company of the OLC. Results obtained to date, reflections, and potential explanations (new hypotheses for the MLL model) for those results are also presented. This account is that of an active participant, as I played the roles of Project Manager and Facilitator for the duration of the Learning Laboratories.

Context. To design and manage the Pilot Project, a design team was assembled with membership from Corp A and the OLC. The stated goal for the Pilot Project is to develop new ways to "sell and market to the 'World' accounts and make money doing it." 'World' accounts are the large corporate customers of Corp A and they represent more than 25% of its total revenue. Corp A has a special group of sales professionals to address the requirements that 'World' accounts have beyond the standard service that Corp A provides.

After a four-month period of data collection and synthesis concerning the problem situation (Phase I of the Pilot Project), the design team decided to do a series of MLL's with a group of sales professionals responsible for handling the accounts. This was the first time, in an OLC project, that the same group would go through a series of different MLL's. The traditional approach is for different people in the organization to experience the same learning laboratory. The purpose of the MLL's was to provide the tools, language and environment for this group to achieve their goal of creating a 'new way to sell and market to 'World' accounts.' An expected output of the series of MLL's was a set of initiatives—collaboratively designed and tested in the MLL settings and empirically validated with some of the 'World' accounts—that would address the stated issue. At the end of the five MLL the design team hoped to have a set of principles to then be rolled out to the rest of the organization through a 'standard' learning laboratory. Simultaneously, people participating in the process were to gain expertise and confidence in the use of the disciplines for organizational learning, thus developing the organization's ability to support the roll-out process.

A deliberate decision was made by the design team to emphasize training in the first two MLL's to help the participants become familiar with the tools and gain confidence in applying them. It was expected that from MLL3 onward the group would take the initiative and lead the process of inquiry.

Because of this and the uncertainty of the evolution of the group, the design of the latter MLL's was not specified when we started the process.

The MLL's were designed and facilitated by the Corp A Sales Training organization in collaboration with the OLC, and the participating sales professionals came from three geographical sales teams from different regions of the US. Although the option to drop out of the sessions was available to the participants, the original commitment to the process came from the managers of each of the sales teams volunteering their group. The fact that nobody dropped out raises suspicion about the pressures that the sales professionals felt to participate. The resulting group was composed of 21 sales professionals and the three managers—one sales professional joined after MLL1 and another one after MLL3. Typically there was a nine week interval between learning laboratories. They were all two and a half days long, and, with the exception of MLL5, they were held outside Corp A's premises. Prior to the first MLL the data gathered in Phase I was made available to the participants, and they were asked by their managers to read *The Fifth Discipline* (Senge, 1990).

The MLL Sessions. To provide some background before describing the outcomes of the five learning laboratories, this section summarizes the main activities performed during each of the MLL sessions and a brief description of the group's decisions and insights at each stage.

MLL1. The context and expectations of the project were presented to the group. A synthesis of the problem situation was attempted based on the data gathered in Phase I using the KJ process (Kawakita, 1982). Some 'communication tools' (see section two) and causal loop diagrams were presented to the group; the tools were immediately put into practice as part of the learning lab setting. The last morning of the session was dedicated to experimenting with the Service Quality/Service Capacity management flight simulator (Senge and Oliva, 1993) as a way to practice conceptualization with causal loop diagrams and evaluate the group's response to the dynamic hypothesis in the simulator.

The group felt anxious as the facilitators revealed expectations of project ownership by the group—of special concern to the participants was the issue of 'sanctioning' of the project by senior management. After the KJ process the group set itself the task of gathering customers' perspectives on the identified issues before the next MLL. Although some initial evidence for the match between the Service Quality/Service Capacity management flight simulator's dynamic hypothesis and Corp A's situation had been generated, the issues addressed by the simulator seemed to be a small subset of the *problematique* identified through the KJ process. The session concluded on a high note, and the group left apparently motivated.

