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THE LEADERSHIP PROCESS AND ITS EFFECTS ON SELF-MANAGED WORK GROUPS IN AMERICAN MANUFACTURING COMPANIES

By

Stephen R. Wirkus

A dissertation submitted in partial fulfillment

of the requirements for the degree of

Doctor of Education

University of San Diego

1991

Dissertation Committee

William Foster, Ed.D., Director

Johanna Hunsaker, Ph.D.

Edward Kujawa, Jr., Ph.D.

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ABSTRACT

THE LEADERSHIP PROCESS AND ITS EFFECTS ON SELF-MANAGED WORK GROUPS IN AMERICAN MANUFACTURING COMPANIES

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Over the past 75 years, leadership has become a widely studied phenomenon, with many theories and models offered to assist the layman to become an effective leader. Most of these theories have been based on management models, that is, models that adapt management behaviors and goals into what the authors call leadership. These theories fall into several categories: great man, trait, contingency and situational among others. While these theories have provided practitioners some valid ideas on how to improve their managerial effectiveness, they have done little in the way of expanding the knowledge of the process of leadership.

This study sought to examine leadership as a process. One definition of leadership was selected and tested against the feelings and attitudes of over 100 work team members from various manufacturing companies in the United States. The intent was to prove or disprove this model of leadership within

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these work teams--to examine the process of leadership at work at the lowest level in organizations, rather than the popular practice of considering the chief executive of the corporation and their personal habits, behaviors or traits.

A survey instrument was designed to test the leadership model selected and distributed to volunteer participants who were members of self-managed work teams within manufacturing companies. This information was supplemented with a few interviews to clarify and triangulate the data. Statistical analyses were performed to determine if the test model was valid within these settings.

The author concludes that the test model of leadership is valid in all respects within the teams themselves. From outside the teams, it was found that the model did not hold valid in all respects. The author believes this is due to the nature of the self-managed teams and their independence from traditional management influence.

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by

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DEDICATION

To my wife, Diane, whose never ending support and encouragement

have made this project possible.

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CHAPTER I

STATEMENT OF THE ISSUE

Introduction

Late in the nineteenth century, America transformed itself from an agrarian society to an industrialized economy. Although not apparent at the time, this change set the stage for generations to come and formed the basis for management and leadership for the next 100 years. Maccoby (1981) addressed three currents that have been transforming the national character since the craft and entrepreneurial eras: technology; movement from a rural society to a semiurban, organizational society; and the challenge to paternal authority. Each of these trends, according to Maccoby, have helped bridge the gap between different cultures and social character coexisting in America, and, with economic pressures, have accelerated the pace of change.

In the early years of this transformation, American businessmen searched for a way to manage and direct the large numbers of workers who were coming to the factories from the farms. These people arrived with few of the skills that were needed in the large and relatively complex factories that were developing. At about this time there emerged a theorist named Frederic Taylor, who proposed in his book, Principles of Scientific Management (1911), that the way

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to organize the workplace and provide the most efficient control of the worker was through a rigid, non-humanist approach that clearly defined each job and left all of the decision making to non-involved managers. This separation of work from responsibility appealed to the early entrepreneurs, who had invested much of their own money into their businesses and who did not relish the idea of turning control of the business over to a group of inexperienced and unskilled workers.

This mode of management thinking has endured to this day, although there is a growing recognition on the part of American business people that change is needed. More managers are recognizing that strict control over workers, separation of workers from responsibility and decision making, and information limited to what is absolutely necessary to complete small portions of a task is not only extremely demeaning for workers but is not the most effective use of this most important resource--the people themselves. The realization that over-control of the work force is non-productive has become more obvious as the preeminent position of American manufacturers has declined to a point where even Americans buy more goods manufactured outside of the United States than do non-Americans. In 1971, the United States balance of trade in manufactured products went negative for the first time. In 1986, America's imports of manufactured goods exceeded exports by almost

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$140 billion, and West Germany displaced the United States as the world's mightiest exporting nation (Hayes, Wheelwright & Clark, 1988).

