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Organizational Change at the Team Level: The Dynamics Of High Performing Self-directed Work Teams From A Learning Organizational Perspective.

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ABSTRACT

This paper describes a model that explains the changes workers go through in formation and evolution of self-directed work teams (SDWT) over a six year period. The formation phase is characterized by major increases in worker commitment to the team concept. Upper management has to convince workers that the company will give them the freedom and resources to function as a SDWT. Once the team comes into existence, another set of processes dominate. The model describes the tradeoff between being empowered to set work intensity and worker accountability. High performing teams may seek external resources to raise the performance bar, through internal pressure to excel. Raising the bar generates burnout as an unintended consequence. However, high performing teams can be relatively immune to burnout. The model hypothesizes that loop processes, associated with team spirit and zeal for the job, appear late in the game to ameliorate the effects of burnout.

Key Words: Self-directed-work-teams, commitment, learning-organization, trust, empowerment, accountability, team-sprit

INTRODUCTION

As economic pressures force companies to face up to global competition, organizations look for ways to increase productivity and market share. One way is through organizing the firm into new units that may generate higher levels of sustained performance. Over the past twenty years or so, self-directed work teams, as an organizational innovation, have been a popular way of increasing productivity. Indeed, there is an ever-increasing literature on self-directed work teams that outline their strengths and weaknesses (e.g., Hitchcock and Willard, 1995). Recently, the dynamics of self-directed work teams have

been explored by Rahmandad and Vieira da Cunha (2001), who looked at the formation of norms in groups. In addition, Levine, Leholm, and Vlasin (2001) modeled the dynamics of leadership in those groups.

PURPOSE

This is the second of a series of papers on modeling the dynamics of self-directed work teams (SDWT)'s. The previous paper, cited above, emphasized the changing role of leadership in the transition from a command and control culture to more of a participative culture. The present paper deals with the dynamics of the team members themselves. Self-directed team members, when moving from old work patterns and structures to (SDWT)'s have to make some revolutionary changes in patterns of work, responsibilities, and the commitment to the self-directed team concept itself. The model incorporates processes of learning, communication, and tolerance of diverse ideas. It captures the dynamics of emotional and social aspects of work teams, such as trust, zeal, and loyalty to the group. It also features the process of burnout under pressure to produce, and shows under what conditions "raising the bar' can be accomplished in the face of burnout. Finally, the model focuses on changes in team spirit, which is hypothesized to play a leading role in establishing extremely high performing teams (Katzenbach, 1993, 1998; Klein and Izzo, 1999).

DEFINITION AND DESCRIPTION OF SELF-DIRECTED TEAMS

Self-directed work teams are composed of workers who characteristically take charge of routine affairs, such as planning daily work flow, doing elemental accounting, deciding what new equipment to order, and bringing in customers to talk about how products could be improved. In most traditional organizations, many of these roles would be the responsibility of the immediate supervisor. However, leadership in self-directed teams is sometimes more diffuse than other work groups. If there is single team leader, he or she will have a very different set of roles, compared to traditional command and control supervisors. Levine et. al. (2001) described a model of leadership in self-directed teams. Much information is shared and gathered from sources within the team, from the organization, and from the environment (e.g., customers, suppliers, governmental agencies). SDWT's fit the pattern of a learning organization, for there is emphasis on keeping up with technology and taking a more holistic view of what is made, sold, or serviced by the team and the company.

Burnout. Another characteristic of SDWT's, especially high performing teams, is that there appears to be more emphasis on monitoring performance, re-evaluating goals, and sometimes "raising the bar," meaning that self-directed work teams may, from internal pressure, raise their goals and target performance levels themselves without external influences. In order to do that, they may have to obtain resources outside of the organization, by being entrepreneurial. Raising the bar has its tradeoffs, however, because higher performance levels have to be maintained, which can lead to burnout of team members. The model hypothesizes what processes dissipate burnout if it were to accumulate over time.

OUR EMPIRICAL RESEARCH ON HIGH PERFORMING TEAMS

In the team literature, some of the soft variables (processes) are said to be responsible for the advantages of SDWT's. Recently, the author has worked closely with his colleagues, Arlen Leholm and Raymond Vlasin at Michigan State University to interview several SDWT's that have been designated as high performing teams. The author's modeling efforts helped these researchers to generate a semi-structured interview, lasting, in total, four or five hours, which probed the history of the team as a working unit, sought out descriptions of the problems faced at the its initial existence, and elicited responses to questions about what happens over time to the key processes the team members thought to be important in their success. Those researchers have gone on to apply this interview format with a number of additional teams associated with many different companies and economy economic sectors.

The author had participated in interviewing the first three non-profit teams, two from Michigan and one from Ohio. In order to get some idea about what happened over time, we asked the team members to draw some of the key variables from the literature over time, such as performance and quality of inter-member communication, as well as any of the variables that came up in the interview that they felt was important. First we went over the definitions of the variables so that everyone more or less agreed on the meaning of the terms used to define each concept. We then gave them standardized forms to do the task of drawing what happened to that variable over the time horizon, which varied somewhat from team to team, depending on its age. For social variables, such as "a feeling of empowerment'" we quantified the variable to range from 0.0, no empowerment, to 100, which was defined as the maximum empowerment they could ever feel, something most if not all would ever attain. For non-social variables, the Y axis was quantified in the units that were appropriate to variable being plotted. If for example, they wanted to plot performance, which might be the amount of dollars brought in by grants every year, they would do the plots in dollar units.

We were looking for general patterns of behavior rather than an accurate behavior over time curve. We were studying very high performance teams, so trying this out on our <u>first</u> team, everyone wanted to show that all of the indices were monotonic. For them, the easiest way to do this was to draw a straight line over time. Their initial drawings, to a person, did not show any limits to growth. The author asked a few questions about the implications of constant change that is inherent in straight-line behavior. It became apparent to everyone that a straight line did not represent the behavior pattern they were thinking about. The author then drew a sample of five patterns on the board: Straight line, logarithmic, s-shaped, exponential-overshoot-and-collapse, staircase, i.e., logarithmic rise to an asymptote, followed by another logarithmic rise. Everyone revised his or her drawings. Most behavior over time graphs were drawn as s-shaped curves, with the exception of performance, which most people, in this elite team, drew a staircase pattern to signify that the team had surpassed its asymptotic performance at least one additional time.

We discovered the efficacy of "multiple choice" patterns with the first group. We used this method from that point on to elicit behavior over time graphs for all additional interviews. As far as I know, my colleagues have used the choice of patterns in their recent, ongoing research with other teams.

Differences in the curves. It should be pointed out that the team members were required to draw behavior over time curves, not just pick a pattern. They also were told that they were not limited to any of the curves they see on the board. By having them draw the curves, we found that, as one would guess, some of the curves developed faster than others. This substantiated our existing experience with teams as well as the literature that speaks of different stages of team dynamics.

Additional Notable Processes Found In Self-Directed Teams

Trust. We also noted that in every case, people reported that they "really liked and respected " fellow teammates. They wanted to spend time with each other, not only in the work environment, but also in many other settings. Thus the notion of trust appears frequently in our interviews and in the literature. From theses sources, it became obvious that trust was used in several contexts. Therefore, the author disaggregated trust into several key processes. For example, there is the trust that team members have for each other, i.e., fellow team members. Then there is trust in the team leader by team members. This type of trust is particularly important in forming the team. Once the team comes into existence and begins to function as a unit, if team members cannot trust each other, then there may not be strong motivation to get new resources to perform at higher levels.

Empowerment. Although trust in team members is an important process that can determine high performance levels, it is only one of several processes that lead to successful functioning. For example, the model captures a potentially important problem with organizational policies that give SDWT's so much power. There is a complex interaction between empowerment and mutual accountability. From an organizational perspective, if an organization suddenly gives the team freedom to set its own schedules and allows the team members to be prematurely empowered, the team members may take advantage of this new freedom by going in the opposite direction. Instead of working harder, they may try cutting their work hours or coming in late. The model captures the dynamics of the interaction between the level of empowerment and accountability to give a picture of the necessary conditions for eliciting innovative and entrepreneurial behavior.

THE THEORY BEHIND THE MODEL

As a guiding principle and as a framework for the organization of this paper, one can think of the processes of team dynamics in terms of a hierarchy of processes embedded in a triangle (see Figure 1). At the base of the triangle, the **first tier**, a number of very important processes have to occur in order for the team to come into existence. For example, the potential team members have to perceive that there will be adequate resources available for obtaining higher performance levels. There has to be a certain

level of commitment by team members to the successfully form the team. The processes associated with the **second tier** deal with what happens after the formation of the team. High performance teams focus on becoming a learning organization within the company. There is emphasis on innovation. Clarity of vision becomes quite important. Finally, good teams strive to obtain high levels of team functioning, allowing more time for entrepreneurship, perhaps leading to external sources of resources. The **third tier** of the triangle only occurs in relatively rare cases. Those are described by Katzenback and Smith (1993) and in most self-directed teams observed in our study. According to our theory, the key concept is team spirit. Most if not all of the variables associated with the previous levels of the triangle must be extremely high to elicit high levels team spirit. High levels of team spirit are associated with extreme motivation to perform and a certain zeal for the job. The team members have a fierce loyalty for the team per se, and the company they work for. There is almost a spiritual quality to their functioning. Most teams never get to those intensities necessary to generate such high levels of the variables and processes associated with the third tier. Once they attain such levels, however, then the high levels of zeal and loyalty feed back to inhibit burnout and turnover.

