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Come Be A Leader in A Self-Directed Work Team: The Dynamics of the Transition from Being A Supervisor To A Team Leader[1]

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ABSTRACT

Although self-directed work teams (SDWT) have become popular since the mid-eighties, little modeling has been done on the dynamics of leadership in the formation, operation, and the sustainability of these groups. This paper describes preliminary efforts to model the dynamic problems of moving from a supervisor in a "command and control" environment to becoming a successful team leader in a supportive environment. In addition to modeling the leader's effect on the work or the service being done, this model portrays such subjective processes as role ambiguity, fear of the unknown, trust in and commitment to the team, and the leader's willingness to let go of traditional control functions. The model generates several qualitative patterns. It helps us to explore under what conditions newly formulated teams may be abandoned prematurely, and under what conditions supervisors can move to new productive roles when, at later stages, some important social loop processes dominate and performance grows.

Key Words: Self-directed teams, leadership, trust, learning, commitment, productivity, vision.

INTRODUCTION

Self-directed work teams (SDWT) have been relatively popular for over twenty years. When working well, these teams become empowered to take on such classical roles as scheduling the work, hiring, training, rewarding team members, ordering equipment, and spending time learning about customer or client needs. According to the literature, not all SDWT show high productivity and high performance (Buchholz and Roth, 1987, Hitchcock and Willard, 1995, Fisher, 2000). Perhaps the majority of SDWT teams within organizations never reach the high productivity originally hoped for when formed.

Katzenbach and Smith (1993) have developed a taxonomy of teams that spans a wide range of organizational arrangements, from a collection of workers not dependent upon each other, to "real" teams which recognize interdependencies among members, and ending with what they call "extra-ordinary teams." These extra-ordinary, high-performing teams are rare, and should be an inspiration to less productive teams. Katzenbach and Smith (1993) feel that high-performance teams cannot be created on purpose or by design. We find merit in that position, but hold that *conditions can be created to enhance the likelihood that high performance teams will emerge*. Quality team leadership is one key condition essential to high performance.

In this paper, we focus on relationships that allow us to understand how to help organizations deal with problems of team leadership. We utilize a system dynamics model to portray these relationships and focus on the underlying dynamics of team leadership. Indeed, team leadership is one of the key conditions associated with high performance. Eventually, teams could be designed to emphasize shared leadership and have a high probability of generating superb, sustained performance.

This paper treats leadership in the overall team dynamics model. The model's time horizon is chosen to be about five or six years. It includes a set of the continuous processes: (1) team preparation and formation, (2) initial functioning, (3) emergence of quality performance and subsequent high performance, and (4) eventual stability. The model introduces social and psychological variables mentioned in the team leadership literature (e.g., see Rolls, 1995), such as commitment to work in self-directed teams and trust in team members, elements embodied in the social capital literature. In addition, the model stresses elements of human capital, -- processes of learning, building skills, and gaining experience in team guidance and coaching.

MAJOR PROCESSES AND VARIABLES

Dealing with the performance gap

Organizations move to a self-directed team structure for a variety of reasons. One is that, as the world economy expands, old standards of performance must be raised to meet competition. The need to raise performance standards pressures the organization to deal with the difference between the actual performance level and the new level at which the organization wants to be to remain competitive - - the performance gap.

Within a command and control environment, the supervisor may attempt to raise the level of performance in various ways, such as through changing work assignments and work flow, persuasion, incentive programs, more training, and perhaps, as a last resort, through threat or cajoling. However, increased performance under those

conditions may lead to fatigue and burnout so that higher levels of productivity cannot be sustained (Homer, 1985; Moorcroft, 1985; Levine, Van Sell, and Rubin, 1992).

The literature on self-directed teams indicates that, under certain circumstances, switching to a self-directed team can move one to a high level of productivity, with additional benefits of higher morale, less absenteeism, and a greater commitment to the organization. However, moving from the concept of a self-directed team to actual effective performance and sustaining it is a challenge for the organization or firm involved, for those who become members of that team, and for the persons who would be team leaders. The challenges for the team leader or leaders alone are substantial. The transition from being a manager or supervisor to becoming a team leader can be quite rocky.

Assumptions About the Organization

Let us assume that the organization or agency has looked into the self-directed team approach and has made a corporate/executive decision that it will move to create one or more self-directed work teams to enhance its performance. Let us assume further that it has made the decision to support the SDWT team effort, providing it with both the resources necessary and the support systems required for its success.

Trust in upper management

Supervisors and mid-managers are faced with pressure from higher sources to move to a team structure. However, the supervisor's parent organization may have a history of trying new programs and then eventually dropping them. Some in the organization may believe this is just a fad, rather than vitally important for the future.

There is a trust component here. It depends in part on getting adequate resources for team formation and continuation. Is higher administration really committed to the team concept, will its commitment continue, and is it willing to allocate needed resources and time to the task? Trust in higher management likely plays an important role in the manager's preparation for the team format and what he or she says to the team. In the model, this trust variable is called "*Trust_In_ Higher_Management***."**

Control

A supervisor, functioning well in traditional work settings, could have problems letting go of control, a vital process in the past. But such control hinders a self-directed team. Giving up control is difficult for many supervisors, particularly if upper management previously practiced "command and control" and has expected supervisors to follow its lead. However, releasing and sharing control and responsibility helps empower team members to take over traditional tasks still vital to performing the team job well. In the model, the control variable is called "*Control*."

Role ambiguity and fear of the unknown

A supervisor, successful in a command and control environment, may have a number of misgivings concerning the transition from the old system to a self-directed team format. According to Fisher (2000), the principal problem is the high level of role ambiguity, i.e., not knowing what he or she will be doing when the system shifts to self-directed teams. Many supervisors and mid-level managers have little knowledge of what

new roles they will play when they become team leaders. Since in the past, he or she has been responsible for making decisions about work organization, controlling work flow, hiring, training, rewarding, reprimanding, and firing, the natural question is, what possible roles would he or she be playing if many of his or her old roles are transferred in whole or in part to workers on the team? High levels of role ambiguity lead to an increase in the fear of performing poorly and possibly losing one's job. Indeed, there is evidence in the literature that the supervisor could be fired because of poor performance. Even if this did not happen, in some cases, instead of trying to learn as much about the new leadership patterns, the supervisor may resist efforts to adapt to the new situation, ask for a transfer to another department, or quit. This variable in the model, encompassing role ambiguity and fear of the unknown, is called "*Ambiguity***."**

Leader's trust and respect for team members

Thus far we have mentioned the leader's trust in higher management. A second type of trust deals with confidence the manager has in workers who will soon become team members. Do the team members have the skills and motivation to new roles required of them? Supervisors in that situation may start with low opinions of people who work for them or who are selected for the team. The leader's trust in team members may build slowly over time as the team members get committed to the team concept, and learn and practice their new roles and skills. We have assumed the decision to bring the teams into operation is partly due to the leader's trust in team members.

We have aggregated this trust variable to include two types of trust, (1) trust that team members' skills are adequate to get the team operating and they are ready to go, and (2) trust that they are accountable enough to take on these new responsibilities. The more the leader can trust that work can be done, the easier it is to spend time getting information about client's needs and communicating the good efforts of the team to the rest of the organization. There is little need for him or her to spend time in micro-managing the team. In the model, the name of this variable is "*LdrsTrust_In_Team Members."*

Leader's commitment to the team concept

Without being committed to the team concept, the supervisor may be unable to gain the knowledge to lead the team and recruit the interest of team members. Assuming the supervisor has a say in deciding when the team structure will come on line, a low level of commitment by the supervisor would retard the formation and initial performance of the team. The motivational variable, commitment, is part of the feedback network, which is in turn is affected by many of the previously mentioned processes, such as performance gap, fear of losing one's job, knowledge of the new leadership roles, lowering of control, and trust in higher management. In the model, commitment to the team concept is called "*Commit_ To_Team*."

The next set of processes involves variables that come into play later, once the team is formed and begins to gain experience working together. We first deal with new roles for the leader, and then we describe other processes, embedded in the loop structure, which make it possible for the leader to play these roles effectively.

Leader's knowledge about SDWT team formation and operation

There is an old saying, "You have got to know soap to sell soap". In this instance we could rephrase the saying, "You have to know the requirements for and operation of Self-directed Work Teams in order to help create them and lead them effectively. There is no substitute for searching out and reading excellent factually based writings on Self-directed Work Teams or "real teams" as they are called by Katzenbach (1999). There are excellent documents on experiences of teams, what makes them successful and what causes them to fail. There are manuals on creating teams, ways to help them be effective, and when to avoid creating teams.

The level of knowledge secured by the supervisor to be leader can make a major difference in formation of a SWDT team as well as its successful performance. Level of knowledge will influence how successful the person will be as a leader. Level of knowledge can influence the way the leader understands and fosters trust, the way control and responsibility is shared, and the proper and effective roles of the leader. The level of knowledge also can influence the leader's commitment to team and team concept, and as the leader's ability to critically manage the team, achieve boundary opportunities, and attain team resources. We call this knowledge variable, "*Know_Abt_Teams*."

Leader's ability To obtain resources

Fundamental to a SDWT team's success is the existence of necessary resources for the creation, initial operation, and continued functioning of the team. Even the clearest mandate from upper management will not succeed unless it is accompanied by a commitment and delivery of resources.