Since 1970, the ability of overseas manufacturers, particularly the Japanese and the West Germans, to produce quality products at prices below those of American manufacturers has become legend. In the fiscal year ending March 31, 1989, 454 leading companies on the Tokyo Stock Exchange realized pretax profits up 25 percent (Teresko, 1989.) The reasons for this are many, but one that continually comes to the surface is the way that these overseas competitors treat their human resources. This difference, particularly with the Japanese, is evidenced in their high proportion of employee involvement groups and self-managed work teams as compared to the number in the United States (Ouchi, 1981).

One can easily argue that there are many more reasons for the success of Japanese manufacturers than their use of employee involvement techniques. Surely the Japanese societal tendencies of devotion to their employer (and vice versa), the politeness of the culture that encourages cooperation and harmony in the workplace, their desire to work hard, and the collective decision making process that the Japanese employ (Ouchi, 1981) are all conducive to producing the kind of miraculous economic recovery seen in Japan since the end of World War II. But for American manufacturers seeking solutions to their problems of

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non-competitiveness, the ideas of simply getting their employees to work harder or the employees becoming more devoted to the business do not seem very tenable. Implementing self-managed work teams, however, is a tactic that many companies are willing to attempt that may eventually lead to a change in the work ethic and work paradigm of many Americans. "The realities of economic power will shift power from employers to employees. Thus the winners of the '90s will be those companies that change the structure, the style, and the assumptions of leadership, and focus on the content of the work, not the bureaucracy of the work" (Verespej, 1990, p. 35).

Evidence that this transformation is occurring abounds. Going back as far as the 1940s, employee involvement efforts have been making an impact in American business. Beginning with employee suggestion programs and quality of work life programs (Accordino, 1989; Smith, 1985) and continuing with workplace democracy and participative management (Kanter, Summers & Stein, 1986), employee involvement techniques have proven to be effective cost savers for those businesses that use them. A survey of over 900 companies showed that their combined savings from employee suggestion programs alone in 1988 was $2.2 billion (Stackel, 1989.) Other innovative programs involving various members of the organization in problem solving teams have also been documented (Wirkus, 1982). These kinds of employee involvement programs

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alone will not, however, make the critical difference that is needed to bring back American preeminence. One important reason is that American companies seem much less willing to implement suggestions made by employees when compared to the Japanese--despite the obvious rewards. At Toyota, Nissan and Honda, for example, employees submit an average of 27 suggestions per employee per year. Compare this with an American yearly average of one suggestion per 37 auto employees and an implementation rate of only just over 20 percent (Nora, Rogers & Stramy, 1986). It will take the use of teams--dedicated, motivated individuals working collectively, interdependently and synergistically toward a common goal--to bring back American manufacturing preeminence. And it will take leadership, from those in management and within the work teams themselves, to bring about this change.

Leadership as a process must, therefore, be clearly understood if this major workplace change is to be effected. It is the leadership focus that this research project addresses, and specifically the leadership of and within self-managed work teams. This concept of self-managed teams dates back to the early 1950s in England, when two researchers, Trist and Bamforth (1951), studied the social and psychological conditions of coal miners. The concept has since evolved into one of the most popular forms of work force management restructuring in decades, and has helped several manufacturing companies from

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the brink of extinction toward renewed profitability.

The Issue

There is a strong need for a change in management philosophy in American manufacturing. This need is evidenced in the dramatic shift that the country has undergone, from the world's largest creditor nation in 1982, to the world's largest debtor nation in 1988 (Hayes, Wheelwright & Clark, 1988). A large part of this change is due to the number of American business failures with the resultant lost tax base that has reduced the government's revenues and helped generate record deficits in the Federal budget for the last 10 years, with a current Federal debt exceeding $3.2 trillion (Staimer, 1990). A major part of the business failure problem is due to the way American business people treat their employees. The United States is no longer an agrarian society. People are better educated, have more job skills and want more from their work than merely a paycheck at the end of the week. Giving people responsibility along with the tools to accomplish the task at hand is part of what self-managed work teams provide, and may be the best short term solution to the problem of regaining America's preeminent position in manufacturing.

Wishing for change, however, will not make it so. Leadership is required to recognize the needs of the workers, motivate people to want to try new ways of doing things, and follow through to make it all happen. Understanding the

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process of leadership within companies that have successfully initiated self-managed work teams is a viable way for leaders in other companies to implement this concept. Understanding leadership within the work teams themselves is crucial to make this implementation successful. For it is these leadership processes that are not well understood, either by scholars of leadership or by the managers of companies that are charged with the responsibility for implementing self-managed teams.