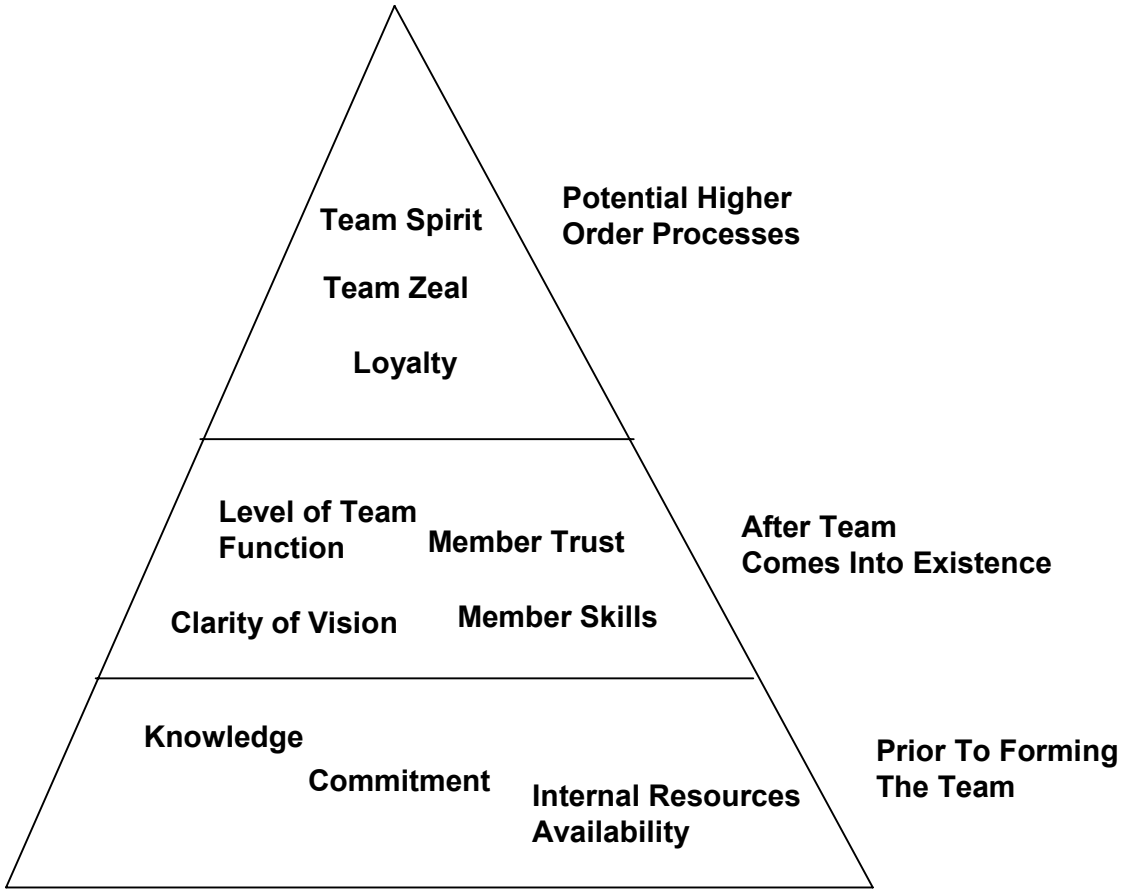


Fig. 1. The hierarchical relationships among processes that are associated with high performing self-directed teams.

Modeling Team Dynamics

The triangle metaphor can provide a organizational framework for modeling the dynamics of self-directed teams. Thus far we have discussed some of the characteristics of very high performing teams. As a system dynamicist, the author frequently wants to look at poorly performing teams to model their problems. Indeed, what he found from his own experience with these high performing teams is that they seem to circumvent, through planning, or never experience many of the problems described in the literature. For example, in a previous paper on leadership in self-directed teams (Levine, Leholm, and Vlasin, 2001), we modeled the transformation of supervisors to team leaders. The literature (e.g., Hitchcock and Willard 1995) describes how hard it was to move from a command and control leadership style to the take on a completely different style and set of roles when working with the team members. In high performing teams, many of the people who became fine team leaders initially showed qualities that would adapt them quickly to the new culture. They may even have had problems adjusting to the command and control climate prior to forming the self-directed team.

The model of team dynamics has all of the elements of the hierarchical triangle (Figure 1) taken from our theoretical framework and tries to incorporate much of the literature, which emphasizes problems and tribulations, i.e. what can go wrong with this type of team. The triangle itself presents a static view of many of these processes. The dynamics will be forthcoming in the rest of this paper. Originally, the author wanted to model what happens to self-directed teams after their formation, but team members that he interviewed made it very clear that it was necessary to include the preparation and formation stage to appropriately model the dynamics. Too many things happened early in the formation stage not to include them in the model.

Table 1
Key Processes represented in the model and organized according to the level of the hierarchy

Level Of The Hierarchy	Process
Formation	Knowledge Acquisition and Ambiguity The Role of Commitment To the Formation Process The Potential Problem of Inadequate Internal Resources
After Formation	Empowerment and Sense of Responsibility Trust in Members and Care and Respect Raising Performance Goals and Level of Functioning
Higher Level Structures	The Emergence of Team Spirit, Zeal, and Loyalty Burnout

Table 1 shows some of the processes represented in the model and discussed in the remainder of the paper. One sub-sector of the model deals with the loop structure associated with behavior generated prior to becoming a functioning self-directed team. Much of the work to be done is in dealing with role ambiguities and acquiring knowledge of working in a new way. Here in many situations, workers do not trust the promises of higher administration, and the new team leader, especially with respect to resources. Commitment to the concept of self-directed teams may be very low. The first sub-sector deals with loop structures connecting role ambiguity, knowledge of team functioning and commitment. The second sub-sector deals with trust in higher administration over resources. The two sub-sectors combined pretty well describe formation stage of these teams.

Once the team begins to function as a self-directed team, to operate effectively, team members have to learn a lot very quickly. In many companies, initially performance levels may go down, not up in the intended direction. The model tries to capture the problems of having too much freedom too soon, without developing a high sense of responsibility. During this period, many things happen. The model includes experiential learning on the job, the gain of new skills as additional member assets and in particular, deals with the role of trust and respect for fellow members.

The model shows under what conditions the team may raise the performance bar as the members become more efficient, successful, and perhaps more entrepreneurial. Obtaining extra resources and having time to seek external resources seems play a major role in raising goals from time to time and reaching them. In addition, the performance sub-sector represents the role of member trust in being entrepreneurial. Finally, maintaining high performance and productivity has its costs. The performance sub-sector of the model attempts to show how burnout may prevent high performance standards from being maintained.

The model also includes a sub-sector that deals with the loop structures that determine team spirit, which emerges very slowly and depends on what happens in the previously mentioned sub-sectors of the model. High levels of team spirit increase loyalty and zeal (intense satisfaction in being in the group and great enjoyment of the work activities). Loyalty helps to cut down on turnover and zeal helps to deal with burnout caused by working so hard.

As one can see from the Figure 1 and Table 1, the theory appears to highlight stages of development. Stage theories describing team dynamics are not new (e.g., see Colenso, 1995). However, in this system dynamic model, with the exception of the process of the team coming into existence, all of the processes, associated with transitions are continuous. Some loop processes are important and dominant at earlier stages than others. The later stages, characterized by high levels of team spirit, zeal, and loyalty, will not come into fruition unless second level processes are sufficiently high enough to have an effect on team spirit. Without sufficient learning of new skills, acquiring communication skills, and gaining respect and trust for fellow team members, team spirit is unlikely to emerge as a potent force in this model.

Linkages to other parts of the literature. The three tiered representation of team functioning reminds the author somewhat of Edgar Schein's work on the dynamics of organizational culture (Schein, 1990), where he defined organizational culture roughly as a pattern of assumptions that are invented or discovered by a given group as it learns to deal with both external and internal problems, and to find what works reasonably well so it might be passed on to new members. In essence, the model captures the dynamics of many of the elements of Schein's theory of the development of an organization's culture. In particular, the model represents the dynamics of two types of consensus building described in Schein's article, namely external consensus, dealing with such things as mission and goals, and internal consensus, dealing with boundaries and language (communication). The model attempts to describe the dynamics of moving from what Schein calls an "multi company", which is associated with an authoritarian/paternal style of leadership to an "action company", which is more egalitarian in nature and stresses sharing information at all levels.

The remaining parts of this paper are organized to follow the dynamics of each of the levels of the hierarchy, starting with the base of the triangle and ending with the apex of the triangle. We introduce the variables and some of the main structural characteristics for each level. Since each tier depends on the previous level of the hierarchy, it was thought best to present a base run that demonstrates high performance team behavior and a run that demonstrates problem areas that may occur for the many of self-directed teams for each level of the hierarchy.

THE PREPARATION AND FORMATION OF THE TEAM

The model's time horizon includes activities of the organization during the formation period and what happens after the self-directed work team comes into existence. The time horizon was chosen to be 72 months or six years. In the formation stage, the firm may be looking for ways to match the external competition from the world economy. Self-directed teams lead to higher productivity when there are strong interdependencies among members performing a complex set of tasks. Before the team actually comes into existence, the potential team members have to go through drastic changes. In some organizations, it is truly a radical transformation. Typically, workers know nothing about self-directed teams. They most likely did not have much to do with the organizational decision to create one or more self-directed work teams. In the old, scheme, workers were usually told what to do in terms of day-to-day operations. There are new roles to take on and old roles to drop. The old reward system was geared to reinforce and promote high performing individuals. That has to change when the team comes on line.

Thus, during this formation stage, team members have to gain vast amounts of vicarious knowledge about self-directed teams. This moves them into a learning organizational mode. There is much ambiguity about their new roles. As time goes on in this formation period, when knowledge goes up, role ambiguity should go down. Another salient

process that affects potential team members is their trust in their supervisor to deliver the resources the team needs to get the job done. Usually in the control and command climate, trust might initially be quite low. The commitment to the concept of the self-directed team is another major motivational variable that determines the success of the program. The members get to know and believe that the company as well as their team will have to increase productivity to higher levels to meet competition. That is a very important factor that increases attitudes towards forming these special types of teams. So, in summary, success in the early formation stage depends on (1) the accumulation of a vicarious knowledge base concerning the roles members will take as a team, (2) on the increased trust in the supervisor to deliver the resources, and (3) the commitment by the team members to form the team and get the work done.