MLL2. The participants described instances from the previous two months when they had used some of the tools–communication tools and causal loop diagrams–in their interactions with customers or other Corp A personnel (war stories). A KJ analysis was done with all the data gathered from the customers between sessions. The 'value added service game'[3] was played by the participants to explore the commitments required in customer/supplier relationships. The 'limits to growth' and 'fixes that fail' archetypes (Senge, 1990) were introduced to explore some of the dynamics experienced in the game.

According to the original proposal, the design of the next session was left to the participants. The three team managers, in conjunction with the facilitators, took that responsibility and opted for a session where the main focus would be the implementation stage. They wanted to 'do' something and move the project forward. They also asked for the opportunity to share more 'war stories' since they felt that the group had learned through that process.

MLL3. The first morning of the learning laboratory was reserved for the presentation of 'war stories.' A framework to design the implementation of changes was introduced to the group as a tool to facilitate their experiments with customers or internal suppliers. In smaller groups, the participants worked on the design of a change implementation they were interested in.

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[3] A board game under development at the OLC.

This MLL did not have the energy of the two previous sessions. Part of it was because the sales professionals realized that they were expected to try implementing some of their designs. Some of them also complained that the framework for designing implementations was too theoretical. The group was given the assignment of starting to work on their implementations in the period between MLL's.

MLL4. Several sub-groups presented their progress in implementing their initiatives within Corp A. The elements of personal mastery (Senge, 1990) and dialog (Isaacs, 1993) were introduced to the group and put into practice during the session. The group spent some time creating a 'shared vision' (Senge, 1990) of how they wanted to have an impact on the 'World' accounts sales organization whit the pilot project.

One of the concerns expressed during the first hours of this learning laboratory was the lack of explicit support and sanction from senior management of the kinds of initiatives they were attempting to implement. By the end of the session, it seemed that most of those concerns had disappeared and that the group had taken ownership of the change process. When questioned about this change, some participants stated that they had 'finally seen where all this was heading.'

MLL5. 'War stories' were shared again in an attempt to detect some patterns of application of the tools in the sales professionals work. Five types of initiatives that the group wanted to take forward as a roll-out process were identified; the initiatives were planned in detail by small subgroups. The Senior VP of Sales came to the presentations of the detailed plans, making explicit his support for these kinds of initiatives.

At the end of this MLL the group expressed interest in continuing to meet to share experiences and learning. Subsequently, a sixth MLL was scheduled.

Results. Action-research, by definition, requires the researcher to spend time intervening in the real world of action, and time reflecting on the intervention to contribute to research. Since the real world is a constantly changing situation, whether the researcher is available to record that change or not, any attempt to give an account of the *intervention* and the *reflection* processes is doomed to be out-of-date. The best the action-researcher can hope for is a 'frozen picture' of an evolving situation at a particular time. Thus, the results, and lessons, presented here can only be understood as a temporary product, and can only be used to drive the subsequent iteration around the action-research cycle; they should not be considered definite answers to the issues addressed. This caveat holds particularly true in this case since the process described above was completed two months before this account was written, and its implications are still unfolding.

The results reported here are only the 'surprising' results, i.e., things that we had not anticipated in the design of the intervention. It is from these unexpected results that errors are detected, thereby creating the opportunity to update models and learn (Argyris and Schön, 1978).

Storytelling as part of the learning. Since sales professionals face similar situations and challenges with their customers and there is no formal mechanism for them to share information—even within a sales team—it should not be surprising that the team decided to formalize the process of sharing 'war stories.' What was surprising, at least to me, was the weight the participants gave to this activity, and the informal sharing that went on after-hours, when asked about the benefits of the MLL's.

Empowerment. The sales professionals reported that, as a result of the MLL's, they were trying approaches never attempted before in their dealings with customers and internal suppliers. They refer to this as a 'discovery of their empowerment.' It appears that through the MLL process they realized that they were not trying things because they had assumed they were not permitted. Apparently 'war stories' had a role to play in this discovery as the participants learned of what was going on in different parts of the country and tried to implement similar strategies—verbal evidence of this was presented during the learning laboratories. Another possibility is that as they held each other accountable for well-validated arguments during the conversations in the learning laboratory, they realized that many of their attributions about restrictions had no foundations.