Purpose of the Study

The purpose of this study was to determine what leadership processes are at work, within successful self-managed work teams and at higher management levels within companies which have implemented self-managed work teams. To accomplish this, eight companies from various parts of the country were contacted and asked if they would allow at least one of their self-managed work teams to participate in my survey. This data was collected, analyzed and blended with interview responses from a small number of work team members in San Diego County manufacturing companies. To examine the leadership processes at work within these teams and at their companies, I endeavored to answer the following questions:

1. What are the characteristics of successful self-managed work teams?
2. What leadership process is at work or has been used to create and

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perpetuate self-managed work teams at various companies?

3. How does the process of leadership compare with an existing model of leadership as defined below?

4. What modifications to the test model are necessary based on this research?

Definition of Terms

To avoid misinterpretation about key terms used, the following definitions are included:

Work team: A group of people that possesses the four essential elements of goals, interdependence, accountability and commitment (Reilly & Jones, 1974).

Leadership: An influence relationship among leaders and followers who intend real changes that reflect their mutual purposes (Rost, 1988).

Organizational culture: The collection of beliefs, values, traditions, customs, rituals and practices that are prevalent and enduring within a definable group, and are passed from generation to generation of group members (Levinson, 1972).

Self-managed: Having the ability to make decisions and control important parts of the work process (Lawler, 1988).

Management: Those persons in a business that have control of resources

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and decision making power, and who typically have responsibility for the work output.

Greenfield site: A new manufacturing facility designed for a specific purpose and workplace organizational culture.

Limitations

This study was limited to companies that were considered to be manufacturing concerns (as opposed to service, information or other types of endeavors). The study was also limited to companies doing business within the United States. Only volunteer participants were used, and only one model of leadership was tested against the attitudes of the participants.

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CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The evolution of employee involvement efforts and the development of teams in America is well documented. In this section, I will review the literature as it pertains to work group formation and development, from the standpoint of theory as well as reviewing what has been accomplished both in Japan and the United States. I will also explore the literature in the areas of leadership, both as a concept and as leadership applies to teams.

Work Group Formation and Stages of Development

Although much has been written about the management and character of change (Argyris, 1984; Smith, 1982) and the leadership required to inspire excellence (Bennis & Nanus, 1985; Burns, 1978; Maccoby, 1976; Peters & Waterman, 1982; Josefowitz, 1985; Belasco, 1986; Hersey, 1984), surprisingly little has been written about the elements of effective team leadership. As teams rapidly replace individuals as the primary unit of focus in innovative companies and organizations, learning how to build, nurture and lead teams becomes a critical skill.

Several models of team development are available. Tuckman and Jensen

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(1977) and Tuckman (1965) describe five distinct stages of development. These stages are forming, storming, norming, performing and adjourning. Bennis & Shepard (1956) include in their model the stages of dependence, counter-dependence, resolution and interdependence. Schutz (1982, 1958) discusses the five stages of inclusion, control, openness/affection, control and inclusion. Bion (1961) incorporated in his model the stages of dependency, fight/flight, pairing and work. Acceptance, data flow, goals and norms, and control are the four stages described by Gibb (1964). Yalom (1970) described the four stages of orientation and hesitant participation; conflict, dominance and rebellion; intimacy, closeness and cohesiveness; and termination. The assimilation of the concepts presented in each of these models leads to a summary model that includes the stages of awareness (commitment and acceptance); conflict (clarification and belonging); cooperation (involvement and support); productivity (achievement and pride); and separation (recognition and satisfaction) (Kormanski & Mozenter, 1987.)

Kormanski and Mozenter (1987) describe the awareness stage of group development as involving the task objective of <u>becoming oriented</u> and the relationship objective of <u>resolving dependencies</u>. In this stage, the team members need to become committed to group goals and understand the goals as task behavior. The desired outcomes for the first stage are commitment and

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acceptance.

Movement to the next stage, called conflict, involves the task objective of resistance and the relationship objective of resolving feelings of hostility. Team behaviors at this stage emphasize acknowledging and confronting conflict openly at the task level and listening with understanding at the relationship level. Desired outcomes at this stage are clarification and belonging.

