

THE LIMITS AND LIABILITIES OF SELF-MANAGING WORK TEAMS

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ABSTRACT

This chapter reviews the limits and liabilities of self-managing work teams (SMWTs) using both sociotechnical and job design perspectives. Characteristics of the task environment and macro environment are delineated that can limit the successful implementation and continuing management of SMWTs. In addition the chapter examines the effects that changing conditions can have on SMWTs over time. The chapter also considers paradoxical issues with direct relevance to SMWTs. The chapter concludes by suggesting the need for increased attention to the potential costs and risks that may be associated with self-management.

INTRODUCTION

When a new management technique or innovation is introduced, the benefits of adopting the innovation are stressed and attention focuses on effective implementation. In these early stages, potential costs or risks receive less attention. In addition, in the early stages, explicit attention is rarely given to specification of the boundary conditions that might differentiate successful

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versus unsuccessful implementation. To date, much of the literature on Self-Managing Work Teams has followed this pattern. For example, numerous testimonials and case studies praise the benefits of SMWTs while another set of literature suggests various steps which can be followed to implement these innovative groups (Cummings, 1978; Goodman, Devadas & Hughson, 1988; Graen & Uhl-Bien, 1991; Hackman, 1990; Lee, 1990; Osburn, Moran, Musselwhite, & Zenger, 1990; Poza & Markus, 1980; Walton, 1985; Walton & Hackman, 1986; Wellins, Byham, & Wilson, 1991; Wellins & George, 1991). The purpose of this paper is to suggest the need for increased attention to the potential costs and risks or limits and liabilities that can be incurred through the use of SMWTs and to specify boundary conditions that suggest situations when SMWTs are more likely versus less likely to make a successful contribution to overall organizational effectiveness.

Self-managing work teams are self-regulating (Cummings, 1978). They perform a complete task, encourage differential member contributions based on different member skills and abilities, exercise discretion over work methods and task schedules, and receive feedback and rewards based on group, as opposed to individual, performance. SMWTs are intact groups that function together over an extended period of time. In addition, members of SMWTs often cross-train each other in order to allow redistribution and allocation of work on a flexible basis. A key characteristic of SMWTs that is typically not included in formal definitions of the concept and is often overlooked in discussions of SMWTs is the fact that self-managing work teams, like other groups, have significant control over group norms, the behavior of individual group members, and overall group effectiveness (Hackman, 1976). Thus, a substantial amount of control is internal to the work unit and is not concentrated in a formal source of authority which is outside the work unit (Bettenhausen, 1991). This control combined with the autonomy that characterizes SMWTs leads to the potential benefits, as well as the limits and liabilities, that are discussed in this paper.

The increasing use of SMWTs coupled with the increasing amount of research attention that is directed toward these innovative approaches to organizing people and work calls for examination of the limitations of SMWTs and the potential risks that may be associated with implementation of SMWTs. Much of the literature on self-managing work teams emphasizes the potential process gains of using SMWTs. In contrast, this paper examines potential structural and process losses that can be associated with SMWTs.

The first major section of the paper addresses boundary conditions of SMWTs. This includes a discussion of structural issues and presentation of a framework that can be used to diagnose the constraints most likely to enhance or limit the success of SMWTs. This section is organized into three parts. The first part examines task characteristics as a structural constraint. The second part examines the broader environmental context as a structural constraint.

Finally, the third part examines the curvilinear nature of some of these internal and external factors and the implications for SMWT success.

The second major section of the paper develops three group process issues associated with SMWTs. First, the general impact of process losses is examined in detail, including social loafing, diffusion of responsibility, polarization, escalation of commitment, group think, and premature consensus. Second, we explore how the importance of key characteristics can change over time. Third, we examine some interventions that can simultaneously enhance and hinder the success of SMWTs. This leads to a relatively paradoxical situation for managers where simple, normative recommendations can have unintended, dysfunctional consequences.

The third and final section of the paper examines the implications for research and practice which emerge from this examination of structural and process constraints and critical boundary conditions that influence successful implementation and management of SMWTs over time.

Characteristics of Self-Managing Work Teams

Before beginning the first major section on structural and process issues, it is important to clarify the difference between SMWTs and other innovative approaches to organizing people and work. Specification of these differences will allow researchers to draw on existing research and develop new theory for SMWTs where appropriate. SMWTs must be differentiated from other group-based structural interventions, general work redesign, and other, more fluid, forms of organizing such as the virtual corporation (Davidow & Malone, 1992). Careful delineation of these differences will help identify and specify the boundaries of SMWTs and avoid confusion with other methods of organizing.

As noted by Pearce & Ravlin (1987) and Magjuka (1991/1992), SMWTs are distinct from task forces, committees, and quality circles. For most task forces and committees, the key difference is based on the temporary or short-term nature of the activity. For quality circles, the key difference is the emphasis on general goals such as increased efficiency, innovation, or cost savings compared to the ongoing emphasis in SMWTs on specific task performance. Thus although task forces, committees, and quality circles are sometimes self-regulating, they typically are not an ongoing, basic, organizational production or service unit.

Hackman (1986) noted that SMWTs can be distinguished from organizational units such as self-designed work teams that have even more control than SMWTs. He suggested that SMWTs have control over the immediate monitoring and management of the work task but generally do not have responsibility for designing the performing unit, its context, or setting larger organizational goals. Thus SMWTs are an intermediate organizational form between the traditional manager led unit and a completely self-contained and self-designed operational unit.

It is also important to differentiate SMWTs from other programs designed to enhance worker satisfaction and productivity. These include empowerment (Block, 1987; Conger & Kanungo, 1988), total quality management (TQM) (Sims & Dean, 1985), and participatory decision making (PDM) (Locke & Schweiger, 1979; Miller & Monge, 1986). Empowerment involves training employees to accept responsibility for influencing their work life. Empowerment is different from delegation. Empowerment is a process that enhances employee feelings of self-efficacy (Conger & Kanungo, 1988). Empowerment may occur with or without redesign of the task or organizational structure. Since empowerment techniques can be applied at the individual level or at the group level, empowerment is not isomorphic with SMWTs.

Regarding TQM, Holpp (1992) suggested that current organizational schemes like TQM differ from SMWTs, because TQM programs typically retain traditional organizational structure and supplement it with cross-functional quality teams. Similarly, Sims and Dean (1985) argued that SMWTs are different from quality circles and suggested that SMWTs are an extension of and improvement on quality circles. Participation in decision making can occur as a stand-alone program or as a component of empowerment or SMWTs. The Vroom and Yetton (1973) model for decision making defines several different types of employee involvement in decision making and also provides guidelines that managers can use to decide what type of involvement is most appropriate for a given situation. This model is often applied within the traditional manager led organization and suggests that worker participation in decisions can be effectively included in traditionally managed situations.

Empowerment, participation, and employee involvement are important techniques that can contribute to the success of SMWTs. They are not, however, necessary or sufficient conditions for SMWTs. Although empowerment, total quality approaches, and participative decision making can each be applied to SMWTs, implementation of any one of these three approaches does not create SMWTs. According to Cotton (1993), SMWTs differ from these other techniques, because SMWTs are a more radical approach to employee involvement. SMWTs are appropriate in some situations and inappropriate in others due to their unique characteristics. In some situations, SMWTs, with their emphasis on ongoing product/service activities, can be an excellent mechanism for enhancing employee motivation and productivity. In other situations, as will be discussed in the next section, SMWTs may not be ideal.

BOUNDARY CONDITIONS FOR SELF-MANAGING WORK TEAMS: THE TASK AND THE ENVIRONMENT

Many of the characteristics and goals of SMWTs can be traced back to socio-technical systems (STS) (Trist & Bamforth, 1951; Trist, Susman, & Brown,

1977; and others). STS suggests that improved performance can be achieved by viewing the task environment as an open system. Because SMWTs occur within a larger organizational and economic context, it is appropriate to relate the reorganized team and task to this larger context (Mowday & Sutton, 1993). Thus an adequate review of the effectiveness of SMWTs should include the impacts (pro and con) of the (possibly revised) context, as well as the task and social functions of the team. In other words, the task, the broader environment, and social relationships all must be considered and integrated in order to maximize effectiveness.

Many techniques aimed at improving organizational effectiveness focus only on the social system (Pasmore, Francis, Haldeman, & Shani, 1982). For example, some of the recent books on implementation of SMWTs devote very little space to technology or task organization and concentrate primarily on motivation, training, and leadership (e.g., Wellins, Byham, & Wilson, 1991). Perhaps this is based on the assumption that work reorganization and changes in technology will be considered by the work team after the team has been given training and autonomy. The STS research explicitly recommends, however, that the task/technical structure, environment structure, and social structure should not be considered independently but instead should be coordinated simultaneously as an integrated system (Kelly, 1978).