It is easy for management to promise the human and material resources, the release time, the needed training, the support for these, as well as adjustments in the organization to make them possible. It is quite another matter to deliver on those promises in a timely, consistent, and positive manner. The effectiveness of the leader will depend in no small measure on her or his ability to maintain close communication with upper management. Within this framework, we have included in our model a pair of resource variables, which we call "*Resources Promised"* and "*Resources Delivered."* The gap or discrepancy between those two variables is inversely related to the "*Leader's Ability To Obtain Resources*", which strongly impacts the leader's *Commit_To_Team.*

Achieving boundary opportunities

Earlier in this paper, we mentioned that, initially, role ambiguity is high. What new roles should the leader play? Fisher (2000) and others have noted that the leader, while dropping the day-to-day micro-management of the work process, plays an important role in interfacing the team with the rest of the organization and with the outside world. Typically, the leader will represent interests of the team in interactions with other departments and higher management in the organization. The leader will search out opportunities for complementary actions with others in the organization. This role entails understanding the organization's mission and what is happening internally organizational-wide. For example, he or she may find that another department has had success with a piece of equipment or a distinctive product or service approach. That information can be fed back to the team to explore in greater depth. The variable that represents this process is called " "*Ach_Bdry_Opport."*

The leader may attempt to buffer the team by protecting it from ritualistic and traditional ways of doing things in the organization. Perhaps the team can think of new ways to do the job better, more efficiently and perhaps more safely. On the other hand, in some organizations, high performance can lead to jealousy, territoriality, and bad feelings elsewhere. One role of the leader is major "internal public relations" work with the rest of the organization. To do so, the leader must know the broader mission and help align team behavior with that mission, while seeking out possible complementary relations with other parts of the organization.

Leadership in a self-directed team also requires intensive work with clients or customers to understand their needs and usage of products or services. He or she then helps to inform the team of those conditions. Sometimes the leader brings team members into the field to observe firsthand the use of their products or services. The leader also may monitor other elements of the environment, like getting information about competitor behavior or products, if that would help the team perform better.

As one can see, the new roles of the team leader are quite different from the traditional roles of the supervisor or manager. The team leader creatively coordinates, monitors, and, as necessary, guards the boundaries. The leader facilitates the production process by sharing information, and at certain times, may act as a coach, helping the team members to solve their own problems. We have aggregated these new roles into one the variable, *Ach_Bdry_Opport*. Although one can learn a lot about those roles before the team is operational, it takes experience on the job to perform them well.

Clarity of team vision and consistency with organization mission

A common term used in systems thinking and organizational learning is "shared vision." It implies clarity about the team's vision and a sharing of commitment to that vision. The team leader must have a clear vision, purpose to accomplish, or direction toward which the team is devoting its talents. In this context, a clear vision represents the process of knowing where the team is going. The clearer the vision, the easier it is for the team and leader to set goals. These goals may be measurable targets, which have a beginning, middle, and end, and are consistent with one's vision (Buchholz and Roth 1987). In the model, we call this variable, "*Clarity_Of_Vision*."

In the model, we assume "*Clarity_Of_Vision*" is a continuous variable that can change rather rapidly. For example, Katzenbach and Smith (1993) describe the formation of a team associated with the railroad company, the Northern Burlington Railroad. Up until the early nineteen eighties, in the U.S. railroad companies rarely combined forces with truck transportation companies. If a customer had a shipment requiring both modes of transportation, two separate contracts to were required. A team formed to explore collaborative efforts to combine the two delivery modes. The team members suddenly realized that the company's major purpose was to deliver goods. Why be constrained by rails only? Thus, they conceived of Burlington Northern not as a railroad company but as an organization in the transportation business, encompassing various modes. This new clarification of vision helped show what the company had to do to accomplish its mission.

Leadership skills

The period before the team is operational may involve much about the new leadership roles and how self-directed teams function. To keep up with competition and lower the performance gap, the former supervisor must gain the skills necessary to be an effective leader. The new leader might have to acquire and read publications on SDWT team formation and performance, and take a course at a local university or participate in a workshop on SDWT teams and the art of coaching. Leadership skills represent the human capital aspects of leadership, and influence a number of variables including the *Achieving Boundary Opportunities* variable discussed above. In the model, the leadership skill variable is called "*LeadrspSkills*."

Clarity_Of_Vision helps the leader determine what skills he or she and team members need to operate as a SDWT team. It also helps the team leader determine how to be helpful in achieving boundary opportunities. As the leader gets to be better at dealing with upper management and with customers, this experience helps clarify where the team is going and helps align the team's vision with that of the organization.

While some supervisors may have the disposition and interpersonal abilities to be skilled leaders, others may not. Skilled leadership can be learned on the job, in part. Being a skilled leader also can be learned in part through reading and study, plus seminars and workshops on leadership skill building, and through experiential learning – temporary leadership assignments, rotation of professional roles, shadowing other leaders, visiting other teams and leaders, or being mentored by another leader. A supervisor can be helped to develop leadership skills or enhance existing skills if inexperienced in SDWT leadership.

The level of the leader's skills will matter in the formation, initial operation, and continued operation of the SDWT team. Can the leader listen creatively? Can the leader understand how to help the team address and solve problems? Can the leader help team members deal with divergent views and perspectives and converge on common approaches and objectives? Does the leader help to empower the team to take advantage of new opportunities? Does the leader understand how to avoid disempowering team members? All of these issues are involved in the *LeadershipSkills* variable.

A SUMMARY OF THE LEADERSHIP VARIABLES

Summarized below are key variables embedded in the model to capture the dynamics of transition of leadership. We have organized variables into two groupings. The first group appears to be more relevant to the formation and early adoption of the team format, when everything is new and the leader has limited experience. The following variables (and abbreviations for the model) fall into the first group:

- Leader's Trust in Higher Management (**Trust_In_Upper_Managemt**)
- Leader's Supervisory degree of Control (**Control**)
- Leader's role Ambiguity (**Ambiguity**)
- Leader's Commitment to Team and Team Concept (**Commit_To_Team**)
- Leader's Knowledge about team formation /operation (**Know_Abt_Teams**)
- Leader's ability to obtain Resources (**Resources**)

There is a second set of variables that play a dominant role after team formation. The variables (and their abbreviations for the model) are:

- Leader's Trust in Team Members (**LdrsTrust_In_Team_Members**)
- Leadership Skills (**LeadrspSkills**)
- Clarity of Team Vision, Mission, and Consistency with Organization's Mission/Vision (**Clarity_Of_Vision**)
- Leader's Ability to Achieve Boundary Opportunities (**Achv_Bdry_Opport**)

From this point on, we will use the abbreviation for each of the variables as we discuss their intensity or their interrelationships.

Conceptually, we differentiated between **Know_Abt_Teams** and **LeadrspSkills**. **Know_Abt_Teams** is viewed as accumulating information about how teams operate, including the basic and special requirements of SDWT teams. Much of this knowledge can be obtained from reading, talking to people experienced in self-directed work teams, taking workshops, etc., even before taking the role of team leader. **LeadrspSkills** can come later through experience on the job and specific training.

Achv_Bdry_Opport is the performance variable for the leader, gained principally from experience on the job. It is both influenced by and affects other variables, such as **LeadrspSkills** and increasing **Clarity_Of_Vision**. Being able to manage boundaries well facilitates and enhances team performance. It also opens channels of information for the team, helps the team to complement other parts of the organization and helps it to avoid interference from other parts of the organization.

BEHAVIORAL REFERENCE MODES

In the previous sections, we have described the key variables in the transformation of leadership. However, these variables will function quite differently depending on the way the organization itself proceeds. The organization is capable of several different behavior modes. We will select and describe three:

(1) Never getting around to starting the teams: The literature and our own experience indicate how easily it a company or agency might move toward developing self-directed teams, and yet not be committed enough to allocate the resources and provide the necessary training to create a functional team. In other words, the organization never gets around to starting the SDWT team. The team never sees the light of day. In short, the leadership opportunity never becomes a reality.

(2) Panicking when initial team performance dropped: Another problem behavior mode has been described in the literature. In this situation, the company or agency does prepare for initiating one or more SDWT. This gives the supervisor, who will become team leader, time to lower his/her degree of control. However, the company may start the team prematurely before members have the skills to assume the former supervisor's old roles or perform new roles in new ways. Thus, performance, rather than increasing toward a higher goal, decreases below the old standard! What may happen is that the leader, who recently let go of control, panics and quickly moves back to the old command and control style. He or she takes total charge again because of poor performance, fear of failure or even being fired. If this fear is great enough, it could lead to the supervisor wanting to terminate the team structure in favor of old work arrangements.

Once this happens, the team's trust in the leader dies away. Prior empowerment of the team is seriously diminished if not destroyed. Since the leader is no longer committed to an SDWT team, **Commit_To_Team** by the leader and team members decreases drastically. And, it might take a long time for the organization to experiment with teams again. However, the organization remains under pressure for performance relative to outside competition. Since the performance gap remains, the organization may eventually decide again to create one or more SDWT teams to decrease the performance gap. We might see later the reformulation of teams with perhaps different leaders.

(3) Deciding, staying the course, and implementing SDWT teams:[2] A third reference behavior mode by an organization is deciding to proceed with SDWT team formation, implementing one or more teams, and supporting the teams once created. This mode provides the context in which leader's trust, knowledge, and skills can grow. The leader's control, leadership roles and responsibilities can be shared. The leader's ability to obtain resources can be demonstrated and enhanced. Team members can become empowered and remain empowered. It is an environment in which teams that are performing well can actually excel and become high performance teams.

In this situation, the organization has deliberately addressed alternative approaches to closing with its performance gap. It has selected creation of "real" teams (Self-Directed Work Teams) with shared leadership, decision-making responsibility, and accountability to close the gap. It has addressed team basics as defied in Katzenbach's Wisdom of Teams – "… a small number of people with complementary skill who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable". (Katzenbach, page 45).

The corporate/executive-level has decided to proceed with design, formation, and operation of one or more SDWTs. There is a companion decision to create team leadership positions, and provide the needed resources, training, and information for successful team performance. In addition, there has been a deliberate decision to provide necessary support systems for the team's effective operation and sustainability.

In reference mode (3), as the team begins its operation its performance may drop below the previous old standards. Both the leader and upper management are aware of this possibility and recognize it as possible with new ventures. They are aware of the concept of the "infant industry" needing special care, consideration and support before productivity flourishes. In other words, the team leader and upper management "stay the course" and nourish the team through its initial performance and beyond.