Emphasis on communications skills. The group as a whole decided to focus on the 'communication tools' despite the facilitators' bias towards focusing on system dynamics tools and the use of

management flight simulators. Two potential explanations come to mind. First, it could be that the everyday work of sales professionals is based on communication skills and that individuals have much to gain by improving those abilities. Second, sales professionals could be getting more benefits for their efforts in applying these relatively simple tools instead of the more challenging systems thinking.

No active experimentation. Despite the clear expectations that the design team had and the different opportunities that were created for sub-teams to try innovative approaches with customers, this never happened. I have identified several potential inhibitors for this. First, coming from different areas in the country and dealing with different kinds of customers, the group as a whole did not appear to share a single issue that could align all of their interests. Second, the group did not exist as an organizational team—i.e., they did not share the responsibility for a particular task or decision within the normal operation of Corp A. Finally, the design team could not guarantee recognition and support from senior management for the initiatives taken under this project. As a result, whatever the participants decided to do, was to be done on top of their current obligations and within their existing budgets.

Individuals and organizational groups are experimenting. Now, after MLL5, some individuals and organizational groups are going forward with initiatives that use the tools and lessons developed. Among the most significant are an initiative to start a MLL process with a group from Corp A and a customer organization and another initiative that is bringing together all the Corp A sales personnel involved in serving the different locations of a particular customer. Apparently now that responsibilities are clear, and each sales professional is accountable for the service level to his/her customer, the initiatives are starting to unfold.

Several MLL's as the preferred strategy for roll-out. Most of the participants agreed that it was necessary to go through a series of MLL's to grasp the potential benefits of using the tools and the 'new way of thinking.' This strategy has been adopted as the way to disseminate the learning lab concepts and tools through the 'World' accounts sales organization. Two of the original sales teams have taken on the task of leading other groups through this process.

The unexpected results described above, triggered a search through the organizational literature in an attempt to find a framework to guide thinking about them. The following sections describe some findings from this process.

4. REFLECTIONS ON THE RESULTS

Although the work of the sales professionals in Corp A is individual—each sales professional is responsible for one or two 'World' accounts, and the sales teams are formed only for control purposes—Brown and Duguid's (1991) model of communities of practitioners helps to explain much of what happened as a result of the five learning laboratories. Brown and Duguid base their model of learning on 'legitimate peripheral participation' (Lave and Wenger, 1991). "Learning, from the viewpoint of LPP, involves becoming an 'insider' ... [to] acquire that particular community's subjective viewpoint and learn to speak its language" (Brown and Duguid, 1991, p. 48). They distinguish canonical workgroups, which are bounded and sanctioned by the organization (e.g., task forces or trainees), from emerging communities of practitioners that are normally not recognized by the organization. Given this distinction, they argue that practice and learning need to be understood in terms of these emerging communities since people tend to work and learn collaboratively.

The group's preference for 'war stories,' and the impact they had on the 'discovery of their empowerment,' seem to signal that the participants cared more for the creation of the emerging community than the actual performance of a task that was outside their control and for which they were not rewarded. Furthermore, the fact that two sales teams decided to lead other sales groups through this process, an engagement beyond the expectations of the facilitators and not rewarded by Corp A, could be interpreted as an effort to enlarge that community of practitioners and continue to have exposure to the same community[4]. From B&D's canonical/non-canonical perspective, the group

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[4] The fact that some participants of the MLL's started to use an e-mail distribution list, especially set for the group, to address questions to other sales professionals seems to provide further evidence for this interpretation.

of sales professionals could be viewed as an emerging community, and it took advantage of th situation to formalize some of its sharing practices.