The following section on boundary conditions is divided into three parts. The first part focuses on structural issues that are associated with the task environment and task characteristics. The second part examines structural issues associated with the broader context and external environment. The third part examines the importance of nonlinear relationships.

Structural Issues: Task Characteristics

The following section on the task environment discusses four key characteristics that can significantly influence the effectiveness of SMWTs and can be used to identify boundary conditions for the use of SMWTs. These four characteristics are group task autonomy, group task variety, process uncertainty, and congruence of goals, feedback, and rewards (See Table 1).

Task Autonomy

In his discussion of some theoretical limits to effective use of SMWTs, Cummings (1978) emphasized that the group's work must be relatively self-contained and autonomous. This is similar to Hackman and Oldham's (1976) emphasis on individual task autonomy. Here we extend Hackman and Oldham's (1980) logic and apply it at the group level. This allows us to consider the task characteristics of the SMWTs as a whole. Thus, the first key characteristic of the task environment is group task autonomy. In other words,

Table 1. The Impact of Structural Task Characteristics on SMWTs

Favorable to SMWT	Characteristic	Unfavorable to SMWT
High	Group Task Autonomy	Low
High	Group Task Variety (Within group)	Low
High	Group Process Uncertainty	Low
High	Group Congruence: Goals, Feedback, Rewards	Low

the group must have control of the task activities in order to feel responsible for outcomes.

To produce a self-contained product, a group must receive a complete set of inputs and must be able to convert these inputs into an identifiable product without substantial additional contact outside the group. If a group produces a product but does not control key elements of the conversion process, it will be less likely to identify with the work and most likely will have difficulty distinguishing where its effort and outside factors diverge. Autonomy is also important so that the group can receive meaningful feedback on its performance.

If we imagine a work process composed of several steps where each step requires additional outside assistance, then group output will rise and fall based on the availability and timeliness of these outside inputs. Under circumstances where there is low group autonomy and high interdependence between groups, there is the additional difficulty of assessing responsibility for overall success and failure. When a group's task is highly dependent on outside factors on an ongoing basis, multiple groups must cooperate in order for each individual group to perform effectively. On the other hand, when a group's work is primarily self-contained and there is low interdependence with other groups during the conversion process, group members are primarily dependent on each other for effective task performance. Thus, the ideal task for SMWTs is a conversion process where a fully defined set of inputs is available to the group at time t_1 and the team's primary mission is to transform these inputs into a product at time t_2 without further major outside inputs, interdependence, or assistance.

This type of task and work process parallels the form of a stand alone organization operating at arms length from its major sources of input. SMWTs, however, occur within the larger organizational context (Argote & McGrath, 1993; Katz & Kahn, 1978). Consequently, reality dictates less than ideal autonomy for task and work process characteristics. In particular, we assume that coordinating SMWT efforts with other activities and other groups in the organization provides economic benefits to the overall organization

(Thompson, 1967). Thus, the autonomy and isolation of the SMWTs can never be as complete as the above ideal suggests. The fact remains, nevertheless, that the more the team can control the uncertainties of the actual conversion process, the more likely that their management of this conversion process will be effective.

Since SMWTs occur within the context of larger organizations, it is critical to assess the degree to which group goals are aligned with overall organization goals. Although SMWTs typically involve a fairly high degree of group autonomy, by definition they also must have some degree of interdependence with the larger organization. The existence of multiple goals within an organization requires that we consider the possibility of goal displacement. This occurs to the degree that subgroups pursue goals that are not fully aligned with overall organizational goals. In addition there is need to consider the mechanisms that coordinate SMWTs efforts with other organizational efforts (Thompson, 1967).

Although SMWT rewards can be tied to overall organizational performance, it is more common and more appropriate to link SMWT rewards to SMWT group performance (Lawler, 1986). By moving from the individual to the group level, goal alignment may be improved between the work unit and the organization. This does not, however, eliminate the possibility of conflicts, subgoal competition, and suboptimal organizational effectiveness. In other words, some SMWTs might optimize goals at the group level to the detriment of higher level organizational goals. This is especially likely to occur in complex situations characterized by equifinality where there are multiple paths to success and no clearly "better" or "standard" approach to performance. This is also likely to occur in situations characterized by somewhat isolated functional hierarchies where groups in different areas may not coordinate their activities for the overall benefit of the organization.

In each of these situations, the highly motivated efforts of one SMWT to achieve its own goals and earn financial rewards or recognition may interfere with the efforts of other SMWTs or other parts of the organization. SMWTs are especially vulnerable to these risks if they are overly autonomous, are focused internally on their own piece of a larger process, and are not integrated with other individuals or groups in the value chain of activities required for effective production of the organization's products and/or services.

For example, when an innovation is being implemented, the best approach is most likely unclear, if not unknown. If a newly designed product does not meet initial expectations, there are several alternatives available to the organization. These alternatives, however, have significantly different consequences for individual subgroups: should the innovation team change its performance requirements, should the team spend additional resources to modify the product, or should changes be made to other products and processes to accommodate the innovation? These examples illustrate how self-management can result in increased conflict between groups.

Task autonomy can be summarized as follows. The ability of teams to control and be responsible for their task activity is increased when the task is an integrated activity that is not dependent on outside factors. Excessively high levels of task autonomy, however, can raise issues related to goal alignment and coordination that may reduce potential efficiency of the team operation for larger organizations.

Task Variety

The second key characteristic of the task environment with direct relevance to SMWTs is group task variety. As specified in the definition of SMWTs presented earlier in this paper, SMWTs perform tasks that allow differential member contributions based on different member skills and abilities. Thus, under ideal circumstances, SMWTs should be assigned conversion processes that involve a variety of tasks. In other words, the group as a whole must be responsible for performing a variety of tasks, because there is no advantage to self-management without group task variety. For example, in a group which basically performs one task such as telephone operators, there is little opportunity for individual members to become specialists (Cummings, 1978). Instead, all group members perform the same basic task, and incoming calls are simply assigned to the next available operator. With each operator handling calls at his/her maximum rate and low group task variety, there is no additional gain to self-management based on member specialization.

Similarly, if the team is composed of individual specialists who cannot substitute for each other, there is no ability for one worker to share work with or assist other team members. For example, consider a team consisting of a lawyer, an ethicist, and an MD. If a case under consideration increased in medical complexity, there would be little ability to substitute the lawyer or ethicist for the MD. Thus the demands of the task on the physician would increase or outside medical consultation would be required. In this situation, self-management would not improve the team's ability to deal with changes in the intensity of the project.

This observation, that not all tasks are equally efficient under the SMWT approach, parallels Steiner's (1972) typology for classifying tasks based on different problem solving situations. If the task is dependent on the weakest member, then there is the risk that the team may place a great deal of pressure on that individual to achieve needed results. This can be dysfunctional and disruptive to the group, as well as stressful for the weakest member. Thus, while many diverse tasks could be combined together into a group, overall performance will be limited in a SMWT if one of the tasks is so specialized that only one member is qualified to perform it. This condition will be further exacerbated if this one critical member's performance restricts overall group performance.

The above comments on group task variety can be summarized in the following way. SMWTs' efforts will be most effective when the group task permits a variety of skills to be utilized and when the group has (or can attain) the ability to substitute individuals in the different tasks when required. While this is primarily a function of the type of task, it is also partially dependent on the skill repertory of SMWT group members. For simple tasks this is often only a matter of cross training. For complex tasks requiring specialization (as in the lawyer, ethicist, MD example above), there may be some gains for SMWTs when a core activity can be shared across individuals. Otherwise the team remains a set of individuals and loses the opportunity for task sharing.

When the purpose of the team shifts from task activity to decision making or problem solving, this situation may change. Nonoverlapping professionals may provide the diverse components necessary to make effective solutions. They must, however, still share a common language.

Task Process Uncertainty

The third key characteristic of the task environment with relevance to SMWTs is task process uncertainty. One of the major advantages of SMWTs is a joint function of the first two key characteristics: group task autonomy and group task variety. When there is high uncertainty in the task environment and when a group is responsible for work that is autonomous and varied, it is possible to handle uncertainty close to the source. In other words, the presence of member specialization coupled with group autonomy and lack of hierarchy within the team allow individual group members with the most specific knowledge and expertise concerning any particular problem or opportunity to resolve the issue and/or involve other group members as appropriate. It's the combination of group autonomy and group variety that allows SMWTs to capitalize on dealing with uncertainty. Consequently, tasks that are routine and highly predictable are not as amenable to SMWTs and in fact are more amenable to mechanistic forms of organization (Cohen & March, 1974; Hage & Aiken, 1969; Koberg & Ungson, 1987).