Further, upper management and team leader are firmly to the SDWT team concept and its implementation and sustainability. In this behavior mode, trust is high – between the team leader and upper management, between team members and team leader, and among team members. The availability of adequate resources, training, information and companion support systems enhances both the belief in and reality of successful performance. Release of supervisory control is facilitated as team members are empowered to proceed. Opportunities to address team vision and mission, achieve clarity about them, and ensure compatibility with those of the overall organization are enhanced in this supportive environment. Likewise, commitment to success of the SDWT up and down the organization's structure makes easier the maintenance of supportive boundary conditions and relationships. Executive level and leader commitment to the success of the SDWT simply reinforces the intensity of trust, empowerment, and mutual

accountability. If these preconditions exist, then one likely will observe unusually high, sustained performance.

Normal patterns of variables. From our experiences with high-performance teams, variables, such as **Clarity_Of_Vision and LdrsTrust_In_Team_Members** are low initially, and take time to increase in intensity. At low values, some of these variables might retard performance while others may have little influence on performance. However, as **Clarity_Of_Vision** and **LdrsTrust_In_Team_Members** move into the higher intensity range, they then can have a very strong influence on other variables, particularly the **Achv_Bdry_Opport** variable that in turn greatly affects performance. Qualitatively, one would describe those patterns as bumpy and explosive, as quality of leadership emerges over time. We would then expect to see **Achv_Bdry_Opport** display a staircase trajectory after some of these soft variables, such as **Clarity _of _Vision**, get significantly large enough to facilitate growth.

CHARACTERISTICS OF THE MODEL – LEADERSHIP SECTOR

This paper covers dynamics of the transformation of supervisors and middle managers to positions of team leader. We are particularly interested in (1) the nature of the variables and their feedback structure influencing the emergence of good leadership (2) the direction of change (i.e., polarity) among the variables and their influence on leadership, and (3) relationships with good leadership as the state variables become more intense. The outputs of the model, as displayed in the figures to follow are plausible theoretical curves representing SDWT team situations, not specific data and measurements for any one organization and its SDWT team.

Time frame of the leadership sector

A useful model would follow the dynamics of leadership from an early period, when one of more teams were contemplated, to team formation, initial operation, periods of growth and finally stabilization. The time horizon selected for the present model is 72 months, roughly 18 months to 2 years for team formation and some 4 years for operation. Empirically, the time span for team conceptualization and preparation can vary considerably. In most of the model runs represented here, a team takes about 22 to 24 months to come on line -- to move from initial concept to initial operation. In reality, various SDWT teams can have a shorter or longer formation period.

Empirical basis of the leadership sector and others

Let us briefly describe the origin and underlying motivation for developing a larger three sector model, and in general, research on self-directed team dynamics. The model as a whole, which currently includes the Leadership Sector and Team Member Sector, and a very small Upper Management Sector, was formulated on the basis of the literature on team dynamics and the experience gained from working with and observing teams here at Michigan State University.

The MSU teams were first established in 1994 by the second author (AL), when he became the Associate Director of Michigan State University Extension. This was one of the first times nationally that self-directed work teams were adapted to extension service organizations. In extension service organizations delivering educational and technical assistance to clientele and communities served, central control emanates namely

from campus to the local, field-based extension offices. The introduction of teams materially changed Michigan State University Extension. Emphasis was placed on team directed educational design, conduct of educational programming and technical assistance, plus shared leadership, shared control and responsibility, mutual accountability, creativity, and learning.

Over 30 self-directed work teams were formed to deal with the main problem of providing timely cutting-edge education and technical assistance needed by clients. The composition and mission of each team exceeded traditional boundaries of academic departments and county offices. While each of the SDWT teams have increased timeliness and positive impacts of their programs, at least two of these teams have reached the level of what one would call, "unusual or very high performance" teams.

Many articles and books help describe problem areas in the SDWT field. Most are based on work with actual teams in private industry, while we have our main experiences in working with teams providing educational and technical assistance to both public and private sectors. We are in the process of actively observing and interviewing high performance teams which come from the public, not-for-profit, and private sectors and have a variety of missions. These include teams from high and low technology industries, substantial and limited resource groups, plus community, domestic, and international contexts. The model described in this paper has provided a theoretical framework for our structured interviews with these unusual self-directed teams.

Quantification of the social variables

This model emphasizes the role of "soft" social and psychological variables, such as **Ambiguity**, degree of **Control**, **Commit_To_Team, Clarity_Of_Vision LdrsTrust_In_Team_Members**, in determining the dynamics of leadership development. To explicitly use them in the model, we quantified the theoretical variables to range from 0.0 to 100, where 0.0 represents a true zero, and a value of 100 is the maximum intensity that the level can attain. Having an absolute zero strongly suggests measuring the variable empirically on a ratio scale (see Levine, and Lodwick, 1992; Levine, 2000). Thus, for example, it might be possible to say that, because of some unique past experience, initially the supervisor had no (0.0) **Trust_In_Upper_Managemt** to provide the team with enough resources to make it successful. Our experiences indicate both high and low extremes are unlikely for the variables discussed in the previous section.

Performance and performance goals for Leadership Sector

In this paper, we are focusing on the dynamics of leadership, the variables that influence it and the relationship of those variables to performance. We decided to simplify the units of team performance, which in reality would vary considerably from one organization to another. Thus, with respect to performance, since this model is very general, we also have quantified performance by using a performance variable that ranges between 0.0 and 100. Of course, if we were to apply the model to any particular type of organization, such as a service agency, we would translate this scale to the appropriate units, -- number of clients served in a given period of time, level of client satisfaction, or money earned. To proceed with our portrayal of the dynamics of leadership, we need some production goals. Thus, for sake of the model, we assume that, initially, the

supervisor sets the production goal at 40 units, and due to external competition, the new goal must at a minimum be raised to 60 units. In this leadership model, we have assumed the team attempts to bridge the gap between the new performance goal and current performance through a negative loop structure, which is represented by a simple first order information delay. This was done for simplicity sake.

Other characteristics of the total model

The total model has been partitioned into subsectors or submodels. *In this paper, we are primarily reporting on the Leadership submodel of the total system dynamic model*. In this Leadership submodel, we have included only a limited portrayal of the dynamics of team performance. Not included is a Team Member submodel, focusing on the dynamics of the team itself, which might have performance goals set by the team that can be raised with successful behavior. In addition, in the Team Member submodel, other possible processes can occur, such as burnout from overcontrol by the team leader or the actions of the team itself.

Thresholds

This system dynamic model is somewhat unusual in that it appears reasonable to conceive of these processes as flourishing in discrete states. Teams can come on line and can be terminated. However, while formation and termination can occur, and are represented by a termination threshold variable, all the other variables underlying those potential states change continually, as in any other system dynamic model. This model is somewhat like one developed by Richmond (1980), treating ethical dilemmas faced by subjects taking part in the Milgram's social psychological experiment. Subjects in the experiment thought they had the option of shocking someone or quitting at any time. In Richmond's model, remaining or leaving the experiment depended on whether the subject was below or above a departure threshold value. However, the dynamics of change in that variable depended on a number of continuous processes underlying that behavior.

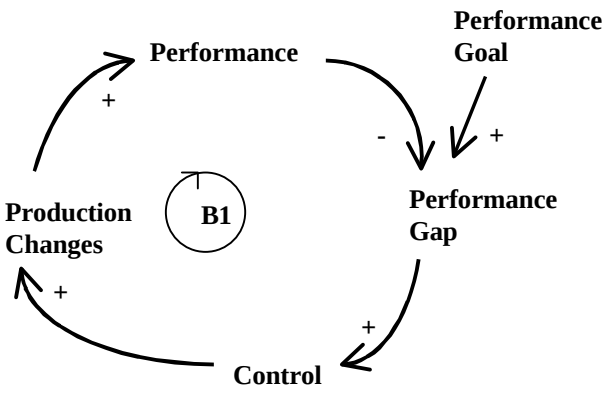
Stages

Teams appear to have several stages -- formation, growth, stability, and perhaps decline, which somewhat mirror the stages of many organizations. Literature on teams contains some stage theories used to describe and understand how teams evolve over time. For example, one of the most common stage theories claims four stages of change in team behavior; namely, forming, storming, norming, and performing (see Deeprose, 1995; Colenso, 1997).

Our observations concerning the dynamics of leadership behavior in these teams are as follows. First, there are many important processes developing very early in the history of the team to get them up and running. We call this the "formation period." A second period that bears watching deals with initial operation and early functioning. Some processes, such as trust and building of respect for one's team members, come into their own at still later stages of growth and stabilization. The model's nonlinear table functions are drawn so that the multipliers at first may be set to 1.0 or below until the value of the input level gets into the upper ranges. Thus, the effect of a key variable may

be felt only after many months, reflecting the slow growth of certain processes such as the leader becoming more trustful of team members.

Fig. 1. Usual behavioral mechanism of control when performance goes down



A brief view of some of the underlying loop structures

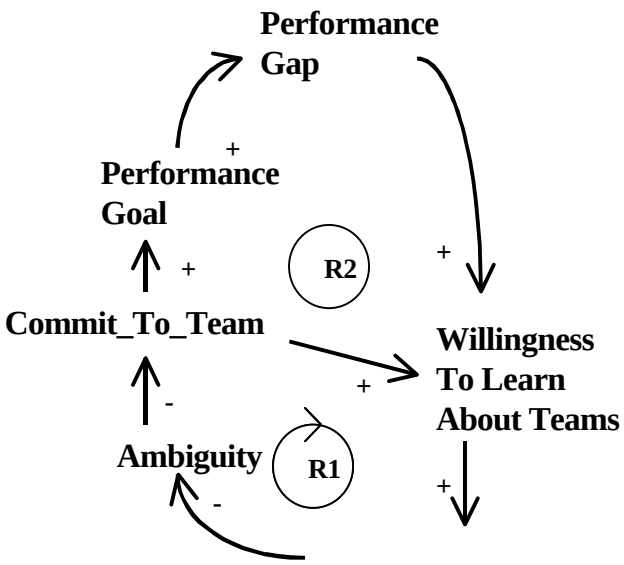
In this section, we show some of the loop structures that potentially underlie the dynamics of leadership in SDWT teams. Some of these loop structures are associated with early stages of formation while others are principally salient and dominant in later stages after the team is operational.