Some Structural Characteristics of the Formation Stage

When employees are told about the possible formation of teams, most workers know nothing about them. Indeed there is a much ambiguity about what roles they will play and what changes in behavior will have to me made to deal the new situation. Figure 1 shows a small portion of the model that deals with the reciprocal interaction between ambiguity and vicarious knowledge. The model hypothesizes that *Member_Ambiguity* is a characteristic of the situation. There is a large emotional element to this variable, unlike *Knowledge*, which is more cognitive in nature. Generally in the model, all psychological variables have been set to range from an absolute zero, which in this situation would be anchored to mean "no ambiguity" at all about the team situation to 100 units, meaning so much ambiguity that the person should be totally confused.

Figure 2 demonstrated some knowledge/ambiguity relationships that take place in the formation stage, in the form of a causal loop diagram and a abbreviated stock and flow diagram. The author assumes *Member_Ambiguity* never increases, but decrease over time in terms of a draining process represented in Loop B1. A lot of ambiguous situations clear up when persons learn something about the topic. The stock, *Knowledge*, was introduced to represent information workers need to know to form and function as a real team. Here is where principles of learning organizations come in. To form a stable successful self-directed team, everyone must do their homework. The emphasis is on learning in this situation.

In Figure 2, we also see that *Knowledge* feeds upon itself as it increases over time. Loop R1 has been deliberately included as a self-loop to represent this psychological process. *Member_Ambiguity* inhibits learning about new tasks. On the other hand, as the team member's stock of *Knowledge* increases, *Member_Ambiguity* goes down. Loop R2 indicates that *Knowledge* should rise over time as *Member_Ambiguity* decreases. Figure 2 also includes a schematic flow diagram showing the elements of the Knowledge Acquisition/Ambiguity sub-sector of the model.

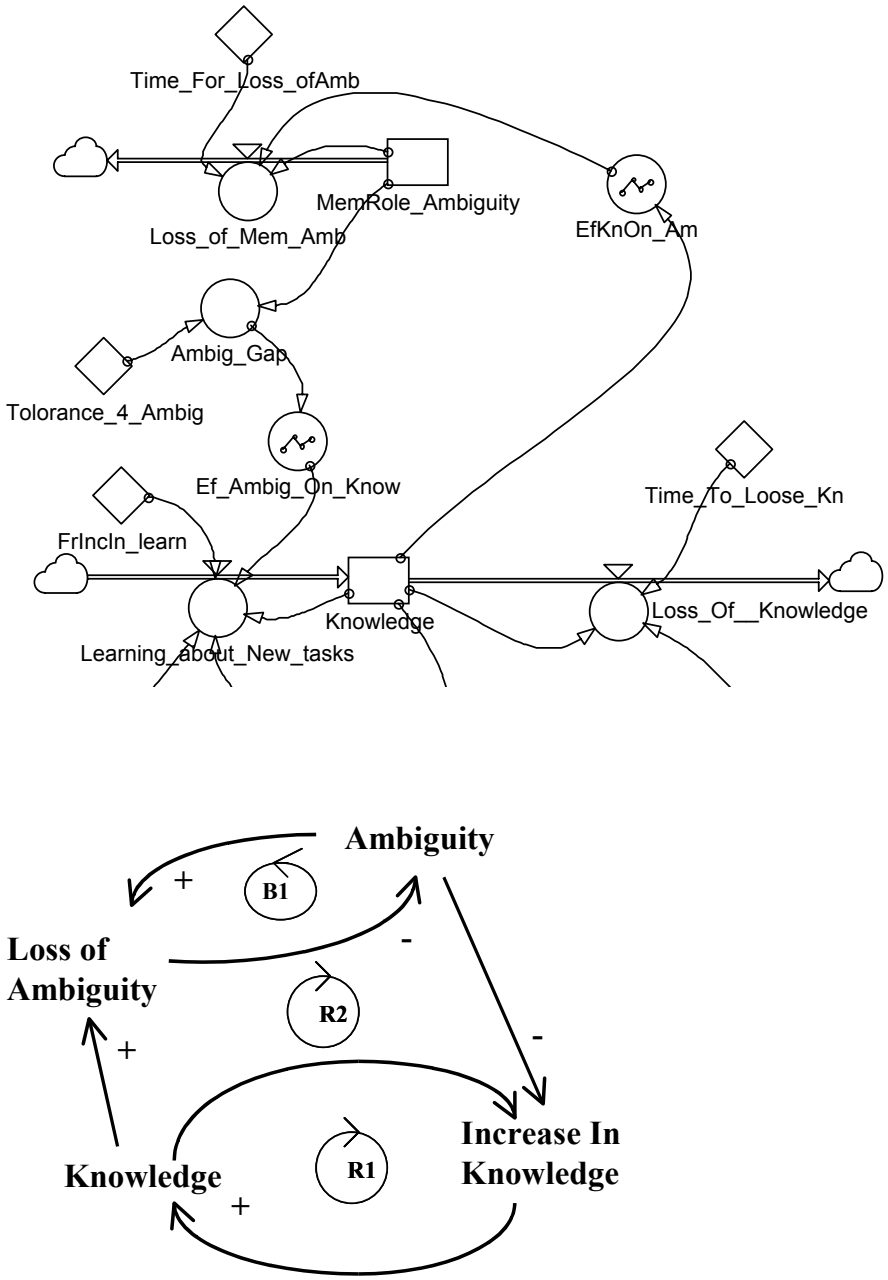


Fig. 2. The reciprocal influence of ambiguity about teams and vicarious knowledge occurring in the formation stage

Commitment

Another motivational variable that is crucial to launching the team deals with the members' *Commitment* to the self-directed team concept. Figure 3 deals with a principal

positive loop mechanism that aids in pumping up enthusiasm for moving toward building a self-directed work team. It is interesting also because the loop spans two sectors of the overall model, namely the team worker sector, being described in this paper, and the leadership sector, reported in Levine (2001). *Commitment* by future team members helps to motivate them to learn more about their new roles in the future. As *Knowledge* increases, the team leader, who at this stage is most likely their supervisor, begins to trust that the group can carry their weight and not fall apart. Thus, the Leader's Trust in Team Members increases when *Knowledge* increases. When the leader's *Trust in Team Members* increases, the tendency to fall back on control and command behavior, the antithesis of the new, promised leadership style decreases. Thus, an increase in *Trust in Team Members* decreases the *Leader's Degree of Control*. Finally a decrease in the *Leader's Degree of Control* increases *Trust in the Team Leader*, which in turn increases *Commitment*.

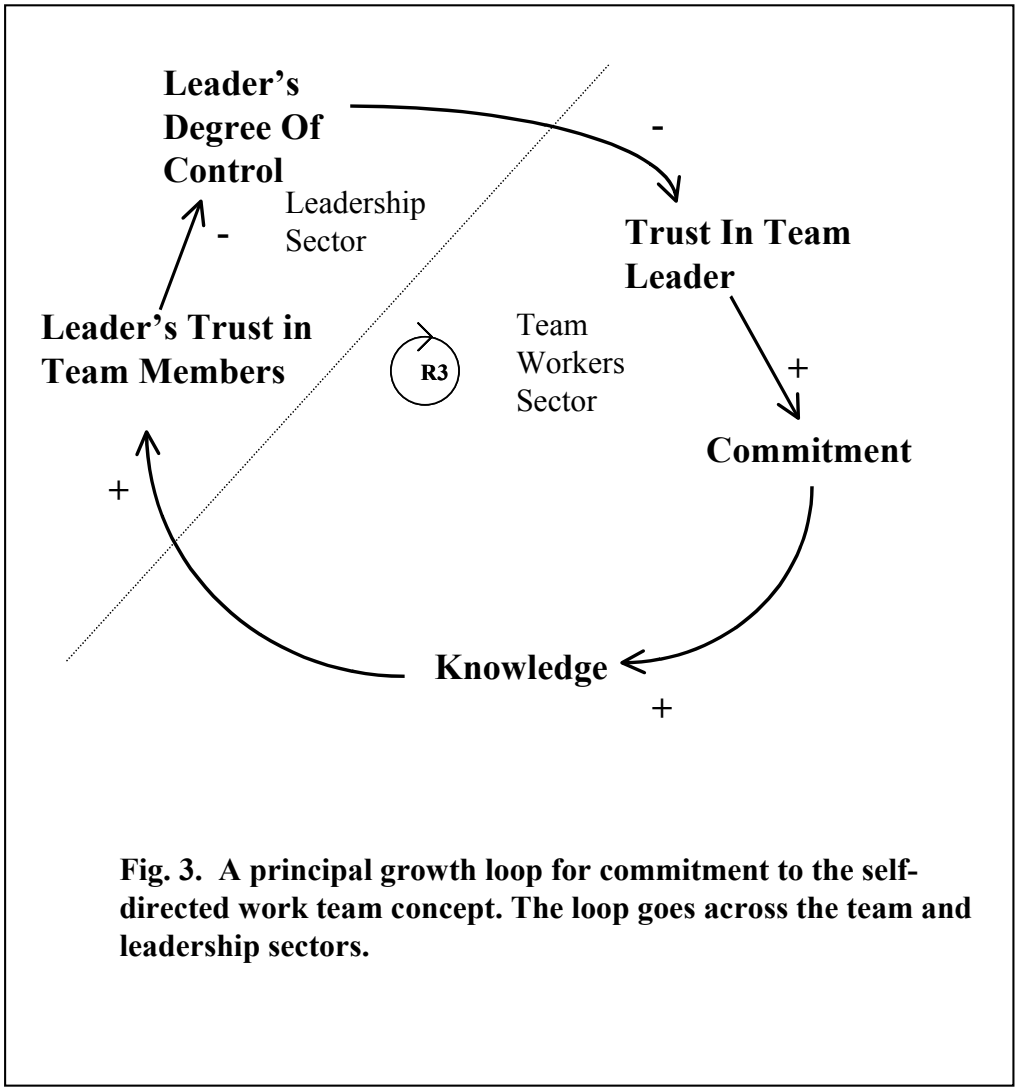


Fig. 3. A principal growth loop for commitment to the self-directed work team concept. The loop goes across the team and leadership sectors.