Congruence

The fourth and final key characteristic of the task environment is congruence on goals, feedback, and rewards among group members (Cordery, Mueller, & Smith, 1991; Gowen, 1986; Lawler, 1986). For example, Saavedra, Earley, and Van Dyne (1993) examined the congruence of goals, rewards, and feedback in tasks that varied according to Thompson's (1967) task typology: pooled, sequential, reciprocal, and team. Their results demonstrated that goals, rewards, and feedback should be coordinated to achieve maximal performance. For sequential tasks where particular steps must be accomplished in a set sequence and all steps must be completed in order for the group as a whole

to accomplish the task, group goals and group rewards coupled with individual feedback are best suited to maximizing SMWT effectiveness.

For reciprocal and team tasks where members have differential abilities and roles and the work passes among members, group goals, group feedback, and group rewards are most likely to provide the most effective motivational package to group members. As noted above, not all tasks are equally amenable to group effort or to SMWTs. Thus where task interdependence is pooled, we would expect less benefit from using SMWTs, since the team members operate independently under conditions of individual goals, feedback, and rewards.

Finally, the timing of communications concerning goals, feedback, and rewards must also be considered. SMWTs need to be provided with specific goals, feedback, and rewards in a timely manner in order to take advantage of self-management (as opposed to management by hierarchy, policy, or standardization) and adjust their behavior. When goals, feedback, and rewards are timely, the team can engage in self-management and can adjust (Lawler, 1986). When the task environment is structured so that these communications are delayed, there is less likelihood that the team can realize the advantages of self-management.

In summary, Table 1 outlines four task characteristics that suggest boundary conditions for the successful use of SMWTs. Obviously each particular work situation is somewhat different and will have a slightly different configuration of characteristics. Nevertheless, Table 1 suggests that these four key characteristics of the task environment can be used as a guideline to diagnose situations where SMWTs are more versus less likely to be successful. The table predicts that when task characteristics are favorable, SMWTs will be more effective and when task characteristics are less favorable, SMWTs will be less effective. In cases where one or more of the task characteristics is extremely weak, SMWTs will probably be of little value. More specifically, the table predicts that when a group has a large amount of task autonomy and task variety, when process uncertainty is high, and when the group receives timely goals, feedback, and rewards that are congruent with its type of task interdependence, SMWTs will be more effective.

Structural Issues: Environmental Characteristics

A second set of structural issues—those concerning the larger macro environment surrounding the organization—also influences the success or failure of SMWTs (Mowday & Sutton, 1993; Sundstrom, De Meuse, & Futrell, 1990). The following section describes three key factors in the macro environment: labor mobility, economic munificence, and cultural values (See Table 2).

Table 2. The Impact of Structural Macro Environment Characteristics on SMWTs

Favorable to SMWT	Characteristics	Unfavorable to SMWT
Moderate	Labor Mobility	High/Low
High	Economic Munificence	Low
High	Cooperative Cultural Values	Low

Labor Mobility

The first key environmental factor is labor mobility. Research has demonstrated the powerful effects of labor-market conditions on employee turnover (Hulin, Roznowski & Hachiya, 1985; Steel & Griffeth, 1989). When jobs are scarce and labor mobility is low, Carnall (1982) has suggested that more senior employees tend to consider their job skills a source of job security. Under these conditions, employees may prefer to protect their own distinctive competence. As a result they may be less willing to share their knowledge and may resist efforts to cross-train their co-workers. When employees feel as though they have fewer alternatives (a tight labor market) they may be more possessive of certain responsibilities. For example, being the only team member with the expertise to accomplish a particular task might be viewed as increasing job security. The implication is that under such conditions, an individual employee could decide that the personal security of "owning" and controlling a specialized job or task activity might outweigh the overall advantages to the group that could result from cross-training and cooperation.

In contrast, when labor mobility is high, work group membership is less stable. High frequency of entry and exit from the group reduces cohesiveness and can disrupt the informal group processes. With high turnover, SMWTs must invest significant time and energy in orienting, socializing, and training new group members. Additionally, the higher turnover associated with high labor mobility can have a more pronounced effect on SMWT performance compared to more traditional groups due to the higher levels of group autonomy and member interdependence in SMWTs.

Economic Munificence

The second key environmental factor is economic munificence—the general state of the economy or industry. Organizations must commit additional resources to establish SMWTs. Under more traditional approaches to organizing people and work, employees do not necessarily acquire the interpersonal and management skills required for successful participation as effective SMWT members. In addition, making the transition from a traditional job or group to SMWTs requires time and attention which can divert group members from focusing on their primary jobs (providing

products/services). As a result, implementation of SMWTs involves costs. An organization must have some minimum amount of slack resources (time and money) to devote to the transition (Cyert & March, 1963). Obviously general economic conditions will influence the availability of slack resources (Pfeffer & Salancik, 1978).

The economic munificence of the environment is also important to more mature phases of SMWTs. For example, Kelly (1978) noted that in some cases economic pressures lead to elimination of self-management in favor of "keeping the machines running." The cavilling process used in the early mining sites for SMWTs illustrates this point. Under cavilling, individual workers could choose their own team. Since individual pay was based on total group output, the best individuals choose to work together. Teams that did not include top performing individuals, however, were unable to utilize their equipment to its fullest capacity and overall effectiveness of the operation decreased. Given the competitive nature of the business, external economic factors required a change. As a result, the cavilling process was eliminated in order to improve overall economic performance of the organization.

Recent reports suggest that tough economic conditions may be behind some of the recent strains in the GM Saturn implementation of SMWTs (Woodruff, 1993). More specifically, increased economic pressure has increased work weeks, added large numbers of new team members from other GM plants suffering layoffs, and reduced the amount of training. Although the SMWT effort is still working, Woodruff (1993) reported that 29 percent of the workers recently indicated a preference to return to more traditional work organizations.

While these examples are anecdotal, they emphasize the point that some of the gains from SMWTs may result from trading short term efficiency for longer term effectiveness. When teams are set up or modified there are additional costs related to training and change. Moreover, skills in management, communication, and conflict resolution are not necessarily those possessed by the majority of the work force. External economic pressure on the organization thus makes this training and change relatively more difficult to tolerate and increases pressure on the teams to improve performance.

Cultural Values

The third key factor is cultural values. Kelly (1978) noted that cultural influences (the relative strength of social bonds at the societal level or the pattern of attitudes, beliefs, and values at the organizational level) can facilitate or impede SMWTs, because SMWTs require higher than average interdependence among group members. SMWTs also require higher than average cooperation among members. Accordingly, the general value that a culture places on individualism versus collectivism (Triandis, 1989; Triandis,

Bontempo, Billareal, Asai, & Lucca, 1988) can influence the success of SMWTs. In particular, Kelly (1978) observed that early SMWT successes under STS programs typically occurred where the social structures of the society or family provided models for collaborative efforts. In other words, the general culture influenced individual employee orientations toward competitive versus collaborative endeavors.

In conclusion, assessment of key environmental factors again suggest boundary conditions for the successful use of SMWTs. Table 2 suggests three characteristics of the external environment which can be used to diagnose situations where SMWTs are more, rather than less, likely to succeed. The table predicts that when labor markets allow moderate mobility, when economic conditions allow the organization to adopt a longer term view of productivity, and when the culture supports team or cooperative activities, SMWTs will be more effective. The first major part of this paper now concludes with an examination of variables with curvilinear effects which consequently can have both positive and negative influence on SMWTs.

Curvilinear Issues

When outcomes are connected to independent variables in a curvilinear fashion their optimal level occurs at an intermediate point in the range of possible choices of the variable (see Figure 1). This presents a somewhat more difficult decision process for teams and managers. When encountering linear relationships there is a clear indication that more is better (or worse) and interventions can be designed accordingly. With a curvilinear relationship there is the possibility of having too much of a good thing. For example, too much cohesiveness, commitment to the group, organizational commitment, or psychological ownership (Janis, 1972; Mowday, Porter & Steers, 1982; Pierce, Rubenfeld & Morgan, 1991; Schachter, Ellertson, McBride & Gregory, 1951) can be dysfunctional (See Figure 1). Stress is another construct that can have curvilinear effects on performance. Too little stress can be associated with low motivation and low performance, while too much stress can lead to learned helplessness and deterioration of performance (Seligman, 1975).