The development of implementation initiatives outside the core group and at the end of the five learning laboratories could also be explained by the realization that the group was a community of practitioners and never perceived itself as a sanctioned group. The obstacles described in section three, however, appear to have played a more significant role in explaining the lack of engagement towards implementation of changes.

These findings suggest that it would be useful to create MLL's addressing the needs of different types of audiences. One type of audience would be a functional team or task force where the group has a well-defined goal and a repetitive set of issues to deal with. For that audience learning laboratories could follow the experimental approach to learning. Alternatively, communities of practitioners, i.e., groups of people with the same set of responsibilities but not a functional objective, appear to benefit more from the opportunity to share experiences.

The group literature, however, did not offer any explanation for the group's focus on communication skills. This observed behavior is particularly puzzling, especially since similar results have been reported in other projects with managerial learning laboratories (Seville, 1994). Although some convergence in the mental models shared by the group is expected through the use of communication tools, the exclusive focus on these skills involves the risk of groups improving the performance of current tasks without ever challenging their existing mental models with the use of system dynamics tools. This area needs further exploration as it might be an inherent risk of managerial learning laboratories.

5. OTHER POSSIBILITIES FOR MANAGERIAL LEARNING LABORATORIES

The search for group learning models also provided some additional insights that could be used to improve the original design of managerial learning laboratories. These insights are briefly presented as alternative improvements for the theory behind MLL's.

If this goal of MLL's is achieved, i.e., to become part of the infrastructure of the learning organization (Senge, Roberts et al., Forthcoming), one can imagine 'off-line' sessions where managers get together to explore a problem situation and experiment with their theories as part of the *normal operating mode* of a learning organization. This would imply that the managerial group ultimately becomes a self-sustained group, with ever-increasing skills, and always open to learning about different situations, i.e., a continuous learning group. According to Kasl, Dechant and Marsick (1993), one of the prerequisites for a group to learn continuously is for it to frame its own identity as a learning group. Perhaps the first step in the facilitation of MLL's should be to encourage the group to spend some time exploring the implications of becoming a learning group and developing their own awareness of it.

Another possibility that emerges from observing learning models is the notion of dialectics. Some of the communication tools within the MLL's are set up to defuse conflict and 'tap the collective intelligence of groups' through dialog (Isaacs, 1993, p. 28). If we accept that collective learning is the continuous updating of shared mental models, then perhaps the traditional Hegelian structure of thesis-antithesis-high level synthesis presents a better strategy to validate and update mental models. It makes sense to use the group process to have a true dialectical debate–never possible by an individual–where each idea is presented with what Churchman (1971) calls 'its deadliest enemy.' Under this perspective a learning group will be one that manages to sustain the 'heroic mood' required to continuously defend the status quo while attacking the status quo with radical paradigms (Churchman, 1971).

It should be noted that most of the proposed explorations for MLL have been oriented towards the manipulation of group process (Hackman and Morris, 1975) with no explicit consideration of group or organizational inputs, or group tasks. An evaluation of those elements identified by Gladstein (1984) as significant to group performance—group composition, group structure, resources available and organizational structure—would surely yield some insights towards the effectiveness of MLL's as group learning environments.

Finally, a word of caution. The emerging lessons in this paper address the challenge of making the managerial learning laboratory a more effective group learning environment. I would argue this is the right level to explore the process of sharing mental models. Because of the increasing role that groups are having in decision and policy making, individuals have lost power to influence or shape organizations (Goodman, Ravlin and Schminke, 1987). Before an organization can formalize a standard operating procedure—Kim's operationalization of organizational 'know-how'—a group of people within the organization, not an individual, has to have adopted and supported the mental model that leads to that SOP. Organizational level learning can only happen if there is group learning. There is, however, a set of issues that need to be addressed if one is to use group learning as leverage towards organizational learning. Namely, what kind of impact do learning groups have in the overall design of a learning organization? How do they become institutionalized? How does the organization react to them? The answer to those questions will ultimately determine the effectiveness of the managerial learning laboratory.

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