Note that the *Leader's Degree of Control* was represented as an exogenous input into the team worker's sector model used as the basis for discussion in this paper. Actually,

sensitivity runs show that the *Leader's Degree of Control* can have a profound effect on growth *Commitment and Knowledge***.** Potentially it can be a strong lever of change. To put it in context, we are describing the early phases of forming the team. If the workers do not "go for it", either the company has to hire new people or most likely drop the idea. When *Commitment* is low, the workers do not seem to learn very much about Self-directed work teams.

Internal Resources Before Coming On Line As a Real Team

In the formation stage, workers look for signs that higher management is serious about moving toward actual team formation. Is the company ready to supply the resources (e.g., time, expertise, and money) necessary for the team established itself and move forward? Depending on past experiences, the workers may be pessimistic about this latest idea that comes from management. *Commitment* is greatly affected by the support and resources given to the workers to start and maintain these teams. The model at this point only has a very small upper management sector that estimates about how much resources will be allocated for this new venture. That amount may or may not equal what they tell the team leader or the workers. If total internal resources are low, then the workers will not be committed to the self-directed work team concept. They will not learn enough have a good chance of increasing and sustaining productivity.

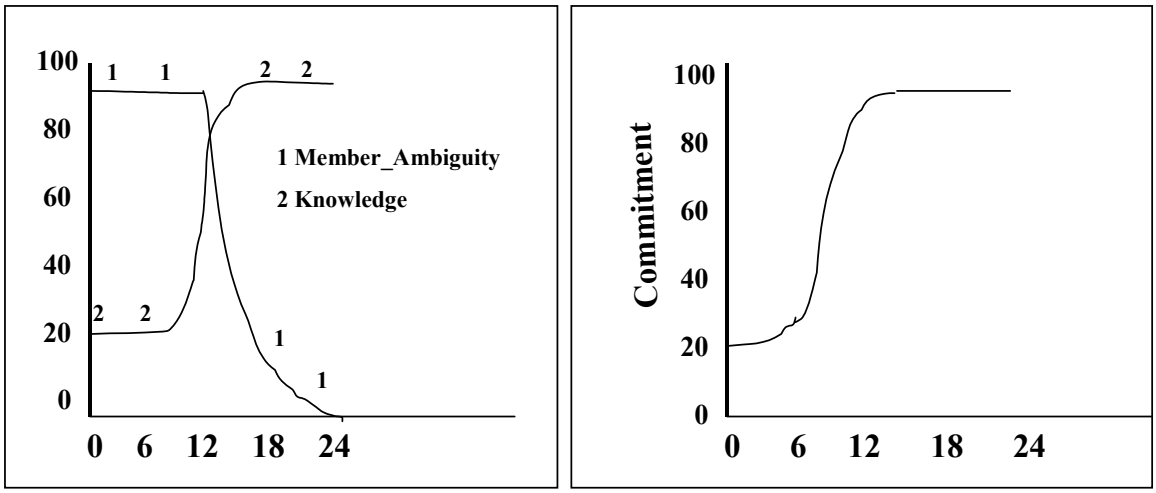
To be general, the stock of *Internal Resources* ranges from 0.0 to 100, and captures the all of the resources needed to set up and maintain the team, at least initially. The literature stresses the importance of upper management giving more than lip service to new the implementation of new ideas (e.g., Katzenbach, 1998). Without the overall support given by the organization, then there is only a small possibility that the team could be successful.

The model used for this paper has a very small closed loop Organization Sector. However, sensitivity runs indicated that at the early stage of formation, in particular, lack of resources lead to dire consequences in terms of dynamics of *Commitment***.** In formulating the model**,** the effect of *Internal Resources on Commitment* assumed that, if you do not have resources, you can not become committed. To be a bit more specific, a table function was set so that, when the value of the table function goes between 0 and 1, the resource factor inhibits the growth of the *Commitment*. When it goes above 1.0, it increases the stock of *Commitment*.

Base Run For the Formation Period

Let us see how the interactions between *Member_Ambiguity*, *Knowledge*, and *Commitment* play out over time, during the formation phase. In this base run, the parameters have been set to represent potentially high performance teams that have adequate resources to become extremely successful. Figure 4 shows the output of the model for team formation period, having a time horizon of 24 months, i.e., it took about two years to prepare to come on line for such teams in this computer run. In Figure 4a, one sees that this group of workers endured about 12 months of very high degrees of

Member_Ambiguity as *Knowledge* increased slowly at first and then very rapidly a bit later. However, *Member_Ambiguity*, after about a year fell steadily as one would expect of a draining process (see Figure 2). By the end of the formation period, many of the uncertainties and confusion about self-directed teams had cleared up.



(a) **(b)**

Fig. 4. Output of the base run describing the characteristics of high performance teams during the formation stage.

Potential Problems: Inadequate Resources Given By Upper Management

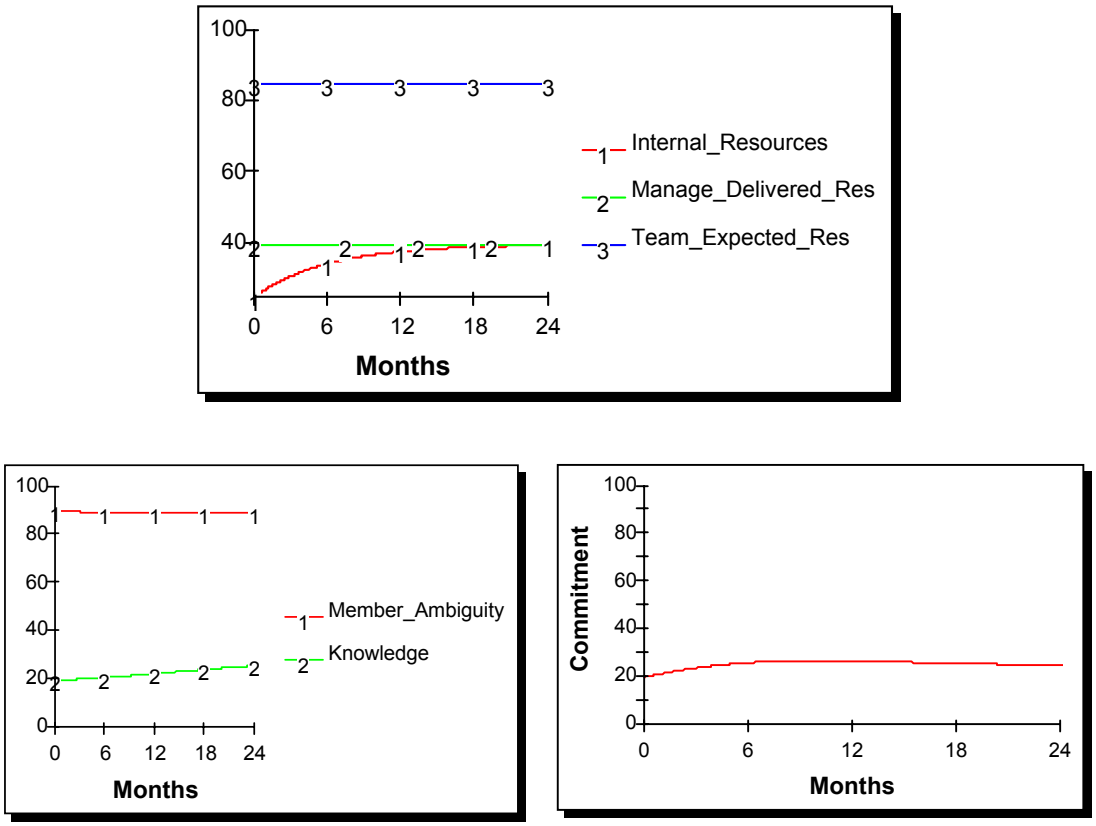
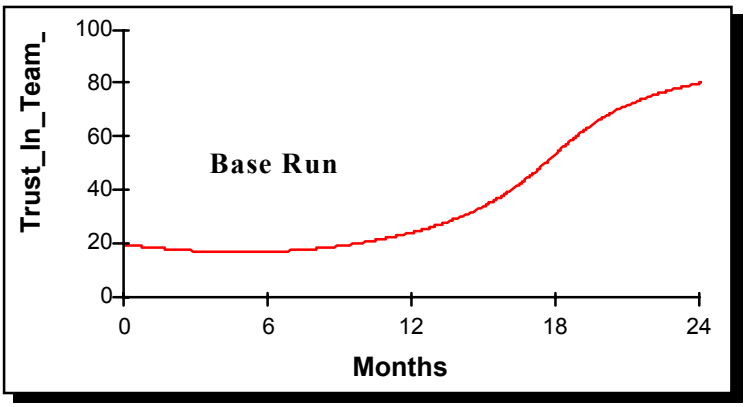
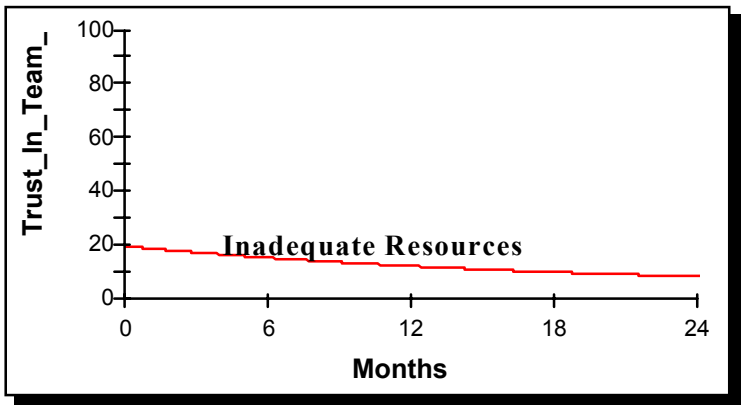


Fig. 5. Output of a run in which upper management did not deliver on Internal Resources.