A number of factors which are important to SMWTs may have curvilinear effects on SMWT performance. Two specific examples include autonomy and cohesiveness. Group task autonomy is one of the task characteristics identified earlier in this paper that facilitates SMWT effectiveness. Under ideal circumstances (unrealistic), SMWTs might be designed to have relatively full control of an isolated conversion task. We differentiate task autonomy from organizational autonomy. Task autonomy allows SMWTs to perform their conversion activities autonomously. Organizational autonomy concerns the link between SMWTs overall inputs/outputs and the rest of the organization. The overall efforts of SMWTs occur within organizations and must be

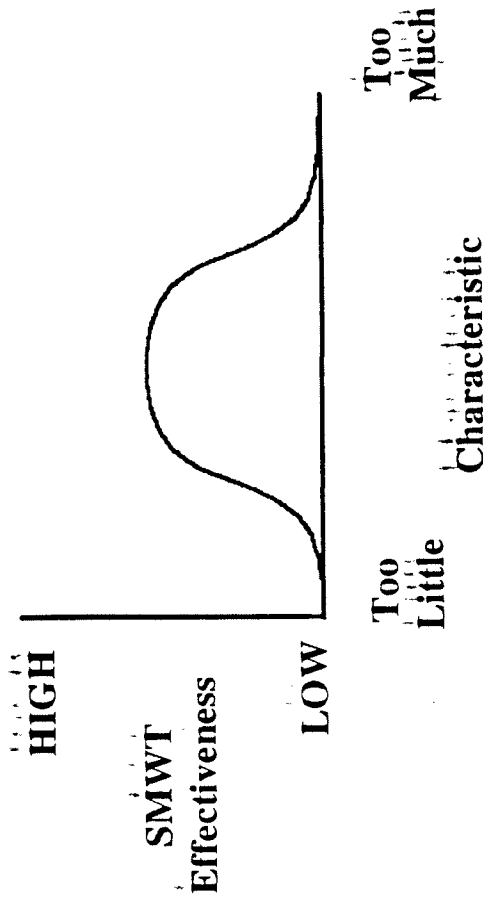


Figure 1. Moderation and self-managing work team effectiveness

coordinated across teams and integrated into an overall organizational strategy. Too much organizational autonomy (i.e., autonomy from the rest of the organization) can have a negative effect on the ability of an SMWT to contribute to overall organizational effectiveness (Carnall, 1982). For example, too much organizational autonomy can lead to goal displacement and subgoal optimization (as discussed earlier in this paper) at the expense of overall organization goals. Similarly, too much autonomy can impair the coordination of inputs to a group and outputs from a group to other parts of the organization.

In addition, as autonomy increases there is an increasing need to provide integration mechanisms to assure overall coordination of SMWTs efforts with the mission of the broader organization (Thompson, 1967). Examples of coordinating mechanisms include extensive planning, frequent communication, and mutual adjustment. Structural coordinating mechanisms include grouping interdependent units in close physical proximity, scheduling regular intergroup meetings, and encouraging use of electronic mail systems (Tushman, 1979).

Although these coordinating mechanisms are important from the perspective of the larger organization, they can increase the overall expense of operating the SMWTs in the larger organizational environment. The problem of autonomy is not new. It is no different from the organizational problem of balancing the need for functional differentiation with integration (Lawrence & Lorsch, 1967). The point is that the implementation of SMWTs does not

eliminate this issue, it merely shifts the focus from the link between the organization and the environment or from between functional units or divisions to the link between the SMWTs and other groups in the organization.

Cohesiveness is a second concept which is important to SMWTs but which also may have curvilinear effects on overall performance. Cohesiveness is defined as the degree to which the members of a group desire to remain in the group (Cartwright, 1968). Cohesiveness is important to SMWTs in order to establish the identity of the unit and to facilitate smooth internal group operations. Cohesive groups can be more efficient in performing some tasks. This is especially true when group norms support productivity and when tasks are well defined. In addition, cohesive groups often exhibit smooth interpersonal processes and high levels of member satisfaction (Jackson, 1992). Just as with autonomy, however, too much cohesiveness can be detrimental to overall SMWT and organization effectiveness. For example, the groupthink literature suggests that too much cohesion can result in insularity and poor decision processes. Too much cohesion can reduce vigilance regarding group decision processes (Janis & Mann, 1977). As a result, changes in the external environment or changes in expectations from users and customers may not be detected and performance can suffer.

The possibility of curvilinear effects on productivity presents both theoretical and practical problems. From a theoretical viewpoint, researchers must be aware of the possibility of curvilinear relationships and must attempt to develop more complex (nonlinear) models to represent these relationships. From a practical standpoint, managers must be sensitized to the possibility and dangers of having too much of an otherwise desirable characteristic. Managers also must be prepared to assist SMWTs achieve an appropriate balance between too much versus too little of these important characteristics.

The above analysis draws heavily on the existing theoretical developments in social psychology and motivation, as well as work redesign. Inferences from these literatures suggest that a contingency view of SMWTs is appropriate. Not every setting is equally suitable for SMWTs. Each implementation, accordingly, warrants a careful examination of the boundary conditions (see Tables 1 and 2) so that optimal use of teams may result. Consideration of task, environmental, and nonlinear effects makes implementation of SMWTs a major challenge for many organizations. These are not, however, the only factors that relate to the success of SMWTs. We now turn to process characteristics that need to be considered not only at the outset but as SMWT efforts develop over time.

GROUP PROCESSES AND SELF-MANAGING TEAMS

This section examines group processes that can have significant implications for SMWTs. Up to this point, we have presented a primarily static, contingency

view. Now we switch to a developmental and processional view. First, we consider process characteristics which provide gains or losses to the team effort. We pay particular attention to process losses, because they have received less attention in the literature on SMWTs. Second, we consider temporal issues, specifically focusing on variables that can have positive effects early in the life cycle of a group but which might be less important or that might have negative effects in later stages of group development. Third, we examine a series of paradoxical situations with specific relevance to SMWTs. We note that in some cases this portion of the paper is less well developed and more speculative than the prior section. This is consistent (Argote & McGrath, 1993; McGrath & Gruenfeld, 1992) with the general state of the field. Generally researchers have focused more on stable characteristics of groups, tasks, and environments. We present the ideas in this section in an exploratory fashion in order to stimulate additional research on these dynamic issues.

Group Processes: Process Losses

Although SMWTs are a special type of group, the literature on group processes and group decision making is directly relevant. SMWTs are, however, differentiated from traditional groups, because they combine, relatively high degrees of autonomy and responsibility with durability over time. For these reasons we argue that SMWTs are subject to more dramatic process losses and process gains than more traditional work groups.

When SMWTs are implemented under positive circumstances as outlined in the previous section, teams can coordinate resource use, resolve uncertainties at or near the source, and design changes in work routines that improve performance. When SMWTs process gains occur they may be utilized over a coherent task and allow for greater range of action with strong feedback. These characteristics can form the foundation for additional gains based on group autonomy to make continuing adjustments to changing conditions.

This responsiveness can provide real benefits and contribute to the successes reported for SMWTs. While some authors suggest that process characteristics are overemphasized in SMWT reports (Goodman et al., 1988), process gains are no doubt partially responsible for the benefits reported from SMWTs. These gains, nevertheless, are not without offsetting risks and potential negative outcomes. Thus a balanced approach must consider the possible effects of process losses for SMWTs. We argue that process losses are especially likely to occur when SMWTs exist over extended periods or when teams are implemented in conditions that are less than ideal.

In addition, SMWTs' autonomy can allow process losses to occur undetected and free from intervention by management for significant periods of time. Thus we would expect that SMWTs' internal process difficulties would not be subject to close management oversight (monitoring) and that immediate or timely

management intervention that might be associated with a more traditional organizational structure is unlikely. Thus, in SMWTs the losses could continue and worsen over extended periods of time. Figure 2 illustrates our point that SMWTs have the potential for significantly increased gains and significantly increased losses compared to traditional work groups in traditional management environments. The dashed lines in Figure 2 suggest that the goal of establishing SMWTs is to make the downside less costly than the positive gains.

All groups are subject to process losses and decision making defects. In SMWTs, group autonomy coupled with the powerful influence that group norms have on individual member motivation (Hackman, 1976) produce a situation where process losses and decision making defects can be significant. Although much of the SMWT literature describes success stories that stress the benefits of process gains, there cannot by definition, be process gains without the possibility of significant process losses. In this section we emphasize the potential process losses, including defective decision making. We do this, not because we are pessimistic about SMWTs, but because we believe that the existing emphasis on positive gains must be balanced by attention to the other end of the continuum—process losses. Overall, one key goal for all SMWTs should be to identify tasks and establish teams in such a way that the process losses are more than offset by gains. This means that those implementing SMWTs must be aware of these potential losses.