Early stages. We start just before the formation stage and, assume the organization is using command and control actions to deal with decreases in performance. Initially, before forming the team, the supervisor, would fine-tune command and control to deal with most problems and emergencies. If performance dipped below the old standard, the typical reaction would direct performance back to where it belongs as soon as possible, through various means, including changed processes, enhancements of efficiency, incentives, encouragement, efficiency, intimidation and cajoling. A simple representation of that process is found in Figure 1, which shows a simple negative loop, B1 that comes into play with an increase in the **Performance Gap**.

Along with the use of control prior to team formation, the supervisor is immersed in becoming a team leader and may be experiencing a traumatic time. He or she has to deal with ambiguity and fuzziness about worklife after becoming a team leader. The next two loops pertaining to preformation are displayed in Figure 2 below.

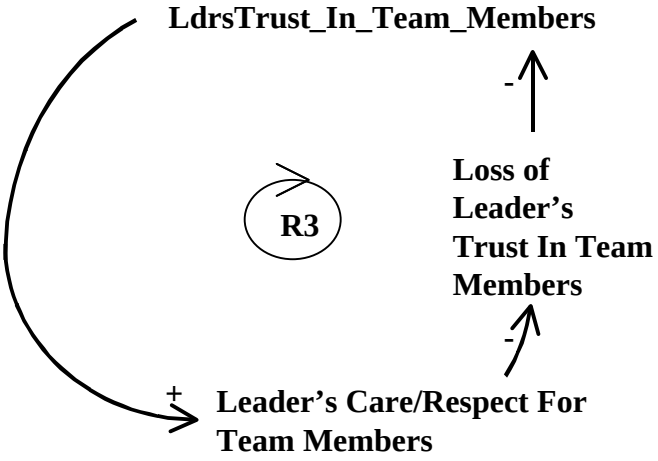
Consider loop R1. If **Commit_To_Team** were to rise, perhaps because of having adequate resources and trust in higher management, then the person might be more willing to take the time out to learn more about teams. As he or she learns about teams, the **Ambiguity** decreases, and the future becomes clearer. This would in turn generate an increase in **Commit_To_Team**, etc. In the model, buildup of **Commit_To_Team** eventually gets high enough to lead to a decision about actually putting the team into operation. This implies raising the value of the **Performance Goal** to match the competition from outside the organization.

Fig. 2. R1 reinforces Know_Abt_Teams as well as Commitment, and R2 reinforces the Performance Goal, which makes the leader more willing to learn about teams



Loop R2 represents action of the pressure caused by the difference between **Performance Goal** and **Performance**, i.e., the **Performance Gap**. The larger the gap, the more willing the leader is to act to eliminate the disparity. This eventually will lead to an increase in **Know_Abt_Teams** and **Commit_To_Team**. The commitment variable is the principal gateway for switching to the SDWT team systems. As **Commit_To_Team** increases the team will come on line. Then the team will adopt the higher standard or **Performance Goal**, which in turn will increase a **Willingness To Learn About Teams**.

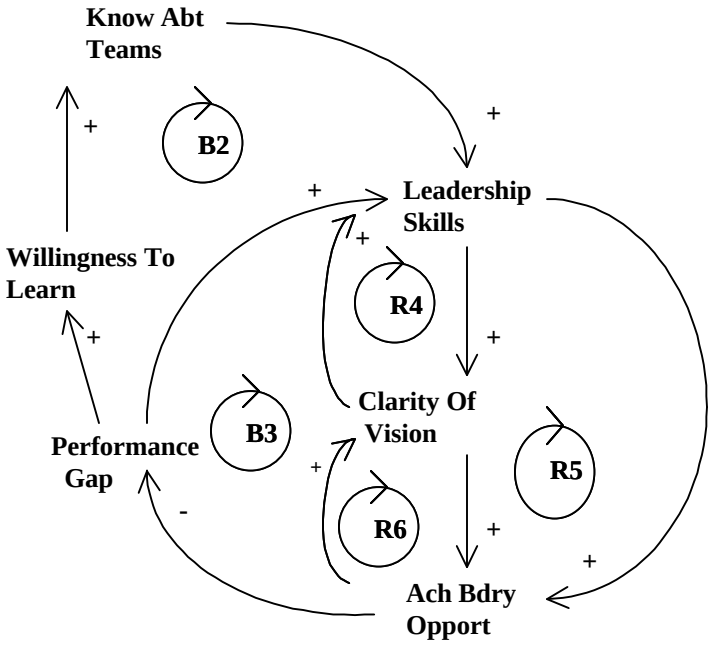
Fig. 3. Care and Respect For Team Members helps to inhibit the Loss Of Trust In Team Members



Giving slack to team members. For a flavor of some other loop structures, consider Figure. 3. A necessary condition for the team leader to respect team members is that he or she must trust them. **LdrsTrust_In_Team_Members** is built in several ways, including from evidence that the team is performing well. In some teams, at later stages, the levels of **LdrsTrust_In_Team_Members** and **Leader's_Care/Respect For Team Members** rise, i.e., accumulate. If the team should experience difficulty or make

mistakes causing performance to drop, the **Performance Gap** will increase. Even high performance teams will make mistakes. If the **Performance Gap** increases, **LdrsTrust_In_Team_Members** will decrease at a slower pace, because the leader is giving the team the benefit of the doubt. The leader would be less likely to go back to old habits of control. From a perspective of the larger picture, cutting some slack allows team members to self-regulate their performance, by correcting themselves. This can happen in teams where the leader has built an intense respect and/or care for team members. In Loop R3, the growth of **Leader's Care/Respect For Team Members** slows down the rate of **Loss Of Leader's Trust Of Team Members**.

Fig. 4. Reactions dealing with decreased performance (B2 And B3) and mutual reinforcing loops among later emerging processes (R4, R5, R6)



Loops Associated with leadership after team formation and operation. In later stages, there are several loops that help raise the leader's skills and level of functioning, which in turn facilitates team performance. Figure 4 shows some of those loops. Loops B2 and B3 indicate that an increase in the **Performance Gap** leads to learning about teams prior to coming on line and obtaining **LeadrspSkills** after the team comes into existence. Loops R4, R5, and R6 represent a set of positive, reinforcing processes among **Clarity_Of_Vision, LeadrspSkills,** and **Achv_Bdry_Opport.**

ASSUMPTIONS

Assumptions about SDWT teams

Before giving results of our simulation runs, we need to describe the assumptions underlying those simulation experiments. First, for the model and the runs to follow, we assume that work performed by the team entails an interdependency among members, so they must work together to produce a product, complete a project, or service clients (Hitchcock and Willard, 1995, p. 4). Without such interdependencies, SDWT teams will not perform better than other work arrangements.

Assumptions about personnel

For the computer runs reported, we have not included personnel dynamics in the Leadership Sector. We assumed the supervisor/leader remains the same for the model's time horizon. Since we focus on the Leadership Sector, a similar assumption is made for team members. We assumed no one leaves the team or there is no effect on worker productivity from someone leaving.

Exogenous input from the Team Member Sector

Since we focus here on the Leadership Sector, the only input variable from the Team Member Sector is **Team_Mem_Knowledge_of_New_Roles**. The trajectory of this member variable, **Team_Mem_Knowledge_of_New_Roles**, assumes that, for all of these computer runs, members trust the leader and trust one another, so that they are willing to learn about their new roles. Assuming this is true, we drew the table function for the trajectory of **Team_Mem_Knowledge_of_New_Roles** so that members start slowly to learn their new roles, then accelerate as they presumably get more involved and committed themselves to being on the team, and finally level off as they more or less understand what they would be doing as team members. It generates an s-shaped curve over time as an input variable to the Leadership Sector.

Exogenous input from the Upper Management Sector

In this paper, upper management has an intended amount of resources it wishes to give the leader and team. These intended resources may or may not correspond to resources expected by the leader. In the model, we defined an auxiliary variable called "**Resource Ratio**," which is the ratio of the **Actual_Resources** given by upper management to the leader's **Expected_Resources**. When this ratio is low, **Trust_In_Upper_Management** decreases. The numerator of **Resource Ratio** is an exogenous variable in these runs.

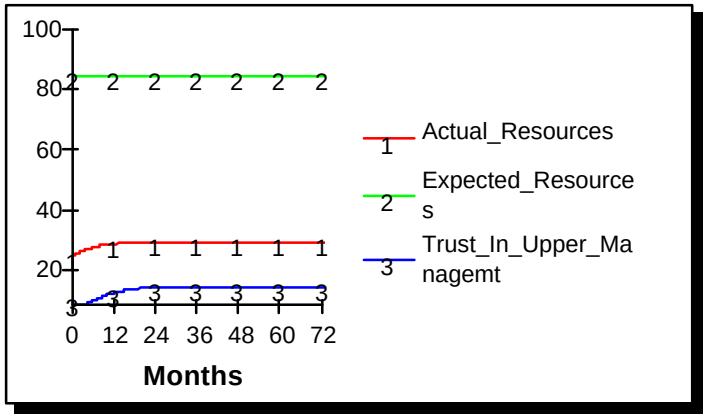
MODEL RUNS FOR THE LEADERSHIP SECTOR

The runs that follow represent three different organizations. One considers use of SDWT teams and fails to create them (Run 1). A second organization considers and initiates a SDWT team and discontinues it, but reintroduces it later (Run 2). A third organization considers, initiates and continues a SDWT team (Run 3). Though Runs 1 and 2 provide useful insights, we are extremely interested in leadership associated with a committed organization as represented by Run 3.