Run #2: **Inadequate resources**.
The base run assumed management would supply adequate resources in the formation stage. On the other hand, suppose there was a discrepancy between what upper management told the workers and the team leader and what resources they delivered. In the model, the organization's *Internal Resources* ranges from 0.0 to 100. In the next simulation run, the workers and the team leader expected a large amount of resources, so that in the model the variable, *Team_Expected_Resources* was set at 85, and all the upper management wanted to give the team was only a moderate amount on *Internal Resources*, namely 40 on the same scale. According to the model, this can devastate group morale. The top figure shows what happens over time to the allocation of *Internal Resources* given to the team for the first 24 months, the period of formation. The figure on the left indicates that *Member-Ambiguity* remains virtually constant over time. It does not go down. *Knowledge* remains relatively stable over time, but at essentially its initial low level of knowledge units. In comparison to Figure 4a, at the end of 24 months, the workers know very little about self-directed teams. Finally commitment stays approximately constant over the time horizon.



(a)



(b)

Fig. 6. Comparison of the members' trust in the team leader when resources are adequate or inadequate

Figure 6 shows the behavior of Trust_*In_Team-Ldr* when resources were perceived as inadequate, compared to the base run, where resources for starting the self-directed work team were perceived as adequate. In Figure 6a, (adequate resources) one can observe a slight falling of trust over the first year with this parameterization, indicating that the potential team members were not sure if the resources expected would be there when they came on line. However, as one can see from the top figure, gradually the workers began to trust the team leader, who is a spokesperson for upper management. The team leader also has to go through a trust enhancing process with respect to upper management.

In Figure 6b, one can see that trust for the leader coasted down during the formation period, not up. Initially, one of the tasks for the supervisor/team leader is to try to persuade workers that it is to their advantage to be a member of a self-directed team. They have to sell the idea, and to assure the workers that it is not another management fad. The leader puts his or her reputation on the line by promising that resources will be

forthcoming. When management does not come through, *Trust_In_Team-Ldr* goes down as one sees in lower figure.

AFTER THE TEAM IS ESTABLISHED AND IS FUNCTIONING

At this point, the team has been established and is functioning on its own. Consider the variables in the next tier in Figure 1. Once the team comes into existence, a new set of processes comes into play. Some of them have their counterparts with variables already described in the previous section. When the team is functioning, it becomes apparent that vicarious learning can only go so far. High performance teams, in particular, continue learning organizational habits. They have so much to learn experientially. They have skills to learn and practice, and perhaps unanticipated new sets of problems to face for the first time.

Empowerment and A Sense Of Responsibility

Many teams are told specific objectives and over-all goals that they have to attain in a certain period of time. There usually are traditional constraints on how their goals have to be accomplished. However, management may not be clear about those constraints. In some situations, initially members might take advantage of the situation, and instead of increasing the intensity of work, they may opt for not coming in regularly, perhaps decreasing productivity. Conceptually, there is an tradeoff between empowerment and member accountability that needed to be made explicit before it could be incorporated in the model. The main idea for moving from a work group, subject to corporate culture of command and control, to a self-directed team format was that workers would increase productivity to meet or exceed competitive standards. Successful self-directed work teams only occur when the team members strive to raise productivity. In order to do that, they would have to be responsible. Too much freedom without responsibility can lead to immediate problems.

Responsibility frequently has to do with the development of norms. Recently, Rahmandad and Vieira da Cunha (2001) developed a interesting model studying the development of norms in these self-direct groups. Alternatively, the notion of empowerment has been a favorite topic in management (e.g., Bucholz and Roth, 1987; Colenso,1997). Empowerment is also a key fixture in the area of community psychology (e.g., Rappaport, 1981, 1987; Zimmerman, 1995, 2000). In many cases, responsibility has either been assumed to be directly included in the definition of empowerment or it is assumed that people who become empowered will use their newly acquired powers in an ethical manner. However, there are a number of instances where people and individuals who have not used their sense of empowerment in an ethical way. Thus, it was felt necessary to disaggregate the process somewhat for the purpose of the model by defining a stock of *Mutual Accountability* and a separate *Empowerment* stock.

Table 2. The tradeoffs between empowerment and a sense of mutual responsibility on setting work goals.

Empowerment	Mutual Accountability: Low	Mutual Accountability: High
Low	No change in goals	No change in goals
High	Decrease goals	Increase goals

The two may interact in a very complex and interesting way. Table 2 represents the interaction hypothesized to occur at various combinations of values of both level variables on setting goals. If workers are low in power and are not very responsible, they cannot do much to change the intensity of work, like decreasing hours. Likewise, going across the first row, if they are low on *Empowerment*, but are high in *Mutual Accountability*, they cannot change their performance goals. They have no authority to do so. On the other hand, consider the second row. If the workers are high on *Empowerment*, but and low on *Mutual Accountability*, they may decide to decrease their work goals by coming into work less often or leaving earlier. On the other hand, those who are high on *Empowerment* and high on *Mutual Accountability* may voluntarily increase their work intensity by working harder and perhaps working more hours, etc.

In terms of modeling, it was difficult dealing with suitable multipliers for the interaction between *Empowerment* and *Mutual Accountability* if one wanted to included all four of the cells depicted in Table 2. The author wants to thank David Lane, for suggesting the general form of the multipliers in this case. Figure 7 gives a rough sketch of the table functions associated with the multipliers. Consider *Mutual Accountability* first. At low levels, the value of the multiplier goes negative, reversing the direction of flow under those conditions. On the other hand, if *Mutual Accountability* is at moderate or high values the value of the multiplier is positive. Now consider the table function associated with *Empowerment*. The value of the function, ranging from 0.0 to 1.0 is always positive and ogival in form. Low values of *Empowerment* are very low, close to zero in the parameterization of this s-shaped function.

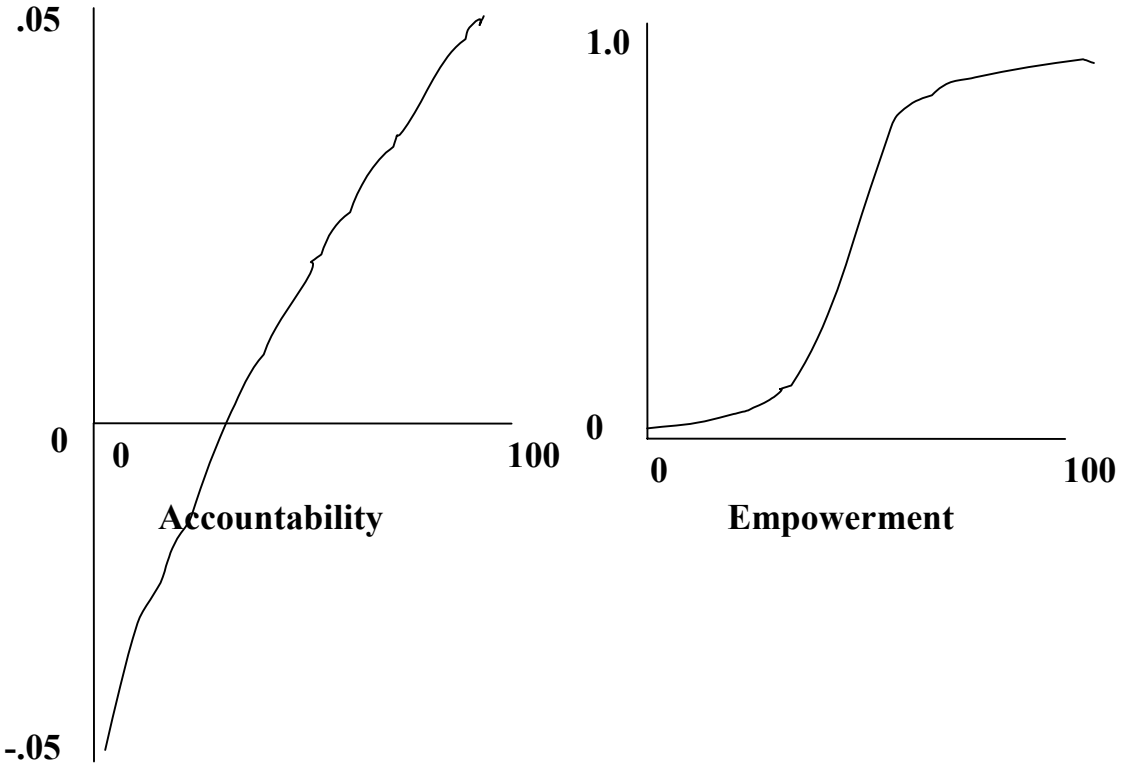


Fig. 7 Table functions that represent the interaction between Mutual Accountability and Empowerment. Note the change the direction of goals when Mutual Accountability is low and Empowerment is either high or low.

Although this interaction may operate to decrease productivity, there are other negative loop processes that prevent a very rapid decrease in performance due to the immaturity of the workforce. For example, management will be monitoring productivity of the new team very closely, and may, if productivity falls too far and too fast, upper management may step in and return to a control and command format by disbanding the team structure after a few months. Levine et. al. (2001) described how the model could react to a decrease in performance by disbanding the team concept after an initial period of observation, where the team was showing a worse performance record than before the team came into existence.

Other Early Important Processes

There are several key things that the team has to learn once it comes into existence. One is the experiential counterpart to the *Knowledge* variable described in the previous sections. The team members have to obtain a number of new skills. In terms of the model, I have designated the stock, *Memb_Skills***,** as the cumulated skill set members have to learn to work competitively for the company. Another aspect of the job is to gain a broader perspective about the role of the team in the organization and the relationship between the team and the outside stakeholders, such as customers, suppliers, and governmental agencies. Team members have to work hard on clarifying a vision of what the team wants to do in the future. Thus, *Clarity_Of_ Vision*, a stock, became another important early process that needed attention by the team leader and team members. For example, as *Clarity_Of_Vision* increases, members can see what new skill sets they would have to learn and master. On the other hand, as they become more skilled in technical matters, members could get greater insights about their role in the company and what they realistically could do in the future. An increase in *Memb_Skills* increased their *Clarity-Of_Vision*, thus generating a reinforcing loop between those two state variables.