Cooperation is the third stage of development described by Kormanski and Mozenter (1987). Also known as the norming stage, this stage involves the task objective of promoting open communication and the relationship objective of increasing cohesion. Desired outcomes for this stage of group development are involvement and support.

The fourth stage of development described by Kormanski and Mozenter (1987) is productivity. At this stage, the group is performing and achieving the task objective of solving problems and the relationship objective of promoting interdependence. Desired outcomes are achievement and pride, and major concerns include loss of enthusiasm and the ability to sustain momentum.

The last and least discussed stage of group development is the separation or adjournment stage. This stage is characterized by recognition and reward of team efforts and encouragement and appreciative comments from the leader on team performance. The desired outcomes of the final stage of group

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development are recognition and satisfaction.

With these phases of group development in mind, it is necessary to examine the ways in which various roles within groups emerge; how decisions within groups are made; how group cohesiveness is maintained; and the ways in which conflict is managed within groups. Understanding these aspects of group dynamics will provide a basis for developing a model for self-managed work teams and will aid in our understanding of the various self-managed work teams that have emerged throughout America.

According to Wilson and Hanna (1986), a role is "the set of behaviors displayed by an individual in relation to the expectations of the rest of the group members" (p. 139). The role evolves over time out of a trial and error process, and the kinds of behaviors that are acceptable and not acceptable to the rest of the group are taught to the group members by a system of rewards and punishments. There are also different kinds of roles. An informal role is one that is regulated between the group and the individual and where the emphasis is on function rather than position. In an informal role, a person may provide leadership functions and fulfill a leadership role without formal designation as leader (Wilson & Hanna). The formal role structure is one that is usually designated by the organization and operates in addition to the informal role. Bormann (1975) takes the role emergence phenomenon a bit further by

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providing a model of how roles emerged in groups that he studied at the University of Minnesota. His is a stimulus-response model that points to role emergence as a function of reinforcement through the group's interaction over time. Figure 1 shows this model and illustrates how the group can influence the roles and behaviors of individual members. Bormann observed in his studies that at a particular time, T_1, a member performs a given role behavior. A member or several members either give ambiguous feedback or encourage or discourage the member with regard to this role behavior. At another time, T_2, the person behaves based upon the group's reinforcement or lack of it. If the group members have given ambiguous cues, the member will generally try the role behavior again. He or she does so until a clear signal is received from the group. If the group approves, the member will try the behavior again--this time with greater confidence. If disapproval is shown, the member will likely stop the behavior. This model, according to Bormann, operates for each of the member's roles as they emerge.

For supervisors, the issue of roles--and particularly their changing roles--is a crucial one. Jessup (1990) explores the issues involved when companies make the move from traditional management styles to one that involves employees in decision making. In his analysis, he finds that "all too often, enthusiasts of organizational transformation have enlisted the support of