Run #1: Failure to form teams with lack of resources

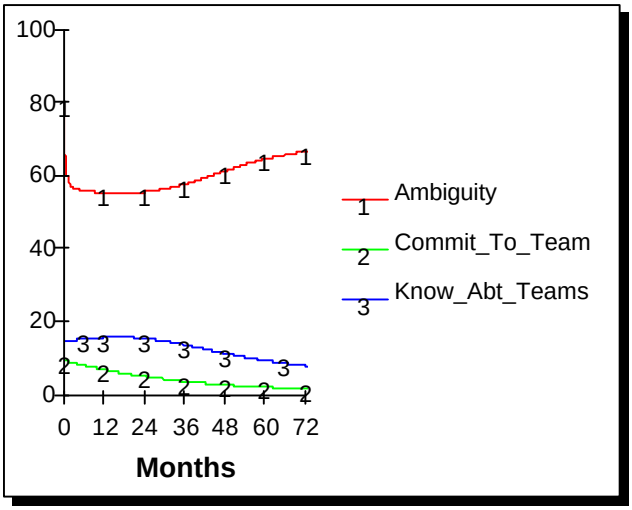
The first simulation run represents conditions where the organization attempted to move toward creating a self-directed work team, but never launched it within a 72 month period. Our analysis indicated the most important process is lack of backing from upper administration, as represented by the discrepancy between resources expected by the supervisor/leader and actual resources delivered. If the supervisor/leader does not get the required resources, his or her **Trust_In_Upper_Management** never rises enough to increase the leader's **Commit_To_Team** (not shown in Figure 5) to the level needed to put the team on line. Results of this run in Figure 5 show the large gap between **Expected Resources** and **Actual Resources.**

Fig. 5. Lack of Trust In Upper Management by leader when Actual Resources Given by upper management did not match Expected Resources



Next, we started the performance level equal to the goal, which for pre-formation was set at a value of 40 units. In Run #1, the supervisor, who expected 85 resource units, was given much less resources for team functioning. We can see from Figure 6 that the leader's **Commitment** decreased steadily over time, due to the lack of resources from Upper Management. **Know_Abt_Teams** increased slightly and then dropped off because of lack of the leader's Commitment. Finally, the supervisor/leader initially experienced a relatively high **Ambiguity**, which increased somewhat over time as **Know_Abt_Teams** decreased. Thus for this run, the initial picture did not change much over time. At no time did the organization change from the old command and control form to the team format. The SDWT team never got started.

Fig. 6. Ambiguity, Commit_To-Team, and Know_Abt_Teams, when Actual Resources given by upper management did not match Expected Resources



Allocation of resources appears to have a powerful effect in the early preformation stage. It shows the importance of the alignment of the team and upper management (see Katzenbach, 1998). Upper management must support efforts of those in charge of establishing and operating the SDWT.

From a system dynamics perspective, our findings also indicates upper management's actions are crucial. The feedback structure underlying the dynamics of

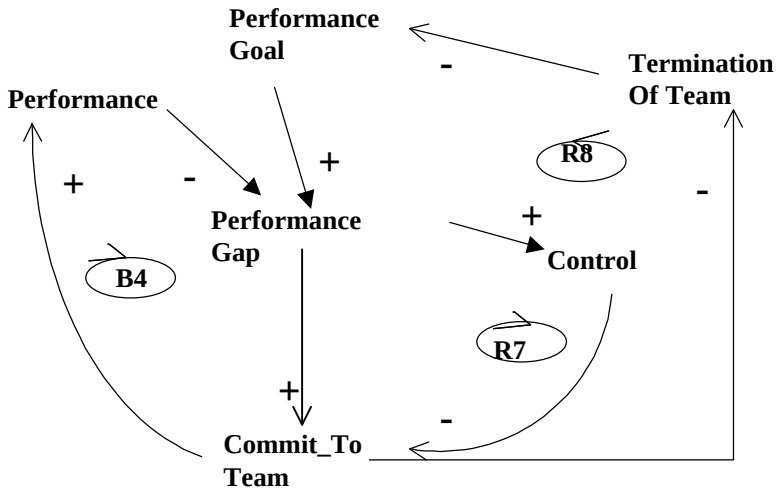
upper management and reciprocal influences between the Upper Management Sector and the Leadership Sector deserves added careful attention.

Run #2: discontinuing the team format

The second run involves a common problematic pattern of leadership in which the team has been created, and was initially performing poorly. As a result the leader (or upper management) decided to disband the team and go back to working the old way. This might happen, for example, if the team went on line prematurely, before it could learn enough to initially perform at or above the old performance level.

Unlike the first run, Run #2 starts after team formation, at around month 24. Let us assume that, at month 24, the team's initial performance level is 35 units. In this situation, the team's performance is below 40 units, which was the performance value under the old standard. The hope in forming teams was to raise performance to a value of 60 units to match competition. A decrease in performance generates an even greater gap. In this run, the leader reverts to familiar patterns of supervisory behavior, namely taking charge and attempting to control the situation and to take remedial actions. In this run, control leads to aborting, or terminating the from the " experiment in shared leadership." The leader pressed the panic button out of fear from such poor performance. He or she goes back to more comfortable habits of supervision and control.

Fig. 7. Increases in Performance Gap can lead to more Commit_To Team (Loop B4) and increased Control (Loop R7). a decrease in Commit_to_Team can lead to the termination of the team



We need to understand what may be happening, when initial performance goes down just after the team becomes operational. Figure 7 shows three hypothesized loops relevant to understanding the panic reaction. In particular, Loop B4 compensates for an increase in the **Performance Gap** by an increase commitment to the team concept. More **Commit_To_Team** yields increased **Performance**. This loop deals with "staying the course." On the other hand, an increase in the **Performance Gap** may lead to loops R7 and R8 dominating the situation. It is hypothesized that the decrease in **Performance** causes the leader to move to older habits of **Control**. This has two effects; namely, (1) **Control** discourages **Commit_To_Team** and in this model, if the value of **Control** is large enough, (2) the organization will terminate the team and go back to older ways. We

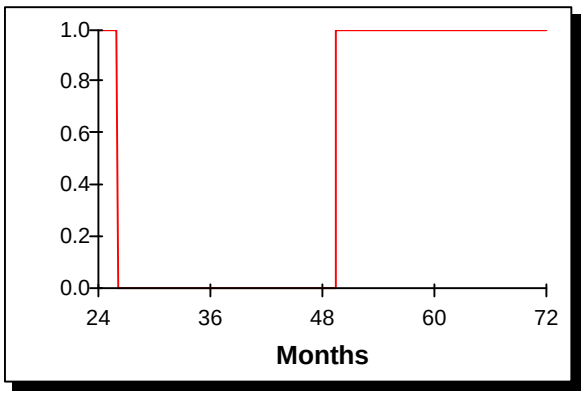
assume that, once terminating the team, the organization will lower its **Performance Goal**, because the command and control system is incapable of maintaining the higher **Performance Goal** set by external competition. Lowering the **Performance Goal** is one way to lower the **Performance Gap**.

Archetypes and the loop structure. Let us look at Figure 7 once more. The structure is somewhat analogous to the pattern of behavior associated with **eroding goals** archetype. (See Senge, 1990; Kim, 1992; Lane and Smart, 1996). In the classical case of eroding goals, there are two opposing negative loops. Loops B4 and R7 (combined with R8) compete against each other. Loop B4 lowers the Performance Gap by increasing **Performance**, which loops R7 and R8 lower the **Performance Gap** by lowering the **Performance Goal**. In this run, where management panicked and shuts down the team, **Control** inhibits **Commit_To_Team** and may cause loops R7 and R8 to dominate over loop B4. As a result the leader and/or upper management lowered the bar so **Performance Gap** decreases, as we follow the actions of R7 and R8 in Figure 7.

By way of comment, seeing these familiar patterns is helpful in gaining insight about the dynamics sustaining teams, especially in initial operation. However, in building the model, we did not start with a list of the popular archetypes and then immediately pick one or two as a blueprint for the total set of dynamic hypotheses. Rather we developed the model, tested it, and while we were attempting to gain insights, we came back to the underlying loop structure to better understand the results. It was then that we became aware of the similarity of those two archetypes (eroding goals and shifting the burden) and the hypothesized structure of our model.

To put numbers on this, originally, let us assume that, before forming teams, performance goals were set at 40 units, while after the team formation, the new performance goal was raised to 60. Now suppose initial team performance was 30, below what the workers were performing prior to team formation. By terminating the team structure, they also will at least temporarily lower the new goal to go from a low of 30 up to the old goal at 40.