These two psychological concepts are distinct from each other. A reviewer of the original manuscript rightly stated that, on the surface, psychological concepts such as *Clarity_Of_Vision* and *Memb_Skills* might have overlapping meanings. If so, loop mechanisms, such the loop described previously, that include such concepts are not robust. This is certainly true if these concepts did overlap, but fortunately that is not the case. *Memb_Skills* include bread and butter skills, such as learning basic accounting practices, because the group now needed those skills. In the model, *Clarity_Of_Vision* takes on a very different role. It partly represents some very interesting phenomena, not yet pointed out in the literature, but nevertheless can be found if look for. In parts of the literature, the vision of the company or the team frequently gets clarified in what my colleagues, Arlen Leholm and Raymond Vlassin call "triggering events or insights." For example, Katzenbach and Smith (1993) describe how in about 1981, a newly formed team, working for the Burlington Northern Railroad, changed the business concept of the company (eventually an industry) by moving toward a different vision of what the company was and where it should go. Initially, Burlington Northern perceived itself as a traditional railroad. This team began to think about piggybacking trucks which then could continue on to their destination more efficiently than by rail alone. The insight was structural. The "intermodal" team clarified their vision about who they were by thinking of themselves, not as a railroad company, but as a total transportation company. That allowed them to do whatever they wanted to do to be more productive..

Empirical basis of triggering insights. In our research, we find in our high performance team interviews evidence of these triggering insights that lead to rapid clarity of the vision. For example, one of the teams interviewed was of a crack university extension team, whose mission was to deal with issues of hiring personnel as people retired from the system. Up until the team was formed, each county had their own personnel specialists who only performed their duties in that county. When someone retired or left, it was not always possible to replace that person very easily, especially because there was sometimes fierce, competitive pressure from neighboring counties to take away the slot for themselves. In many cases, they were at each others' throats. The team members

began to think about these competitive relations among the neighboring counties. They made a structural change in their vision by redefining who they were. Their job was to find the best person for a particular county. The slot could be filled with someone who also could work for other counties in the region. So they began to hire a group of specialists who were available at any time on a regional basis. The model uses the variable Clarity_Of_Vision to deal with such insights, which open the way for more and more productivity.

Social Processes Important During Intermediate Phase Of Development

Self-directed teams are noted for the trust and respect members show for each other. The model tried to capture this process by including a stock called "*Trust_In_Team_Members*." Trust begins to increase slowly even before formally becoming a team. As *Mutual_Accountability* increases in the early phase of team functioning and the team begins to meet its goals by performing at or above higher standards of performance, team members begin to trust each other even more. The model also assumes that trust (*Trust_In_Team_Members*) aides members to communicate (*Member_Communication*) better among themselves and with other stakeholders. As *Member_Communication* increases, members are more open to listening to and accepting diverse ideas and perspectives (*Acceptance_Div_Ideas*). This openness in turn affects *Trust_In_Team_Members*. Thus, there is a reinforcing loop between interfaces these three social variables, *Trust_In_Team_Members*, *Member_Communication*, and *Acceptance_Div_Ideas*.

Level_Of_Team_Functioning

As the team members acquire work and communication skills, they also gain information from other parts of the organization, and from people outside of the company, such as customers or clients. Gradually the team begins to function very well, assuming that the members get the necessary resources to accomplish their work. This level of team functioning, which is represented by the stock, *Level_Of_Tm_Functioning*, takes time to accumulate after the initial startup phase. It is a function of resources, ability of members to communicate with each other and to gain relevant information about clients and the competition. When the *Level_Of_Tm_Functioning* is high, things are humming. It is influenced by *Trust_In_Team_Members, Member_Communication, and Acceptance_Div_Ideas*

Goals, Routine Effort, and Hours Devoted to Getting External Resources

Previously discussion focused on modeling a set of social and psychological variables, such as *Commitment*, *Knowledge*, and *Level_Of_Tm_Functioning*. Most system dynamics models contain variables that have conservative properties, and act as material/energy processes (see Levine, Van Sell, and Rubin, 1992). The model also has some typical "hard variables," like hours worked per month per worker, frequently found in other system dynamic models. Earlier, the setting of goals was briefly discussed in describing the interaction between *Empowerment* and *Mutual_Accountability*. This

section will be devoted to the very important topic of performance and the process of potentially raising the bar, i.e., raising performance goals. The model assumes that changes in performance goals are due to the empowerment/accountability interaction and a very important factor, *Trust_In_Team_Members*. The basic assumption is that the team members will only raise the bar if they feel empowered to do so and know that fellow members will come through for the team. There must be trust that others in the group can accomplish what the group set out to do. In addition, the model assumes that team members also may eventually not raise goals if there are not enough internal and external resources to increase and maintain new levels of performance. The constraints due to total resources are represented in the form of a multiplier, which can decrease the overall performance goal when resources are not available.

Performance.

In this general model, *Performance* is treated as a cumulative stock variable, varying from 0.0 to 100 and not an action variable. Note that the term, *Performance* (level) is used. However, in any application of the model, the variable, *Performance,* would be changed to match the type of index being monitored, such as sales or profit. Initially, before the team came into existence, the old standard was set to 40 performance units, which is too low, compared with the competition, which was set in computer runs to 60 units. When the team comes into existence, it is assumed that *Performance* is at the old equilibrium level, 40 performance units. At that point, there is a gap between the old performance level, 40, and the new competitive performance level, which at the time the team came into existence is set at a minimum of 60 units. So there is a gap between where the team wants to go and where it is at when the members officially began working together.

The model assumes that at first the team works harder, which is very common to observe in self-directed teams. This generates a negative loop process that has been included in a number of system dynamics models (e.g., Morecroft, 1983; Homer, 1985). One way of working harder is to put in more hours just to do fairly routine tasks that are necessary for the group to function. This is a normal reaction of the team to cope with so many new tasks, etc. However, fortunately, another process comes into play. As *Member_Communication***,** *Memb_Skills***,** and ultimately the *Level_Of_Team_Functioning* develop and increase, the team gradually becomes more efficient in doing routine, but necessary tasks. As *Clarity_Of_Vision* increases, it may become apparent that the teams must look to external sources of funding and resources to raise performance.

Base Run. Consider the output of the model in Figure 8. Note, at first the neophyte team has to put in many more hours per month to stay competitive, but as they become efficient, and obtain additional resources they raise the bar by increasing the *Performance Goal* variable. It is the opposite of the problem of drifting goals. Thus, Figure 8 shows a typical run, using the parameterization of the previous base run, that represents what might happen to a high performance team as it becomes more efficient. This is related to the *Level_Of_Team_Functioning* variable in taking care of routine matters and utilizes surplus hours, which normally would be devoted to routine matters, to gain additional

resources. Frequently, the newly acquired resources come from outside the organization.. Productivity goes up to the new standard and then gradually drifts upward, due to augmented resource capacities and increased performance goals.

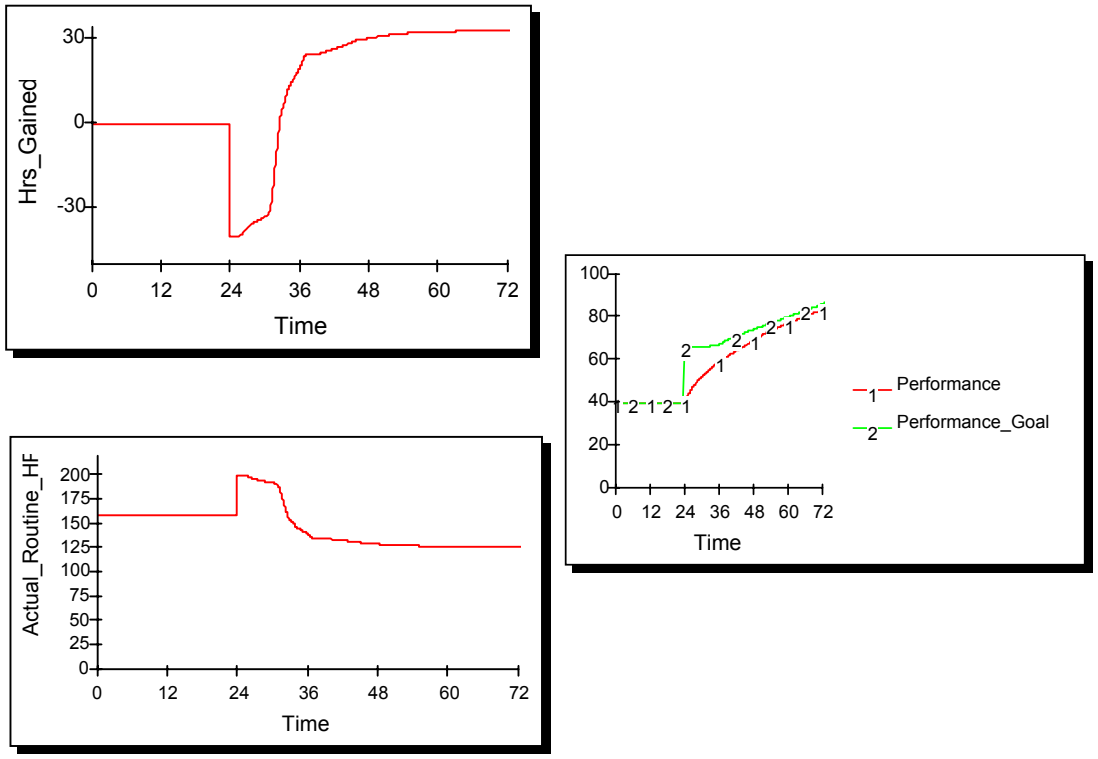


Fig. 8. Hours gained by team members that is put into getting more external resources that help to increase performance.

Getting External Resources

Obtaining new resources is not a particularly easy task for team members. Figure 9 shows a portion of the model that deals with how the team gets its resources. There are two types of resources, internal and external. The stock variable, *Internal_Res*, represents resources emanating from the upper management sources. These are the original resources generated over time by the organization to form and to maintain the team's functioning. However, in many cases, the team is encouraged to enlarge the pie by generating suitable additional resources externally. The model assumes that the generation of *External_Resources* occurs when team members feel empowered to take the time to apply for additional resources and have built up enough trust in the leader to move on their own. In order to get funds, members have to gain knowledge of the external environment concerning what are the needs of their clients and/or what the competition has to offer. Finally, they have to have the extra time devoted to obtaining and maintaining *External_Resources* by functioning at a very efficient level.