Traditional process losses include the time and effort required to coordinate task performance and interpersonal relationships (Steiner, 1972). In addition, there is a significant amount of research which illustrates that under some circumstances, there are liabilities to group decision making which also can lead to significant process losses (Janis & Mann, 1977). Finally, both task conflict and interpersonal conflict (Jehn, 1991) are somewhat inevitable in groups where members are interdependent (Thomas, 1976). The literature on small groups is both extensive and has a long history and provides an excellent summary of these effects. Examples include Bales (1950), Guzzo and Shea (1992), Shaw (1981), McGrath (1984), and others.

This section of the paper highlights some of the process losses and group decision defects that are especially likely to limit SMWT effectiveness. Among the process losses are social loafing and diffusion of responsibility. Specific defects of group decision processes include polarization, escalation of commitment, groupthink, and premature consensus. Two specific process losses focus on the willingness of individual members to put forth effort. Social loafing occurs when members fail to put forth their best effort, because they believe their particular level of effort will not be discerned by others (Latane, Williams, & Harkins, 1979; plus others referenced in Harkins & Szymanski, 1987). Diffusion of responsibility occurs when individuals fail to initiate action, because the group size reduces their feelings of accountability (Darley &

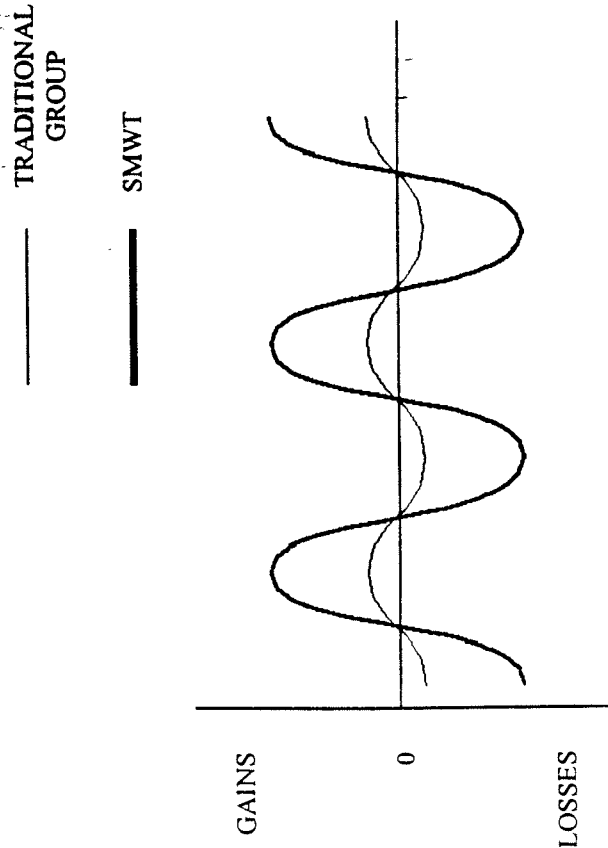


Figure 2. Process gains and process losses

Latane, 1968). While both of these phenomena concern individual willingness to contribute to the group, they have different implications for SMWTs.

Social Loafing

Social loafing is most pronounced when individual effort cannot be ascertained (Weldon & Gargano, 1988). In contrast, when individual effort can be observed and evaluated, participant performance improves. In addition, the ability to observe and evaluate group output may reduce social loafing (Harkins & Szymanski, 1989). Proximity of SMWT members can facilitate performance and minimize social loafing when individual effort is obvious to other group members (Conlon & Parks, 1990). Where members of the team are able to observe individual performance, the team may use the feedback to improve performance. When such observation is not available, the improvement is moderated by the degree to which the members are committed to the team and by the degree to which the group shares norms for high performance. On the other hand, in many jobs individual effort of SMWT members will not be readily apparent, and under conditions of group goals and group feedback social loafing may become a serious problem.

Diffusion of Responsibility

Diffusion of responsibility suggests that individuals may fail to take action when they expect that others will act. This idea was originally proposed to explain the unwillingness of bystanders to intervene in emergency situations (Darley & Latane, 1968). Diffusion of responsibility involves failure to take action. While physical effort or even cognitive effort can be monitored by other group members (by the amount of activity, or output, etc.), it is less clear that a failure to take action will be discovered by others or attributed to the individual in question. For example, if a team member notices that a machine needs maintenance s/he may assume that someone else will take care of the problem and consequently will not take action. Thus, while monitoring may reduce the tendency to loaf, it may also lead to the belief that someone else will see problem situations and take the initiative to intervene.

Group rewards and group feedback present two risks associated with social loafing and diffusion of responsibility. First, SMWTs' emphasis on group-based monitoring may lead to social loafing and diffusion of responsibility since rewards are based on group performance rather than on individual performance. Thus a loafer might expect to benefit from other's efforts (free rider effects). This would offset some of the gains from placing monitoring in the hands of those most closely associated with the work effort. Second, Argyris (1969) has pointed out that all groups experience pressure for social stability and reduced conflict which may lead to a reduction in performance in order to avoid the discomforts of internal pressure and conflict. This may be especially severe in SMWTs. Cheung (1983) presented an interesting example of how groups consciously externalize monitoring in certain settings. For example, workers pulling barges might hire an outside monitor to whip anyone who seems not to be working at full effort so that all are assured that no one is a free rider.

When employees are encouraged to identify with team performance, other diffusion of responsibility process issues arise. One of these is a form of attribution similar to attribution biases found in individuals (Ross, 1977). A group may attribute successes to internal effort and expertise while attributing failure or poor performance to external factors beyond group control. This line of reasoning suggests the possibility that competitive pressures and rivalries between individuals may be replaced by similar pressures at the group level. This can be especially felt in task environments where groups are interdependent, resources are scarce, and when one or more groups are suffering from below average performance.

Polarization

Group decision processes are not identical to individual decision processes. In some situations groups make better decisions than individuals, and in other

situations group decision making is deficient. One process change in group decision making is polarization (Isenberg, 1986; Lamm & Myers, 1978). This occurs when the group takes a more extreme position than that taken by individual group members. This shift may cause a group to become more risk prone than individual members or, if individual members are risk averse to start with, the group may become even more conservative (Baron, Roper & Baron, 1974; Isenberg, 1986). Whether this is a problem or a benefit to the SMWT depends on the circumstances and the disposition of the team. In certain work circumstances, such as nuclear reactor control tasks, additional risk prone behavior might be highly undesirable. In other circumstances, excessively conservative behavior (such as perfunctory compliance with work rules) would be inefficient and costly.

Finally, groups are subject to a variety of social pressures that may cause faulty decision processes. Among these are escalation of commitment, groupthink, and premature consensus.

Escalation of Commitment

Escalation of commitment (Staw, 1976) is a faulty decision process with potential implications for SMWTs. Under a variety of conditions, individuals persist in economically irrational behavior even though negative feedback indicates the need to stop or withdraw. The literature on escalation by individuals is extensive and readers are referred to Brockner and Rubin (1985) or Staw and Ross (1987a, 1987b) for reviews. Given a choice between withdrawing or continuing to invest in the previously chosen course of action, even though it may be counterproductive, individuals with prior investments typically invest more, compared to individuals with no prior involvement.

A variety of factors influence escalation in individuals. Staw and Ross (1987a) categorized these into project, psychological, social, and structural categories. In the project category they included a variety of variables such as closing costs, remaining costs to completion, long term payoff structure, access to resources, and others. Psychological determinants included personal responsibility, ego importance of failure, prior reinforcement history, and the behavioral commitment potential of prior actions. Social variables included public identification with the course of action, the ~~existence~~ of norms for consistency, existence of competition, job insecurity, social models for persistence, and responsibility for failure. In the structural category they included external political support for continuing, administrative inertia, and others.

The literature on escalation in groups is much more limited than the literature on escalation in individuals. Yet there is good evidence that groups may also be subject to escalation. Bazerman, Guiliano, and Appleman (1984) found that groups were subject to similar conditions of dissonance when faced with

negative outcomes. They also found that groups escalated in a manner similar to individuals. Finally, Whyte (1990) has reported additional data that suggest groups may be more likely than individuals to escalate a losing course of action.