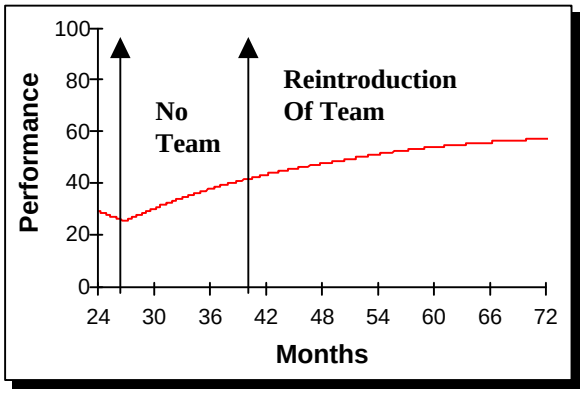
Fig. 8. Indicator variable showing that the team started at month 24, stopped operating a couple of months later, and was reinitiated about a year later, around month 40



Terminating and reintroducing the SDWT team. In the model and third run, we have used the variable, **On_Off**, as an indicator of whether or not the team was in existence. Note that this indicator variable responds to changes in variables in the internal loop structure, so **On_Off** is not exogenous. Run #2 starts at month 24, just after the team came on line. By definition, the value of the **On_Off** variable is 1.0. The results of

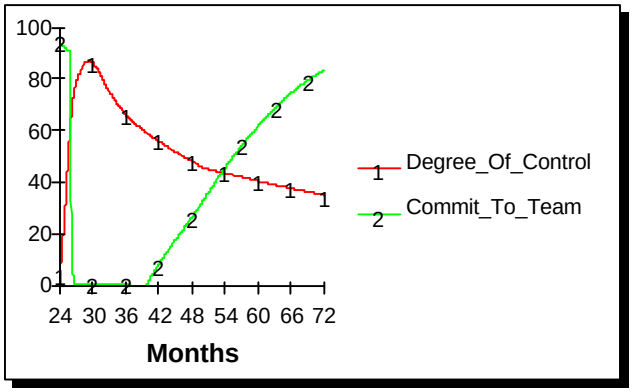
this run, which are represented in Figure 8, shows that the team was first disbanded a couple months later. The change in this indicator variable was because other variables, such as **Commit_To_Team,** decreased to a low enough value to trigger a decision to drop the SDWT team. Finally, note from Figure 8 that the team arrangement was reintroduced about month 40, as indicated by On Off changing from 0.0 to 1.0.

Fig. 9. Worker Performance before and after the reintroduction of the team format at month 40, when Performance Goal shifted from 40 to 60 Units



Now let us look at **Performance**. At the start of the run, month 24, team **Performance** equaled 30 units. The team was in existence, and initially the **Performance Goal** was set at 60. From about month 26 to the 40th month, the system had shifted to a lower performance goal of 40, and was making progress toward it. The team format was reintroduced in month 40 and sustained, implying that under new conditions, the **Performance Goal** increased back to 60 units and the advantages of SDWT teams took hold. In Figure 9, one can see that team Performance shifted gears at month 40, when the team was reintroduced and moved up toward the higher **Performance Goal**. By staying the course. after month 40 **Performance** became more responsive to external competition.

Fig. 10 Rapid reintroduction of Control and almost complete loss of Commitment when team underperformed just after coming on line, but was eventually brought back again



Continuous variables underlying the transitions: Months 24 to 26. Let us look at some key continuous variables associated with transitions of the team structure during months 24 to 26. In this computer run, the team came into existence in month 24. Prior to this time, a number of variables had radically changed values. For example, during the

formation period, prior to month 24, the supervisor worked hard to lower his or her **Control** in preparation for becoming a team leader. Thus, by the 24th month, the **Control** variable is relatively low, 5 units in this run, compared to two years before. Likewise, prior to coming on line, the leader's **Commitment** variable started low, but gradually became high until **Commitment** had attained a value of 85 at month 24.

Figure 10 shows what happens to the **Control** and **Commitment** variables in the model initially when the team first started to operate, i.e., when the **On_Off** indicator variable equaled 1.0. It should be remembered that the **Performance Gap** is large at month 24. The leader's degree of control was low and he or she was very committed to the team concept. However, poor performance immediately triggers the operation of loops R7 and R8, immediately raising **Control** and rapidly diminishing **Commit_To_Team** (See Figure 10).

In the model, **Control** and **Commit_To_Team** are two key variables that play a dominant role. Returning to the loop diagram in Figure 7, one sees that when **Performance** goes down, the **Performance Gap** increases, which in turn increases **Control**. This could set into motion Loops R7 and somewhat later, R8, which work together to decrease **Commit_To_Team**. If the leader and/or upper management move to a control strategy, commitment to the shared leadership characteristics of SDWT teams is withdrawn. This may lead to the scrapping of the team format as a failed experiment.

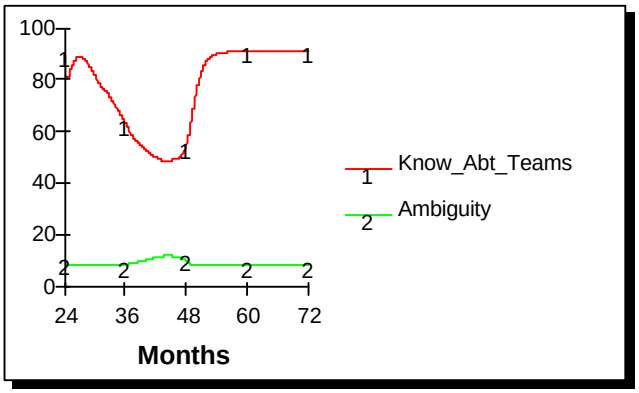
With this parameterization, loss of commitment and return processes take place rapidly, according to Figure 10 above. We should add that the threshold for deciding to terminate the team is a function of **Commit_To_Team**.

Continuous variables underlying the transition: Months 26 to 40. Around the 26th month, the team was abandoned for OVER a year before being reintroduced. In Figure 10, one sees that the degree of **Control** slowly moves down, although it went up very quickly starting from month 24. The model specifically built this social phenomenon into the dynamics of control. **Control** goes up very quickly as a function of a fear of failure. This fear makes it easier to control the situation quickly, but harder for the supervisor/leader to give up control, hence the slower decline of the **Control** variable in Figure 10 during months 26 to 40, when the team did not exist.

In the model, **Control** has a profound effect on the **Commit_To_Team**. In Figure 10 the leader's **Commit_To_Team**, with this parameterization, was extremely low, close to 0.0 for about 14 months. High values of **Control** inhibit **Commit_To_Team**, according to the model. However, **Control** reaches a maximum at about 30 months and then slowly declines over time. In this run, when **Control** decreases to about a value of 60, it "allows" the commitment process to begin again.

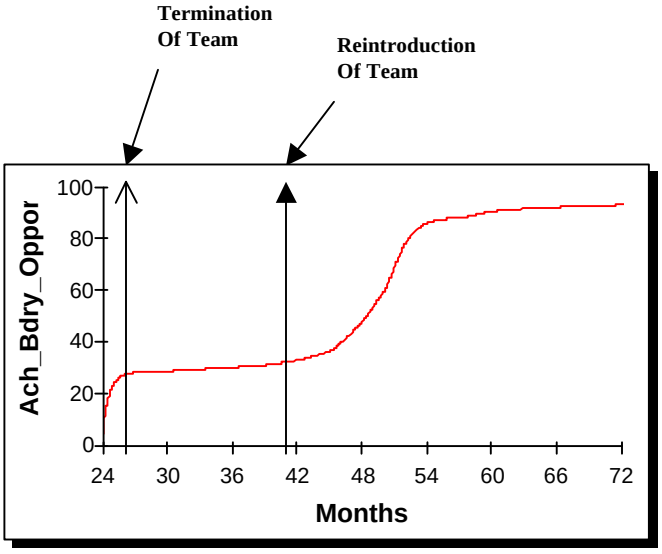
Growth in **Commit_To_Team** also is a function of role **Ambiguity** and **Know_Abt_Teams**. Figure 11 shows what happens to them over time, when the initial **Performance Gap** is large. For this run, we have assumed that, by month 24, the leader has learned a much about teams. Thus, we set the value of the state variable, **Know_Abt_Teams** at 90 units. The other variable of interest is **Ambiguity**. Although at time equal zero months, **Ambiguity** was high, during the formation period, **Ambiguity** went down systematically because **Know_Abt_Teams** went up. By month 24, **Ambiguity** is very low, namely 10 units.

Fig. 11. Know_Abt_Teams and Role Ambiguity. Note that during months 26 to 40, Know_Abt_Teams dropped due to forgetting, and Ambiguity was almost unaffected by team termination



Consider what happens during the time that the team no longer existed, the time interval between months 26 and 40. Figure 11 indicates that when the team was disbanded at month 26 **Ambiguity** stayed constant during this interim period. The leader had, in the first two years, dealt with the anxiety and fear of the unknown associated with role **Ambiguity**. By 24 months, he or she was not confused or anxious about new roles and responsibilities the leader would have to assume in the team situation. On the other hand, consider the **Know_Abt_Teams** variable during this same period. Figure 11 indicates some forgetting of details after the team was terminated. However, once the team was re-established around month 40, and a high level of **Know_Abt_Teams** was now very important, one observes a recovery process. The value of the **Know_Abt_Teams** variable returned to a very high level later in the run.

Fig. 12. Achieving boundary opportunities for different phases of team existence



Continuous variables underlying the transitions: Months 40 to 72. Here we briefly describe results for the time between the reintroduction of the team and the end of Run #2 at 72 months. Figure 9 indicated that, once the Team came back into existence on the 40th month, **Performance** moved upward beyond a value of 40 performance units,

the old standard of performance. In Figure 10, after the 40th month, **Commit_To_Team** began to rise quite steadily due to (1) the decline in **Control**, (2) the high level of **Know_Abt_Teams**, and finally (3) the low level of role **Ambiguity**.

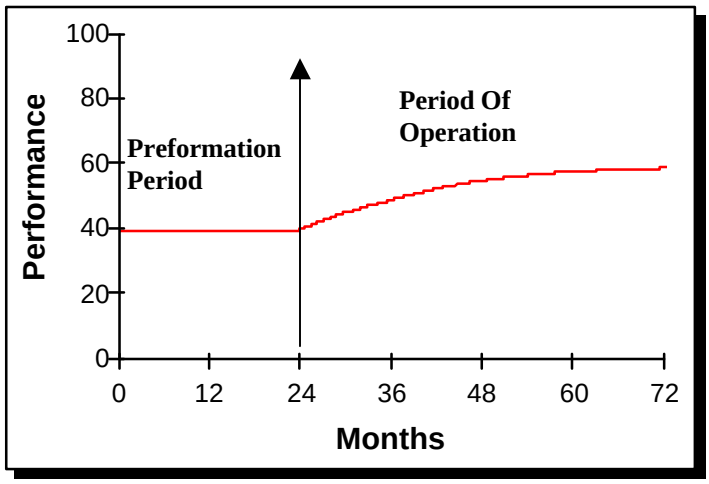
Higher order state variable: Achv_Bdry_Opport. In ending Run #2, we demonstrate what happens to one other higher order state variable, **Achv_Bdry_Opport**. Figure 12 shows the behavior of this variable. At the beginning of this run, there is a brief rise in the variable, between month 24 and 26, until the team is disbanded and the older system of command and control takes over. **Achv_Bdry_Opport** is unchanged for the duration of the period ending around the 40th month when the team comes back into existence. Finally there is an explosive period after team recreation, generating an s-shaped function beginning at that point in time. This general pattern is appears to be similar to other functions, such as **Clarity_Of_Vision** and **LeadrspSkills**. All of those processes were able to increase very rapidly once the team began functioning again.