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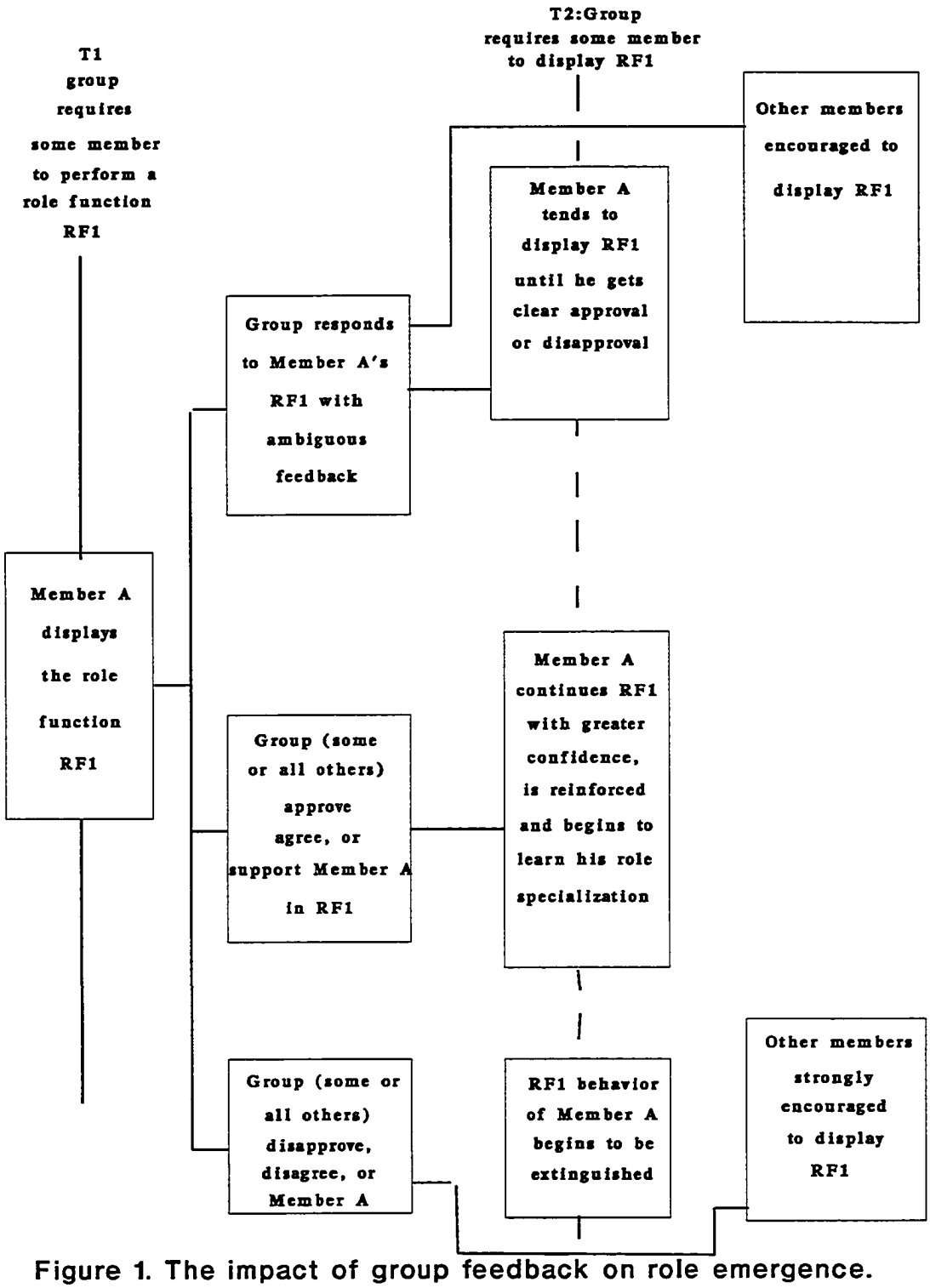

Figure 1. The impact of group feedback on role emergence.

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production workers (with some success), and have left supervisors hanging by their fingernails" (p. 79). This situation leads to frustration on the part of the ex-supervisors, but perhaps more significantly for the new organizational structure, often hinders the new teams from reaching their fullest potential and sometimes causes their failure altogether. To address this problem, Jessup suggests that the organization train and place the ex-supervisor into one of three "external" team leadership roles: administrator; coach; or advisor. Each of these roles has specific responsibilities for assisting evolving and operating teams. Administrators, for example, communicate business issues, review team goals for realism and delegate specific authority commensurate with the team's maturity. Coaches participate in meetings with the team and help the team find expert sources; advisors provide training for team members and act as liaisons with designated segments of the organization.

Roles, including the important one of group leader, are dependent on the inputs of the various group members and the management of the organization. This thinking is in line with that of current leadership scholars (Rost, 1988; Foster, 1988) who feel that the role of leader is one that changes from time to time; where ideas and member needs create a dynamic of leadership that is not vested with one person only. This changing of leader position will inevitably lead to some conflict within a group. Understanding this phenomenon will be

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dealt with next.

"Conflict can be defined as a struggle involving opposing ideas, values, and/or limited resources" (Wilson & Hanna, 1986, p. 243). Deutsch (1973) stated that conflict exists when there is an "action that is incompatible with another (and it) prevents, obstructs, interferes, injures, or in some way makes the latter less likely or less effective" (p. 10). Conflict has also been conceptualized as "a struggle over values and claims to scarce status, scarce power, and/or scarce resources" (Coser, 1956, p. 8). This last definition fits nicely with the views of Burns (1978), who saw the struggle for power and scarce resources as a major factor in the leadership equation. But how does this conflict, present anytime you have people with different ideas and values working together in a group, manifest itself? And what is the role of leadership in resolving the conflict such that the group can remain productive?