In applying these findings to SMWTs we would expect that the psychological variables would be less important than the social and institutional variables described by Staw and Ross (1987a) and that the social and institutional variables would need to be explicitly reviewed for application to SMWTs. Some of these, such as norms for consistency, would seem to be unchanged in the SMWT setting. Others, such as responsibility for failure, might increase in the SMWT setting since additional visibility and responsibility is allocated to the group and more autonomy and responsibility is assigned at this level. Thus, we might expect that groups would become identified with their actions and decisions and would tend to defend these in adverse circumstances. This further reinforces the possibility, in keeping with the pattern suggested in Figure 2, that SMWTs will engage in escalation when negative results occur.

Two structural variables are important with regard to escalation in SMWTs: administrative inertia and institutionalization. The ability and willingness of management to intervene in an escalation setting may be diminished by the need to reinforce team autonomy and allow teams to learn from their own mistakes. The SMWT setting also facilitates development of strong norms within the teams. These norms could easily form a type of institutionalization that would generate persistence in the face of negative feedback.

Escalation research suggests that timely feedback, repeated decision opportunities (active decisions), low visibility, and salient economic characteristics outweighing social and psychological factors reduce escalation. This suggests that SMWTs in a traditional assembly line environment would not be especially subject to the risks of escalation. However, as the task environment becomes more uncertain and projects become more complex and of longer duration, the risk of escalation increases. These criteria correspond to the task conditions outlined in the earlier section and summarized in Table 1.

Groupthink

Group think (Janis, 1972) is another faulty decision process with significant importance for SMWTs. Groupthink is "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (p. 9). The general model for groupthink suggests that high cohesiveness and high conformity pressure can lead to groupthink and defective decision processes.

Janis (1972) suggested that the symptoms of groupthink can be grouped into three categories: overestimation of group capabilities, closed-mindedness, and

pressure toward uniformity. This leads to seven categories of decision defects: incomplete surveys of alternatives, incomplete surveys of objectives, failure to examine the risks of the chosen alternative, failure to reappraise initially rejected alternatives, poor information search, selective bias toward information favoring chosen alternatives, and failure to plan for contingencies. These characteristics can result in escalation of commitment to a failing course of action. Additionally, as Janis (1972) noted, the output of groups operating under groupthink may not be as high in quality as under a more vigilant decision process.

Self-Managing Work Teams involve situations where high cohesiveness and autonomy from other managerial controls may generate the initial conditions that can lead to groupthink. This was initially identified in three cases examined by Manz and Sims (1982) who noted that SMWTs were potentially vulnerable and that the cases examined indicated the potential for groupthink symptoms. Recent research by Turner, Pratkanis, Probasco, and Leve (1992) suggests that threat to the image of a cohesive group was a sufficient antecedent for faulty groupthink decision making. They also identified the importance of social-identity (categorization of others in terms of group membership rather than as unique individuals) as a factor in groupthink. Social-identity is certainly concordant with the emphasis on cohesive teams in SMWTs' implementations. The issue of threat to the teams and the organization as a source of stress fits well with the economic munificence discussed above, as well as with threats to the team reputation.

Premature Consensus

The final type of faulty decision process explored in this paper for specific relevance to SMWTs is the premature consensus problem (Harvey, 1974). This arises when individuals reach agreement based on the assumption that some group member prefers the proposed solution. In this situation the group does not fully explore the reasoning behind an initial casual suggestion. In its extreme form this can lead to the paradoxical situation described by Harvey (1974) in which a group of individuals made an unnecessary trip to Abilene that none of them preferred, because everyone believed that someone else really wanted to go to Abilene.

Group Processes: Temporal Variation in Relations

The second group process issue concerns temporal changes in the importance of key SMWT characteristics. For example, during implementation and early stages of SMWT group development, enhancing cohesiveness, teamwork, and commitment among team members is essential. In later stages, however, it is critically important to assess the overall level of cohesiveness, teamwork, and

commitment. As SMWTs mature, it is possible that the "excessive success" of early interventions to promote cooperation and team spirit can lead to problems. In other words, more mature SMWTs can become rigid, insulated, and dominated by conformity pressures if group solidarity becomes excessive. Thus, what is important in the implementation and early group development phases of SMWTs may be less important in later phases.

The changes due to self-reinforcing cycles are another example of the more general theoretical consideration which suggests that the effect and importance of independent variables can change over time. Staw and Ross (1987a) suggested that, in escalation situations, the relative importance of variables in decision processes may change over time. We paraphrase their suggestions and apply them to the SMWT environment. Project or economic variables are often emphasized in the early stages of a project before cohesion develops among team members. Over time, however, interpersonal team activity becomes more important, and teams become closely identified with their actions.

This change in emphasis or importance has two major effects. First it means that external observers of the team will not see consistent decisions based on stable criteria. This may make analysis difficult. In addition several factors related to group identity and reputation may become salient and increase the behavioral commitment of the teams. We are unaware of any tests of the Staw and Ross (1987a) conjecture, but its relevance to team situations warrants inclusion among temporal factors for future tests.

Another model that may explain changes in importance of the categories of variables over time is based on the view that groups attend to both task and social components of the group (Bales, 1950; Bales & Strodtbeck, 1951). When minor problems are encountered with a member's activities or when a suggested alternative is not optimal, group members will evaluate the costs in terms of task efficiency against the social losses incurred through objecting. When the cost of raising objections could interfere with relationships and make future cooperation problematical, group members will tolerate minor mistakes and inefficiency on the part of co-workers. In short, members decide not to "rock the boat," because they have to work with these people over time. As the team progresses (especially with stable membership and a stable task set), the value of these social relationships should increase. Thus, while extended working relationships may lead to improved skills and ability to anticipate needs, they may also lead to increased value placed on the social components of the team relationships. This emphasis can be a minor loss or lead to more extreme cases of escalation or groupthink.

A number of researchers have developed theoretical models of group life cycles or stages of group development (McGrath & Gruenfeld, 1992; Moreland & Levine, 1982, 1988; Tuckman, 1965; Wanous, Reichers, & Malik, 1984; Worcheh, Coutant-Sassic & Grossman, 1992). Although the details of these models differ, all suggest that the characteristics most critical to success change over time as

groups are formed and develop. Many of these changes surround the initial or formative stages of group development. To the extent that a group becomes successful in establishing good working relationships and norms for productivity, performance is enhanced. Early success and strong norms, however, also seem likely to limit adaptation in the future (Staw & Boettger, 1990). This is similar to the concept that adaptation precludes adaptability (Weick, 1979).

These examples of deterioration of team outcomes over time can sometimes be a direct result of temporal changes combined with initially beneficial efforts to establish the team. As noted in the previous section there are some variables that have a curvilinear relationship with team productivity. When teams initially have little of these variables (cohesiveness, shared identity, etc.), it is natural for the organizers and mentors to take steps to increase the amount of these factors. We suggest that many of these variables work in self-reinforcing cycles and that this can lead, over time, directly to excessive amounts of the initially desirable factors. Thus, what was important as a goal at time one may be less important (or actually counterproductive) at a later time. For example, in later stages of SMWT group development, "excessive success" of early interventions to promote cohesiveness, teamwork, and commitment can lead to significant process losses. More mature SMWTs can be subject to rigidity, internal focus, insularity, and conformity if group solidarity becomes excessive.

Stage theories of group development focus on intragroup activities and the emergence of norms for group activity. This approach, while relevant, fails to examine the relationship of the group to the larger organization in which the team is embedded. Contextual factors, as pointed out by Ancona and Caldwell (1992) and Guzzo and Shea (1992), can have critical impact on team performance. Similarly, the Staw and Ross (1987a) approach explicitly accommodates social and institutional variables and their impact on focal actors (in our case SMWTs). Thus, although stage models are useful for developing a general understanding of groups, the understanding of SMWTs requires a temporal theory of embedded groups. This is inherently more complicated than stage models which generally postulate fairly long and stable periods of productive group performance after the emergence of norms.

Not only must team members learn to work with each other, but teams must learn to work with other teams and with the entire organization (Tjosvold, Dann, & Wong, 1992). Since various internal and external variables can change in importance over time, the study of these embedded teams is more complex than the study of an isolated team over time. The key observation here is that activities started or proposed for one reason (such as economic or task efficiency) may be perpetuated for reasons that are not related to the initial purposes (such as reputation, consistency, etc.) These changes in the importance of variables can create behavior that may appear inconsistent and irrational to the outsider.