Finally, we note that this premature departure of the team had its opportunity costs. The downtime was about 14 months, and the organization lost in productivity and many of the other less tangible quality of work factors that teams can help to foster.

Run #3: Emergence of productive teams supported over time

Although in the last run, we observed productivity and relatively high functioning later in time, we also find conditions where (1) the teams come on line, i.e., become operational, and (2) remain stable enough to continue over time.

Fig. 13. Performance before and after The SDWT team came into operation at month 24



In Run #3, we start the system at the beginning of the formation stage and view the system for a six year period, as we did in Run #1. Given this parameterization, it took about 24 months to come on line (See Figure 13). For this run, we set initial value of **Performance** equal to 40 units, the old **Performance Goal**. Figure 13 indicates that, once the team became operational, around the second year, its **Performance** shifted to meet the new competitive **Performance Goal** , which was set to have a value of 60 units.

Know_Abt_Teams and Commit_To_Teams. Unlike the previous simulation run, many of the initial values of other variables at the beginning of the formation period were set to describe the organization as needing much work to get to the point were they could benefit from the team structure. For example, role **Ambiguity** was set high at 80 units, **Trust_In_Upper_Management** was set low at 10 units, and we set supervisor's **Know_Abt_Teams** a low value of 15 at the beginning of this run.

Fig. 14. Early salient variables: Leaders Know_Abt_Teams and Commit_To_Teams

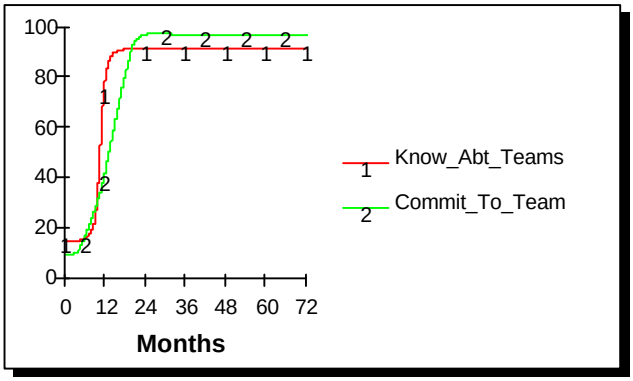
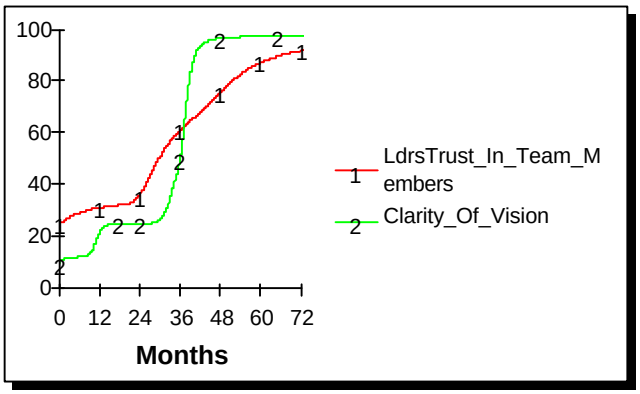


Figure 14 shows what happens to two key state variables during the formation period as well as the later behavior after the team is created. Both variables show rapid growth during formation, which ends around the 24th month. **Know_Abt_Teams** goes through its explosive phase a bit earlier than **Commit_To_Team**. These variables have to be in place before others can attain high intensities.

Fig. 15. The behavior of variables that help to bring out and nurture performance and the quality of work life



Later variables. There are variables in this model which come into play later, but sustain functioning of the leader as she or he gets better and better. Figure 15 shows two such variables. In this parameterization, one can see that **LdrsTrust_In_Team_Members** starts slowly, but makes progress, even before the 24th month when the team went on line. Once the team is operating, this variable rises steadily to a high level.

Figure 15 also shows the time course of **Clarity_Of_Vision**. One can see an interesting stair-shaped curve. When the team began to operate, it showed little if any

progress for the first year. But due to increased **Know_Abt_Teams**, i.e., what the leader learned prior to having experience on the team, **Clarity_Of_Vision** went up to a new plateau. At the micro-level, this could be a deliberate mission and vision clarification process before the team came into existence. After the team began to operate, it took the leader while to gain experience. So with this parameterization, one sees a very steep and significant improvement in the **Clarity_Of_Vision** between the third and fourth year. This rapid improvement was primarily caused by the leader's effort to gain skills during that period of time.

Fig. 16. The behavior over time graph of Achv_Bdry_Opport, which is an indicator of the leader's overall level of functioning

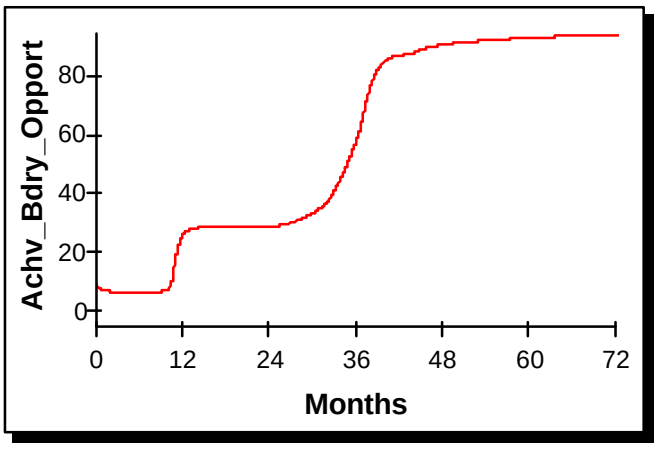


Figure 16 shows another stair-shaped behavior pattern in which a hierarchy of processes came into play after the team became operational at about month 24. The first increment, between year 1 and 2, was due to transferring of **Know_Abt_Teams** learned in preparing to go on line. The next increment was primarily due to on the job learning, i.e., gaining **LeadrspSkills**, and experience as a SDWT leader. Finally, as other variables gained intensity, the leader went from above average to a superb leader. This is where **Clarity_Of_Vision** and **LdrsTrustIn_Team_Members** and **Leader's_Care/Respect** for his or her team members came into play. If you trust and respect them, then you can become a better leader by spending the time achieving more boundary opportunities, while vesting more control and responsibilities with the team.

INSIGHTS AND POLICY IMPLICATIONS

The model was capable of generating at least three different and important reference modes, namely, (1) never establishing operational teams, (2) terminating teams when performance initially decreased and then bringing them into existence again, and (3) creating and supporting the teams, and, in this run, reaching superb levels of performance and high quality of leadership.

The Importance of lower level processes

In conceptualizing this model, we think in terms of hierarchical influences in this situation. The first level of influences comes from external sources, such as from administrators, owners, upper managers, coaches, and other stakeholders. Managers who

commit to the SDWT approach and who control and dole out resources represent the key sources of influence at this level. Since this portion of the model focuses on team leadership, the Leadership Sector, we have only employed the barest amount of structural detail concerning how higher management makes commitments and allocates resources. At a later stage in our research, we plan to develop an Upper Management Sector for the model dealing with upper management's understanding, fostering, and integrating self-directed teams into the organizational structure and culture (see Katzenbach, 1998)

In Run #1, for the Leadership Sector, we see how fragile the system is to lack of initial resources needed to establish these teams. At the beginning, at least, it appears extremely important to deliver the level of resources promised, raising supervisor/leader's trust level, so that he or she can be a spokesperson for forming the team, and raising her or his own commitment and motivation to learn as much as possible about team functioning. We saw lack of upper management support in Run #1. Also, from the perspective of both supervisor/leader and potential team members, upper management is "talking the talk, but not walking the talk." If promises by higher management are not met, trust by the supervisor/leader of higher management goes down, and trust by the workers in the supervisor/leader and in the organization also goes down.

Run #2 represented a different situation. Here the organization went through preparations for the team to come on line. Perhaps for a variety of reasons, when the team did come on line, performance initially declined from the old performance level. In this run, resources were adequate. The problem was associated with a second level of processes, which are internal to the team and its leader, per se. Examples of the second level of key variables would be **Commit_To_Team** and **Know_Abt_Teams**. We feel that high levels of these variables are necessary for the team to perform highly, but they are not sufficient alone to reach and sustain such high productivity.