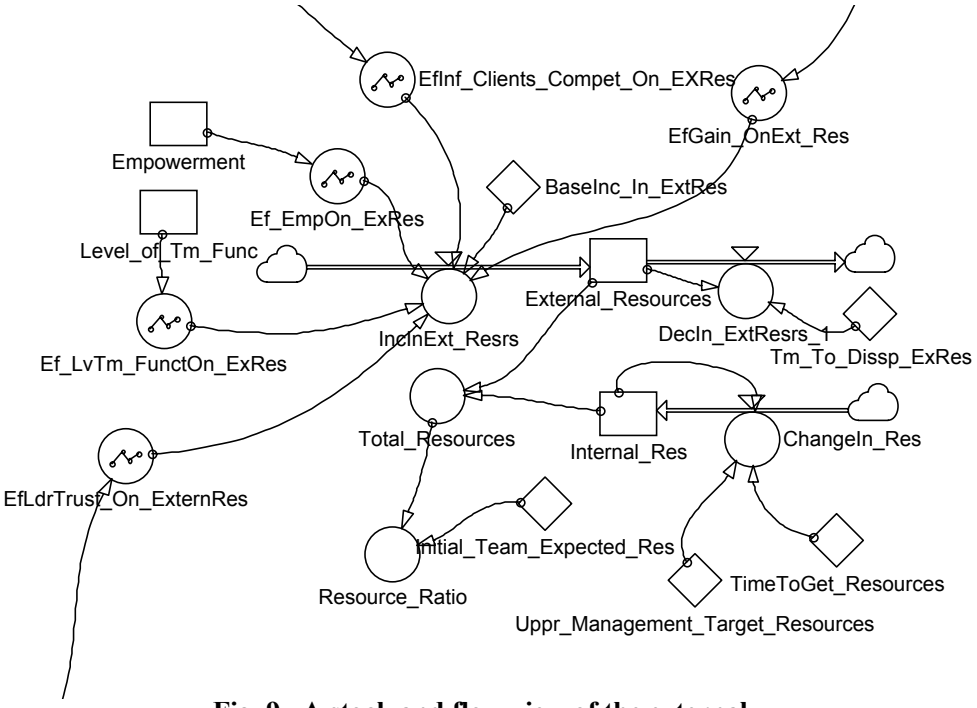
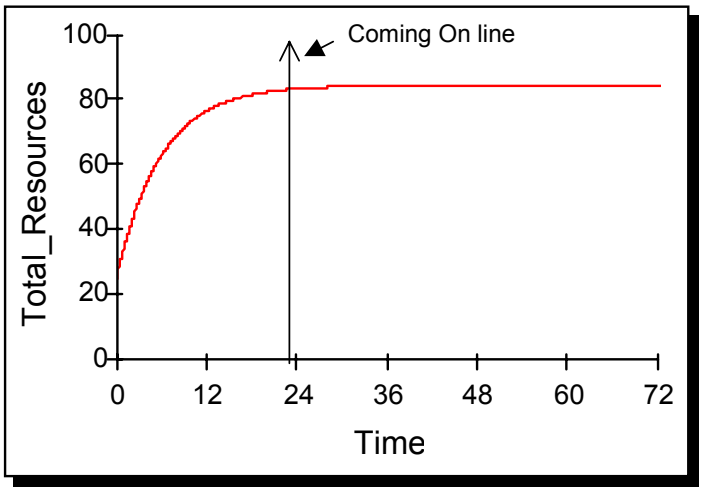
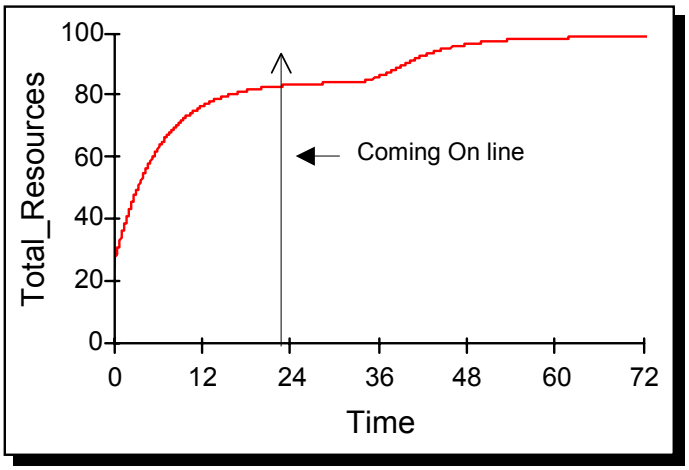


Fig. 9. A stock and flow view of the external and internal resource subsector.

Run # 3, Ineffective team leadership. Some of the most interesting structure in the model is associated with loops that span sectors of the total system. In this case, if an organization does not foster the development of their team leaders, the lack of support from the team leader can inhibit the motivation for team members to elicit external funding. Figure 10a shows what happened in a simulation run when the quality of leadership was relatively low, thus not providing enough support for the team to seek external funding. On the other hand, when leadership develops adequately over time, and other conditions are met, new external resources will be obtained. Figure 10b shows that the team in this situation utilized internal funds until about 3 and half years into the base run, and then began to obtain additional capacity to generate higher productivity. The performance graph for this group had been shown in Figure 8.



(a)



(b)

Fig. 10. Simulated Total_Resources when leadership was lacking (a) and (b) when the team leader helped support the team's entrepreneurship.

THE EMERGENCE OF HIGHER LEVEL STRUCTURES

The model can deal with self-directed teams that potentially can meet and sometimes go beyond the competition. However, sustaining higher levels of performance has its limitations and a potential downside, namely the very real problem of burnout. The system dynamics literature has a number of models that deal with various forms of burnout (Morecroft, 1983; Homer, 1985; Levine, Van Sell, and Rubin 1985). It is extremely hard sustaining such high levels of performance in the face of burnout, yet apparently, high performing teams can keep producing at a high level year after year.

What mechanisms allow these elite teams from burning out? The author's work with A. Leholm and R. Vlasin on studying high performing work teams seemed to indicate that there was more going on than meets the eye. Yes, it is true that one that members of high performing teams have more sophisticated work skills, more trust among members and in general a much higher level of functioning over time. However, in comparing moderately good teams with elite, high performing teams, what we noticed was that the latter group was filled with, what we might call "team spirit." They were fiercely loyal to the group and to the organization. They seemed to show a high degree of zeal for what they were doing. The intensity of team spirit, in particular, was missing in self-directed teams that were only moderately successful.

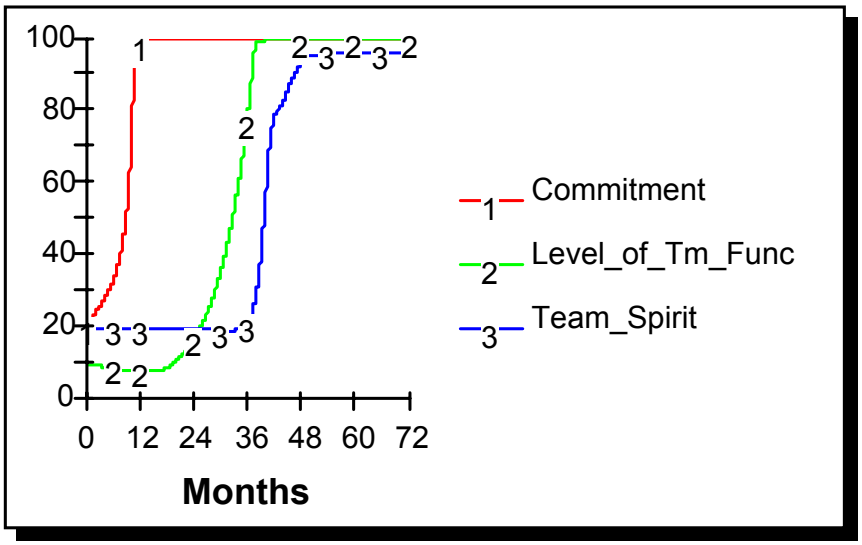


Fig. 11. The emergence of different team processes at different times in a six year period.

The Timing of the Variables

The notion of team spirit is certainly not new. It has been loosely used in management circles for a long time. What is new is the idea that, if one considers *Team Spirit* as a state variable of the system, then (1) it takes time for it to emerge and influence other key variables and (2) may not emerge to any extent for only moderately productive self-directed teams. *Team Spirit* will not grow unless the team has done those things to attain a high *Level_Of_Tm_Functioning*, act in an empowered way to obtain *External Resources*, and build up a degree of care and trust for each other, i.e. build up social capital, so that the level variable, *Trust_In_Team_Members* was high. Figure 11, from the base run, shows the behavior of the model simulating a highly successful self-directed work team. As one can see, *Commitment* peaked very early is followed by

Level_of_Tm_Functioning, which peaked around year three. Finally, note that Team_Spirit, only took off when the *Level_of_Tm_Functioning* had reached its peak.