A hypothetical example (in fact a composite of several examples observed by one coauthor) is helpful. A SMWT may develop the belief that certain work changes would be beneficial for the larger organization. Consequently this SMWT may lobby for these changes (motivated by economic or task efficiency for their group or the organization). As a result of this effort they gain visibility for their program within the organization and ultimately the program might be accepted regardless of initial opposition. As the team begins to implement the changes they most likely will encounter unexpected difficulties. At this point the SMWT is publicly committed and the internal discussions within the group now include new variables not initially salient. For example, team members might ask themselves what would happen to their reputation if they fail. The image of the group now becomes an important factor. The key observation here is that the relevant variables (to the group) have changed as a result of past actions. Thus, what was started for purely economic or efficiency reasons may now be continued (or canceled) for reasons such as social image.

Group Processes: Emergence of Paradox

A paradox is a situation in which there is a simultaneous existence of opposites (Smith & Berg, 1987, p. 217). The previous discussion of temporal changes in group attention, goals, and processes at times seems complex and even paradoxical. As noted in the section on premature consensus (The Abilene Paradox, Harvey, 1974), groups sometimes pursue goals almost accidentally. Paradox has been associated with SMWTs as well. Manz and Angle (1987) found examples where attempts to establish SMWTs paradoxically caused workers to feel less autonomy. This is paradoxical, since one of the goals of self-management is to increase involvement, participation, and autonomy. Carnall (1982) reviewed the contrast between task and organizational autonomy noted above and identified this as the paradox of autonomy.

In these examples the groups may seem irrational and the situations may seem contradictory. The study of paradoxical processes is an attempt to understand these events. Smith and Berg (1987) suggested a variety of paradoxes associated with groups. While it is not possible to review the entire set of paradoxes considered by Smith and Berg, it is worth while to examine three that seem especially relevant to SMWTs.

The view proposed by Smith and Berg (1987) conceptualizes the group as a whole and as an entity above and beyond, or apart from, the actions of its members. This condition occurs when group members see themselves as different from those not in the group, when outsiders hold the group accountable for outcomes, and when outcomes are a result of the pattern of interaction among group members rather than a result of actions taken by the group itself. In the SMWT environment this is exactly what can occur. The importance of the team as the generator of important outcomes and receiver

of rewards results in elevated importance of the team for those within and outside the team. The team also can be viewed as more than the sum of its parts when there are process gains. In fact, these process gains are often identified as desirable reasons for establishing SMWTs. Process gains, however, include an element of intangibility—they often can't be specifically identified or duplicated. In some extreme cases these process gains may be based on tacit knowledge that team members cannot verbalize or communicate to others (Nelson & Winter, 1982; Winter, 1987). Finally, the SMWT is provided autonomy because of the skill and expertise of team members. Accordingly, it is likely that, over time, members will see their effort and ability as unique. In turn, it is likely that outsiders will not fully understand what goes on in the group. If this were not the case, outside managers could effectively manage the team using traditional methods.

The first Smith and Berg (1987) paradox concerns individual autonomy. Individual members most likely want to be independent and also to be a part of the team. This sets up a tension that is difficult to resolve. As some members become more independent (via dissension, devil's advocacy, etc.), other members may ostracize them (and thus lose their productive contribution), or outspoken team members may have to give up some of their autonomy in order to be team players. This tension results from the simultaneous desire of team members to be part of the team and to be independent of the team (Smith & Berg, 1987). The problem is further complicated, because efforts to resolve the dissent or reintegrate an autonomous member often increase the felt tension by the autonomous member and thus can make the situation worse, rather than better. Smith and Berg term this the paradox of involvement.

A second paradox from Smith and Berg (1987) concerns trust. "Group life is filled with dilemmas in which one needs to trust others but where the development of trust depends on trust already existing" (Smith & Berg, 1987, p. 115). The role of the jailer is a critical example of this conundrum. The jailer keeps the prisoners away from society but also keeps society away from the prisoners. The jailer also keeps the prisoners away from each other. In fact, as noted by Cheung (1983) earlier, the jailer role is often created by group members in situations where needed. Trust is critical in SMWTs, because members of the team need to believe that other members will honor commitments and provide consistent, acceptable performance (Wellins, Byham, & Wilson, 1991).

The final paradox from Smith and Berg relates to the need for failure or negative feedback. Teams learn from their failures and thus must accept and seek negative feedback in order to learn. Paradoxically, that which helps the team grow and learn and become more successful is less than perfect performance. Quite often, however, teams reject negative feedback or dissenting members and thus lose the very information they need. This presents a dynamic explanation for some of the escalation behavior discussed above.

Janis and Mann (1977) point out tendencies to look for confirming information after a decision is made. This results in discounting negative information or the allocation of accountability to external uncontrollable sources. When this occurs, the team misses opportunities to learn about their own efforts and to make beneficial adjustments.

There also is a natural tension between task performance and social maintenance in team efforts (Bales, 1950; Hackman, 1992). However, some social maintenance efforts to be flexible and agreeable in the short term can lead to missed opportunities for improved performance in the long run or to toleration of outright mistakes in decisions. Similarly, some task performance efforts to produce results in the short run can threaten interpersonal relationships and the ability or willingness of group members to cooperate with each other in the future. Thus it is not enough to encourage critical thinking such as the devil's advocate, dialectic, or minority influence processes (Cosier, 1982; Nemeth, 1985, 1986; Nemeth & Staw, 1989; Schweiger, Sandberg, & Rechner, 1989; Schwenk, 1990) or team building (Baker & Salas, 1992). Although both critical thinking and cohesiveness are important, each must be implemented and maintained in a balanced fashion which acknowledges the potentially paradoxical consequences to SMWTs.

Management of SMWTs is also paradoxical. The phrase itself conjures up images of paradox. Additionally, some empirical research demonstrates that, at least in some instances, the best approach to managing a SMWT is to "let go" and facilitate self-management. For example, Manz and Sims (1987) contrast traditional leadership with leadership that is suitable for SMWTs. Their results suggest that the most important behavior for external leaders of SMWTs is (somewhat paradoxically) getting the team to manage itself through self-observation, self-evaluation, and self-reinforcement.

Finally, SMWTs are created to further the productive goals of companies and organizations. This suggests that teams must cooperate with other teams (Tjosvold, Dann, & Wong, 1992) and should have cooperative goals. Nevertheless individual teams also have independent goals and must work to achieve these goals, sometimes in competition with other teams (Messick & Mackie, 1989). The paradoxical view suggests that these tensions between competition and cooperation are natural and that an attempt to resolve the tension will not make it go away but may instead lead to frustration. In fact, Tjosvold (1991) and Baron (1991) have contrasted the negative effects of denying the existence of conflict with the potential positive effects of acknowledging conflict and trying to manage it proactively. We note an additional paradox at this point. The literature on SMWTs simultaneously calls for cooperative goals and rewards to align goals with overall organizational productivity combined with emphasis on team performance, even if this means competing for resources. These recommendations are paradoxical and create a double bind for organizational members (Bateson, 1972).

Thus, the possibility of paradoxes with relevance to SMWTs must be acknowledged, identified, and studied. When a team encounters a paradoxical situation, many of the natural actions aimed at solving the problem actually make the situation worse. In other words, the situation involves vicious cycles with complex reciprocal effects (Weick, 1979). Similarly, Schelling (1978) has pointed out the unexpected amplification that occurs at the group level when individuals respond to a situation without considering how their actions combined with those of other group members will produce unanticipated results. It is important for SMWTs to realize that these paradoxes are natural and that, while they sometimes can be managed, the tension cannot be eliminated.

CONCLUSIONS AND NEW DIRECTIONS

In general, existing theoretical considerations and empirical data suggest that SMWTs can produce productivity benefits. Our analysis suggests that these benefits will be especially obvious early in the life cycle of SMWTs and in munificent environments. As organizations are pressured by competitors and the environment to be more productive, stress increases. Since SMWTs are autonomous and typically have responsibility for an entire operation, when stress levels increase, it is likely that SMWTs members will feel the pressure. In fact, based on recent work of Sullivan and Bhagat (1992), we suggest that SMWTs members will feel more stress than employees in more traditional jobs, because SMWTs have more managerial responsibility. Decentralization of decisions and the reward structure will stress all employees instead of focusing accountability and stress primarily on management.

In short, SMWTs are responsible for both task performance and management activities. Increases in perceived control over task activity could mitigate some of this stress as could attribution of problems to outside factors. These possibilities raise additional research issues for further examination. Changes in the importance of variables and in team behavior over time may introduce complex cycles and paradoxes not expected from the set of conditions present in the early implementation stages. We thus conclude that the success of SMWTs is concurrently dependent on boundary conditions as discussed in part one and on processual issues as discussed in part two.