The importance of higher level processes to reach high peaks of productivity

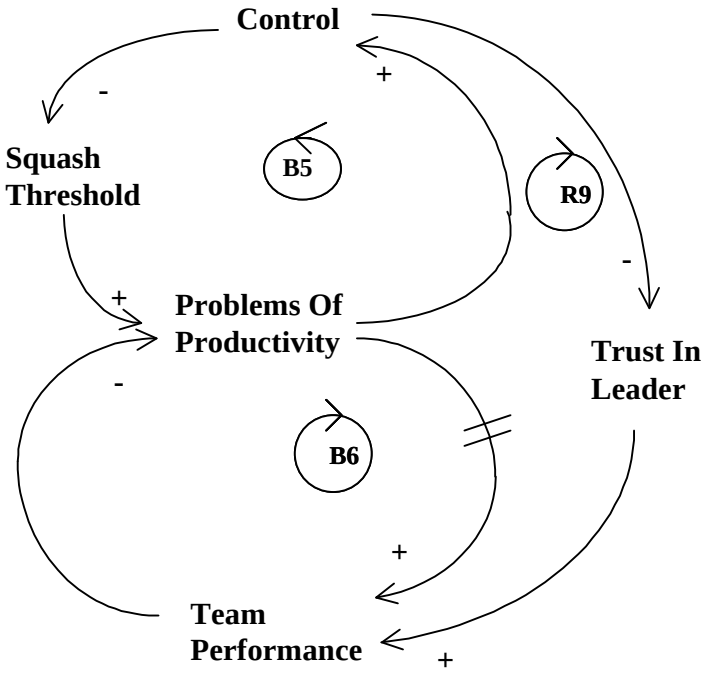
The purpose of Run, #3, is to demonstrate leadership patterns found in continuing teams that can achieve high performance. In our framework, base level processes come from external sources, such as stakeholders, etc. The second level deals with basic processes, such as the leader's commitment, and obtaining skills to perform better. In Run #3., we also show a set of processes that take **Performance** to greater heights. These processes in this leadership model, deal with such things as **Clarity_Of_*Vision*** and **LdrsTrust_In_Team_Members**. We hypothesize that these variables when high, help **Performance** to reach new heights and greatly increase other variables such as **Achv_Bdry_Opport**. Moderately productive teams never get to such heights on variables such as **LdrsTrust_In_Team_Members** and **Clarity_Of_*Vision***, which take a long time to accumulate. Thus, the difference between high performance teams and those that perform less well is in the intensity of these higher order variables. Finding ways to increase intensity of these variables is key to achieving and sustaining high productivity.

Potential policies and actions

Policy direction A for Run #2: Deal with initial poor performance --raise the threshold for termination. In Run #2, **Resources** were adequate. In this situation, commitment, an internal process, plays a key role in deciding whether to keep the team

going or to return to old way of doing things. In our Leadership Sector the decision to scrap the team concept depends on the level of **Commit_To_Team** and a discrete parameter called the "**Squash Threshold**." In the model, a sizeable **Performance Gap** generates fear of failure, which in turn rapidly increases **Control** by the supervisor turned leader very rapidly. If the value of **Control** reaches the threshold value, the decision to disband the team is made. Thus, for example, from a policy lever perspective, one might attempt to find ways to raise the leader's threshold value, so that he or she will control the situation without scrapping the team. Presumably, if the leader works with team members, fosters team problem solving, and waits long enough, **Performance** will rise as the team gets its act together. Also, if the leader works with upper management, they will understand the situation and continue support.

Fig. 17. Raising squash threshold, but keeping use of Control eventually inhibits the efficacy of team action



The leader can succeed if the team sees the leader is inserting himself or herself to help the team through this difficult period. However, there may be unintended consequences, especially if, in addition to raising the squash threshold, the leader reverts to some command and control. Indeed, letting the leader revert to old patterns of control could have demoralizing effects on the team as represented by loop R9, Figure 17. The situation is made worse if the leader appears to be abandoning the team concept. The leader's behavior would be viewed as being hypocritical. Trust in the leader, which had accumulated over time, could fall drastically. The message to the team would be, "Any time the team begins to drop in productivity, I am going to jump in and take over responsibility for getting you back on track, because I do not think you are capable of solving your problems." This type of act disempowers team members, and recovery is slow at best.

In many respects, the policy option of raising the **Squash Threshold**, but continuing to use control, i.e., "to put out the fire", would generate ill will and lack of trust, and reduce team efficiency (Figure 17). This in turn may lower the effectiveness of the long-term solution to raising productivity through the self-directed team structure. This fits the classical archetype of shifting the burden. Unfortunately the positive loop, R9 leads to some very unfortunate unintended consequences. Certainly one would want to avoid handling performance in this manner. It is doomed to fail!

Policy direction B for run #2: Deal with initial poor performance -- keeping Control at a low level and emphasizing team problem solving. The archetype, shifting the burden to the intervener is important here. It suggests an alternative policy of moderating and inhibiting the urge to control through learning about the high possibility the team might have a bumpy ride at first, and about ways to support team efforts and help the team in problem solving. Sharing control (weakening old **Control** approaches) helps to make loop B6 as seen in Figure 17 more salient in this situation. The downside is that it is very difficult to help team leaders avoid increasing **Control** when **Performance** declines. However, we prefer a policy of teaching the team leader, through study, role playing and coaching, etc. to come out of an initial rough start by letting the team members get vital experience playing their new roles and by assisting without disempowering them..

In our model, **Know_Abt_Teams** was the variable representing conceptual information learned about teams prior to coming on line. Presumably knowledge about possible poor initial performance, as when the team began operating before it was ready, could be associated with and integrated into the **Know_Abt_Teams** variable. We modified the model by coupling **Know_Abt_Teams** to the input rate of the **Control** variable through a multiplier that would slow the increase of **Control** as performance fell. Under suitable parameterization, simulation runs indicate that the leader could at first see a decline in **Performance** and still not micromanage the team.

Concluding policy: Increase the likelihood of having a very high performance team -- deliberately fostering positive loop processes containing higher level leadership variables. Runs #2 and #3 help demonstrate that variables such as **LdrsTrust_In_Team_Members, Trust_In_Upper_Management, Clarity_Of_Vision, LeadrspSkills, Leader's_Care/Respect**, and **Achv_Bdry_Opport** are vital in growth of productivity, i.e., **Performance**. In particular, **Achv_Bdry_Opport,** which in this model represents the leader's primary level of functioning, is involved in one or more positive loops with those other variables. As high level leadership variables grow in intensity and approach a maximum, they have strong synergistic effects on one another and in particular, on **Achv_Bdry_Opport.** All the positive reinforcing loops are acting in the same direction. And the payoff could be greater team performance, potentially to unusually high levels.

We feel that these variables are amenable to encouragement and growth. A wealth of literature and abundant experiential learning opportunities are available to the organization and supervisor/leader that are aggressive about obtaining them.

Nothing in Runs #2 and #3 of the Leadership Sector provide a sure "fix." However, these runs imply that fostering high levels (intensity) in the so-called higher level "soft variables" will increase the likelihood of very high levels of team **Performance**, assuming similar dynamic loop processes operate effectively in the

Member Sector. The team itself must be committed, knowledgeable, skillful, have clarity of vision, be willing to take risks, and look for innovative solutions to problems. High quality leadership is absolutely essential to team success and achievement.

ENDNOTES

1. We gratefully acknowledge that Michigan State University Extension funded this research on team leadership.
2. Typically, system dynamic models focus on the dynamics of problem behavior. . In keeping with Saeed's suggestions concerning the need to look for and include multiple patterns of behavior, even behavior modes which are associated with normal or outstanding performance, (Saeed, 1992; Saeed, 1994), we also include patterns which might be found in high performance self-directed teams.

REFERENCES

Buchholz, S. & Roth, T. 1987. Creating the High-Performance Team. John Wiley & Sons: New York.

Colenso, M. 1997. High Performing Teams In Brief. Butterworth-Heinemann: Oxford, England.

Deeprose, D. 1995. Team Coach: Vital New Skills for Supervisors and Managers in a Team Environment: American Management Association Press: New York.

Fisher, K. 2000. Leading Self-Directed Work Teams: A Guide to Developing New Team Leadership Skills. (2nd ed.) McGraw-Hill: New York

Hitchcock, D.E. & Willard, M.L. 1995. Why Teams Can Fail and What To Do About It. Irwin Professional Publishing: Chicago.

Homer, J. Worker burnout: 1985. A dynamic model with implications for prevention and control. System Dynamics Review, 1, 42-62.

Katzerbach, J.R. & Smith. D.K. 1993. The Wisdom of Teams: Creating the High-Performance Organization. Harper-Collins: New York.

Katzenbach, J.R.1998.Teams at the Top: Unleashing the Potential of Both Teams and Individual Leaders. Harvard Business School Press: Boston, Mass.

Kim, D. 1992. Systems Archetypes: Diagnosing Systemic Issues and Designing High-Leverage Interventions. Pegasus Communications: Cambridge, MA.

Lane, D.C. and Smart, C. 1996. Reinterpreting 'generic structure': Evolution, application and limitations of concept. System Dynamics Review, 12, 87-120.

Levine, R. 2000. System dynamics applied to psychological and social problems. Proceedings of the 18th Internaitonal Conference of the System Dynamics Society, 126.

Levine,R.L., & Lodwick, W. 1992. Psychological Scaling and filtering of errors in empirical systems. In Analysis of Dynamic Psychological Systems, Levine, R.L. and Fitzgerald, H.E. (eds). Plenum Press: New York;V2, 108-116.

Levine, R.L., Van Sell, M., & Rubin, B. 1992. System dynamics and the analysis of feedback processes in social and behavioral systems. In Analysis of Dynamic Psychological Systems. In Levine, R.L. and Fitzgerald, H.E. (eds). Plenum Press: New York; 230-259.

Morecroft, J. 1985. Rationality in the analysis of behavioral simulation models. Management Science, 31, 900-916.

Richmond, B. 1980. Generalization with individual uniqueness: Modeling the Milgram

experiment. System Dynamics Group Working Paper, D-2508-2, Sloan School of Management, M.I.T., Cambridge, MA.
Rolls, J. 1995. The transformational leader: The wellspring of the learning organization. In Learning Organizations: Developing Cultures for Tomorrow's Workplace, Chawla, S and Rensch, J. (eds). Productivity Press: Portland, OR.
Saeed, K. 1992. Slicing a complex problem for system dynamics modeling. System Dynamics Review, 8, 251-261.
Saeed, K. 1994. Development planning and policy design. Avebury: Hong Kong
Senge, P.M. 1990. The Fifth Discipline: The Art & Practice of the Learning Organization. Doubleday: New York.