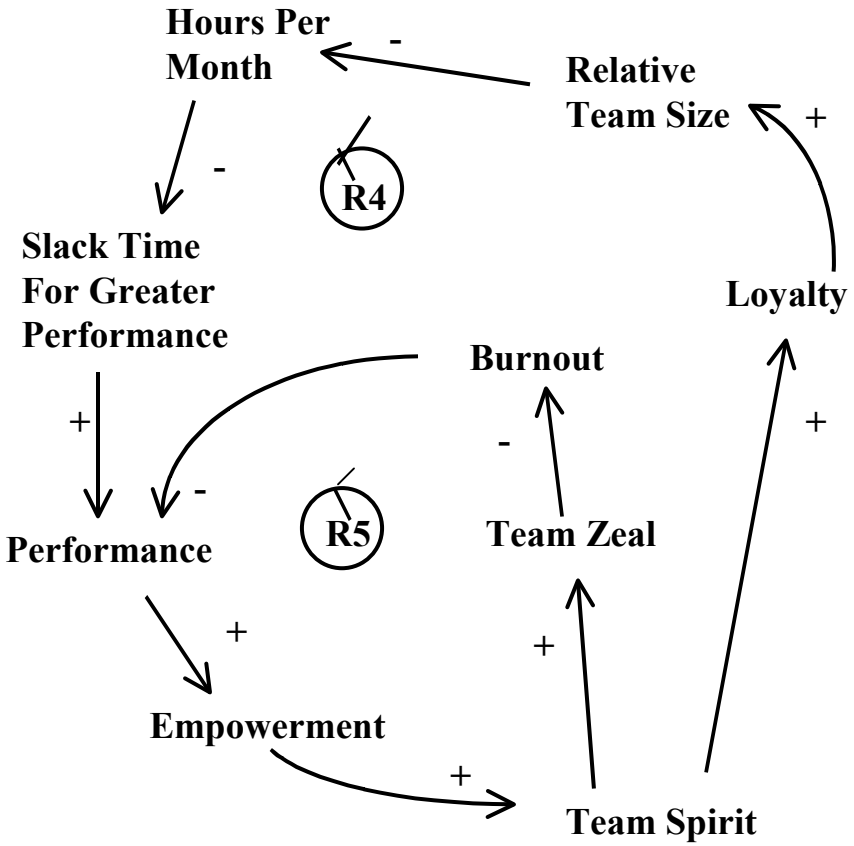


Fig. 12. Two of the main reinforcing loop structures that increase loyalty and lower burnout through Team Sprit.

From a dynamic viewpoint, increases in *Team Spirit* increases (1) *Loyalty* for the team and the organization and (2) *Team Zeal***,** which is an intense happiness and satisfaction for doing things on the job**.** Two of the main loop structures involving the action of *Team Spirit* are seen in Figure 12. Loop R4 shows that, as *Team Spirit* gets large, team members become very loyal to the team, sometimes passing up great offers to go elsewhere in the company or to other organizations. *Loyalty*, in turn, keeps people from leaving, so that it is easier to hire and retain the desired size of the team. As the relative size increases towards it optimal value, the number of hours per month per team member doing routine tasks decreases over time, generating slack time to devote to new and challenging projects. An increase in slack time increases *Performance***,** which will enhance the team members' feeling of *Empowerment*. Finally, an increase in *Empowerment* will in turn increase *Team Spirit* even more.

As *Team Spirit* becomes large, a second reinforcing loop, R5, takes hold. As described previously, there is an amazing kind of extreme enthusiasm for the team that in the model is called *Team Zeal*. It may be somewhat similar to the zeal one might find in cult groups or in terrorist cells. The assumption here is that, even though the high performance team is raising the performance bar far above the standards set by competition, they can maintain long periods of high performance levels because of the intense *Team Zeal* they feel when working or when bowling together, etc. In R5, an increase in Team Spirit increases *Team Zeal*, which in turn inhibits *Burnout*. A decrease in *Burnout* increased *Performance Goals*, which in turn increases *P*erformance. When *Performance* increases, *Empowerment* increases, which in turn would increase *Team Spirit*.

Burnout Revisited

Let us see what happens to *Burnout* in the high performance base run. The right hand panel in Figure 13 shows what happens to *Burnout* in the formation period as well as after the team was formed. As one can see, Burnout grew very slowly prior to coming on line on month 24. Recall that the period after month 24 was devoted to changing goals to meet competition. This was a very difficult time, and thus the team members had to work overtime to catch up. This is reflected in the initial rapid rise in *Burnout*, just after month 24. Around month 48 or 49, *Burnout* reached it peak, and then dropped down to eventually come into equilibrium at a low value.

To get a better idea about what processes caused the rise in *Burnout*, as well as what caused it to eventually dissipate, consider the left side of Figure 13. Figure 13a shows the indicated number of hours per month per worker needed to deal with standard, routine tasks. Initially, until month 24, workers put in about 160 hours per month. The figure indicates just after the initial period of functioning, starting from month 24, workers put in a longer number of hours, starting from a baseline of 160 hours per month per person to about 200 hours per month per person. Shortly afterwards, the *Level_of_Tm_Functioning* began to rise, so that the workers became more efficient. One sees in Figure 13a a drop in the number of hours, eventually to a low point of 125 hours per month per person for routine tasks. The "work harder" process, followed by "getting better at it" process accounts for the initial rapid rise in *Burnout* after month 24 as well as the leveling off process that occurred around month 32 to month 48. Thus, the initial reaction to working as a team was responsible for about half the *Burnout* curve. The other half of the curve is due to the rapid effects of *Team_Zeal*. Figure 13b shows the changes of the multiplier representing the effects of Team_*Zeal* on the dissipation of *Burnout*. The multiplier changes the time factor associated with a drainage process. Low values of the multiplier increase the dissipation rate. One can see that *Team Zeal* essentially had an effect on *Burnout* after month 48. It drastically reduces *Burnout* during the last half of the simulation run. Finally, consider Figure 13c. It portrays the net gain or loss of *Burnout* over time. It supports the contention that burnout was generated by the work harder process and was dissipated by the zeal members felt for the work.

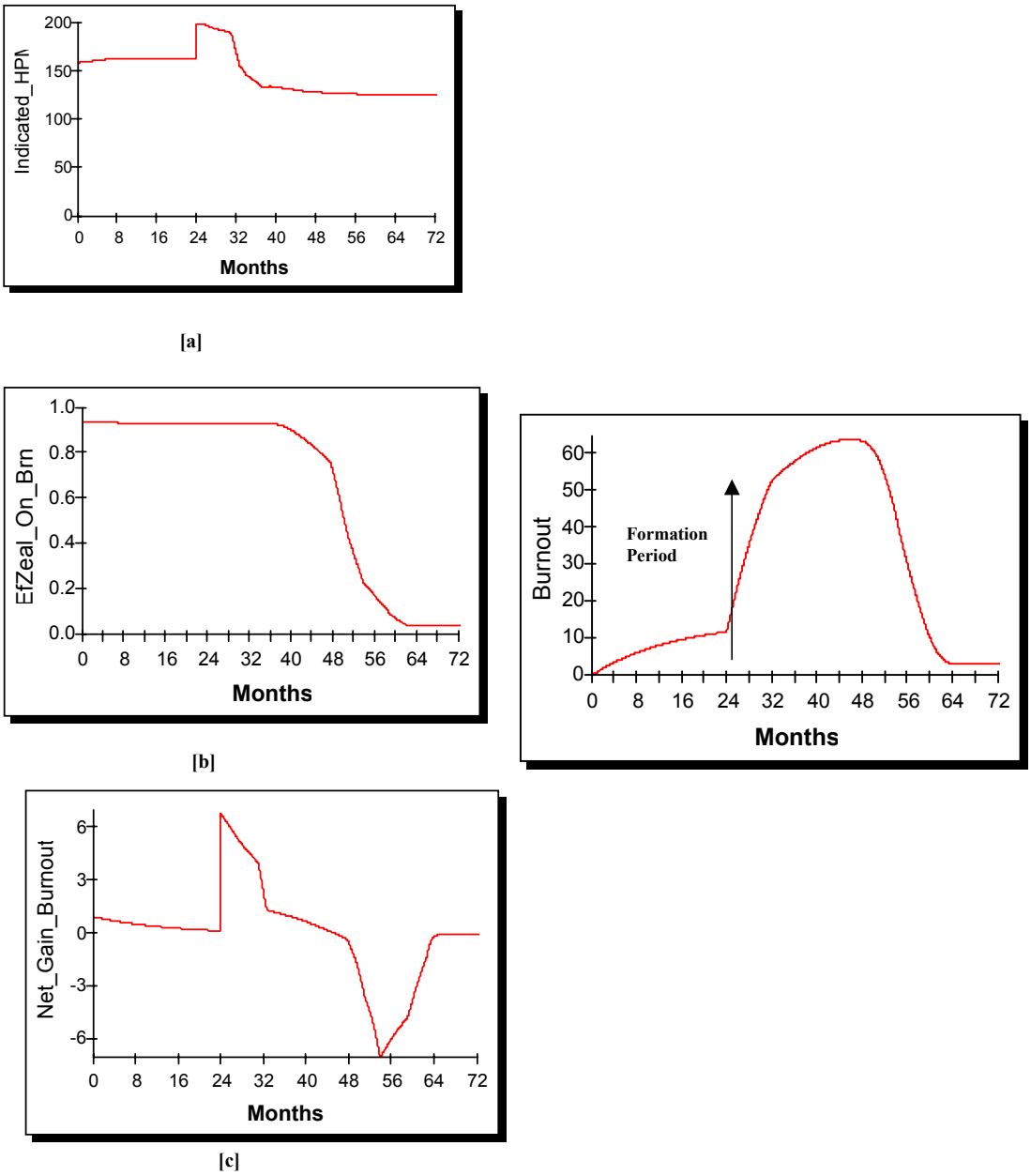


Fig. 13. The influence of team effectiveness and team zeal on burnout at different stages of the team's development.

CONCLUSIONS

Attaining high performance in self-directed work teams is relatively rare, but achievable. Besides from good leadership and adequate initial resources, much of the activities initiated when teams come into existence are associated with a learning environment. Workers have to learn new roles and obtain new skills that help them keep up with the competition. In addition to these new skill sets, something else happens to the group, if the members have worked on the basics, namely there is definitely a social process that

helps them trust the leader and trust and respect their fellow members. This leads to a sense of empowerment and the motivation to become entrepreneurial. If the team can generate external resources, it becomes even more empowered to raise the bar and eventually raise its level of attainment.

We have introduced the notion that something happens to high performing teams that allows them to increase and maintain those high productivity levels. We have hypothesized that those teams move towards a high degree of team spirit, which in turn generates so much zeal in everything members do that burnout is eventually neutralized..

In the future, we would hope to expand the boundary of the model to include important components, such as an enlarged upper management sector and sector dealing with the problems the team might have with other company units. This would enlarge the scope of the model in dealing with problems faced by such work teams. Potential conflicts with other departments and internal competition for funding are certainly potentially problematic and challenging processes to model..

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