Implications for Research

A considerable amount of research has been developed on groups and more recently on work teams and SMWTs. Nevertheless, there is much that we do not yet know about work groups and SMWTs. Research on SMWTs has developed and matured to the point where it is now time for researchers to

look beyond testimonials and case studies and to look beyond issues of how to implement SMWTs. This paper calls for more in-depth consideration of the risks and costs of using SMWTs and the boundary conditions for when SMWTs are more likely to succeed or fail. In addition, the paper calls for differentiation of the criteria that are relevant in early versus later stages of SMWT evolution, because some of the very factors that initially make the team effective may work against the team in later developmental stages.

Researchers should be alert for problems that may not manifest themselves until well after a team has been established. This suggests that short term studies may miss such issues entirely and that cross-sectional studies of many different SMWTs should control for the stage of group development. Alternately, the study of SMWTs can expand to include process research over additional periods of time.

Since the organizational structure of SMWTs will generally be more diffuse than traditionally managed groups, additional research should examine role conflict, inter-team conflict, and paradox in SMWTs. Where traditional managers assume coaching and mentoring responsibilities and where team members assume responsibilities for external contacts with other teams and for self-management, we can expect conflict between prior roles and new ones (issues of transition and socialization). In addition, ongoing conflicts are expected between the need to learn and experience problems and the need to be efficient economic units. As teams require and compete for resources we expect that conflict between teams may result. Finally, traditional efforts at conflict resolution may be less effective than learning to live with the paradox.

Generally, SMWTs are part of a larger effort at empowerment and decentralization of decision making in the modern corporation. These techniques, however, are based on a more cooperative set of cultural values than historically present in the American work force. This, by itself, suggests that considerable difficulties may be encountered before the full potential of SMWTs are recognized. Many of the strains caused by this change to group/cooperative based work may appear in unexpected ways, and natural efforts to resolve problems may result in enduring or increased tensions rather than resolution.

Researchers must look for and anticipate paradox, or it will go unnoticed. As Weick (1969) has suggested; "believing is seeing." Researchers must look for the failures of SMWTs in order to identify what went wrong and thus learn how to improve future implementations. The danger of not looking for paradox or only studying success is that we forget that we need failure for comparison and for continuing improvement. We conclude this section with several propositions based on the ideas developed in this paper that may serve as a framework for empirical research on the limits and liabilities of SMWTs.

Proposition 1. SMWTs will resist changes to the basic underlying work technology or to team composition.

Rationale: As SMWTs develop work norms and relationships they will have vested interests (based on group rewards) to maintain relationships and production techniques. Since new technologies and team members require adjustments, learning, etc., these costs will be resisted compared to traditional groups which emphasize individual rewards and hierarchical decision making.

Proposition 2. SMWT members in low performing teams will be subject to increased stress and role conflict and less satisfaction compared to members of traditional groups while SMWT members in high performing teams will be subject to less stress and role conflict and increased satisfaction.

Rationale: Members of SMWTs have additional responsibilities to manage group and work processes. Under successful team circumstances this may result in increased variety, satisfaction, etc., which reduces stress and conflict and results in increased satisfaction. When activities are not progressing successfully, the additional responsibilities for self-management result in increased tensions compared to traditional groups. These tensions result in reduced satisfaction and increased stress and conflict.

Proposition 3a. When responses to external uncertainties are within the scope of SMWTs' resources, SMWTs will respond more effectively than traditional groups.

Proposition 3b. When responses to external uncertainties are not within the scope of SMWTs' resources, SMWTs will respond less effectively than traditional groups.

Rationale: SMWTs have additional responsibility for management of task activity. When the resources are available to respond to environmental uncertainties, SMWTs result in efficiencies, since less management staff is involved. When the team does not have the resources available they will require additional effort to maintain management in the face of the uncertainties and will require outside assistance.

Proposition 4. Reduction in organizational slack will increase stress felt by individual SMWT members more than on members of traditional groups.

Rationale: Reduction in slack within the organization will increase the competition between teams for scarce resources. Since resolution of the reduction in slack will fall directly on SMWTs and since it will have direct effects on team performance (less ability to refer problems to traditional managers), the SMWTs will feel additional stress.

Proposition 5. Failure by SMWTs to recognize paradoxical tensions will lead to vicious cycles.

Rationale: Traditional efforts at resolving paradoxes tend to direct efforts toward compromises, victories, and elimination of conflicts. Since conflict and tension are inherent in the team effort, these solutions will not eliminate the underlying difficulties and the tensions will reappear.

Implications for Practitioners

The social, psychological, task, and environmental requirements for successful SMWT implementation pose a formidable task for organizations. Initial success depends on the training, motivation, and organization of the teams. Much of the literature has focused on how to start SMWTs successfully in new or existing facilities and how to overcome barriers to performance. The above review suggests that there are additional and conceptually different barriers relevant to SMWTs that must be considered compared to traditional work groups. Consequently, it is not surprising that practitioners might lose sight of these limitations in the effort to overcome very real obstacles at start up:

Our emphasis on limits and liabilities is not to argue that SMWT efforts are not worthwhile. Quite the contrary, evidence suggests that SMWTs can improve productivity (Pearson, 1992; Wall, Kemp, Jackson, & Clegg, 1986). However, SMWTs are not a technique for eliminating all problems. At best they replace one set of problems with another set of problems (probably more complex) but at a hopefully higher level of productivity.

Practitioners must understand that efforts emphasizing cohesiveness and success in the early stages of SMWTs may be detrimental if they generate too much cohesiveness and mask underlying problems that have not been apparent in initial analysis (see recommendations by Holpp, 1992). In fact, the argument presented here is that continuing use of SMWTs should lead to substantially different problems in the post start-up periods.

A variety of literature is emerging on de-escalation and flexibility (Brockner, 1991; Simonson & Staw, 1992; Staw & Ross, 1987b). Some of these papers include recommendations that are appropriate for use by SMWT managers. These include: (a) reducing the risk associated with admission of failure, (b) making negative outcomes less threatening, (c) better training to recognize

escalation, (d) setting interim targets and considering changes if targets are not met, (e) setting limits before starting new projects, (f) getting early feedback, and (g) using process criteria rather than outcome criteria to evaluate decisions. Others, such as changing managers or separating decision makers from implementers, may be less compatible with the autonomy associated with SMWTs.

Just as the researchers must look for paradoxical tensions, those involved in implementation and ongoing use of SMWTs need to be aware of the changing nature of the team efforts as they move beyond start-up. Initial efforts at implementation may rightfully emphasize team building, cohesiveness, and commitment among team members. In later or more mature stages of SMWTs, there probably will be a need to de-emphasize these characteristics in order to avoid rigidity, internal focus, insularity, and conformity which may occur if group solidarity becomes excessive.

A number of recommendations may be drawn from the paradoxical observations of Smith and Berg (1987). Natural attempts to remove or resolve conflict may increase tensions rather than resolve them. For example, when the team decides to expel a dissenter or when the team votes to adopt a compromise, it does not eliminate the sources of the basic conflict. Smith and Berg suggested that the team misses valuable opportunities for learning unless it is able to acknowledge the fundamental nature of the conflict itself. SMWTs may need special assistance beyond that used in traditional conflict resolution efforts in order to surface paradoxical tensions. Part of the reasoning is that it is difficult for team members to be participants (actors) and also be observers of the team operations. While the observer sounds like the role of mentor or coach (Hunt & Michael, 1983) usually assigned to outside managers, the techniques for intervention are less straightforward with paradoxical tensions, since team members are less likely to see the tension as paradoxical. In the conflict above, team members are most likely to see the problem residing in the dissenter, other groups, or in the environment and less as an inherent part of team life.

One primary area where escalation research and paradoxical analysis agree is on the fundamental nature of negative feedback and the acceptance of conflict. Both literatures suggest that the belief that conflict can be resolved is illusory when efforts focus on outcomes. Both approaches suggest a focus on the process and in the case of paradoxical analysis, the acceptance of the inevitability of conflict. Negative feedback is also a natural (and for paradoxical situations necessary) adjunct of team efforts. The ability to accept negative outcomes and to accept them, not as failure, but as a positive source of learning should reduce the paradoxical tensions, as well as reduce the possibility of escalation.

In closing, we acknowledge that some people might argue that organizations are proceeding with SMWT implementations too slowly or too fast. We prefer

the paradoxical view which suggests that destruction and setbacks are part of the creative process (Schumpeter, 1986) and that, rather than trying to deny or eliminate limits and liabilities, we should work with them to gain an improved understanding.

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