The incompatibility of ideas or values may be real or imagined on the part of the group's members. As long as there is a sense that a difference exists there is a motivation for conflict. This leads to an attempt to prevent, obstruct, interfere or in some way to intervene to achieve the desired end. There are several aspects of conflict that need examination (Wilson & Hanna, 1986). First, the more important and attractive the goals, the more intense the conflict is likely to be. For a group leader, this can manifest when a decision

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to be made is a serious one that may be difficult to implement. If the decision will cause the leader a good deal of grief, then the leader may fight hard to defeat the proposal.

Second, the relative attractiveness of the options affects the intensity of the conflict. If the group perceives two ideas to be equally attractive, there is likely to be great conflict if the members also see the alternatives as being important.

Third, a group may find that the ideas they are considering have both attractive and unattractive features. A solution to a quality problem created by a group member may make the group more productive at the expense of the individual group member if that member must admit that he or she needs additional training.

Fourth, the number of ideas to consider may affect the conflict. If the group sees several alternative courses of action as equally attractive and sees their decision as an important one, the group may experience intense conflict. Wanting to make the best decision, wanting to get everyone's input, and having to sort through the various possibilities can be very difficult.

In self-managed work groups, conflict is present on a daily basis. Not only are there many decisions to be made, but the people making the decisions are often unfamiliar with this job requirement. In many of the self-managed

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work teams that I have been involved with, the members are new to the idea of making their own decisions. In their former roles, most decisions were made for them by a supervisor, and the group member's only conflict occurred when the resulting activity was an unpleasant one for them to carry out or conflicted with their personal goals or values. In self-managed work teams, the same people are required to make many of these decisions themselves, and are required to live with the results. This puts additional pressures on the team leader, as the team members look to the leader to provide the guidance when a decision affecting the group is needed.

Several strategies for managing group conflict are available. Burke (1977) offers the following list:

1. Withdrawal: Retreating from the argument. For example, "let's not talk about that today. I'd rather move on to something else."

2. Smoothing: Playing down the conflict (differences) and emphasizing the common interests, or avoiding issues that might cause hard feelings.

3. Compromise: Looking for a position in which each gives and gets a little, splitting the difference if possible; no winners and losers.

4. Forcing: Using power to force the other person to accept a position; each party tries to figure out how to get the upper hand, causing the other person to lose.

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5. Confrontation-problem solving: Directing energies toward defeating the problem and not the other person; open exchange of information is encouraged; parties try to reach a solution that is optimal to all; the situation is defined as one where everyone wins. (pp. 254-255)

Filley (1975) has classified these kinds of methods as win-lose, lose-lose and win-win. Obviously, the win-win strategy is the type that a leader, who is considering the wants and needs of his or her followers, would want to pursue. This would allow for each of the parties involved to achieve their goals while maintaining the overall objectives of the group. Win-win strategies usually result from some attempt to reach consensus within the group.

There are several ways that groups attempt to reach consensus. Compromise can result in pseudoconsensus. This route may, however, result in some members of the group having reservations about the decision. This is because when people give up something, they lose and may not be satisfied with the outcome. Wilson and Hanna (1986) found that the issue for groups is achieving as much commitment to the decision as possible rather than finding some acceptable middle ground.

The majority vote approach is a popular one within groups, but one that is not without its own problems. Jones, Barnlund and Haiman (1980) provide three questions that can be asked by a group or its leader before calling for a

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vote:

1. Are the motives of the members really so much in conflict that, given more time for exploration, they might not be able to come to agreement?

2. Is time really at a premium?

3. Will a majority vote truly produce the greatest good for the greatest number when the members of that majority have not had an opportunity to come to a full appreciation of the minority's feelings? (p. 151)

A final method to resolve conflict is to involve a third party, or arbitrator. This person is usually a member of management who is brought in to give an opinion or make a decision that the group is unable to make. This method is open to the same criticisms as the compromise method, but can be made more effective when the group uses an uncommitted member of the group whom they trust to make a fair decision. The arbitrator's role requires an exceptional member, and it places that member under extreme pressure (Rubin, 1980).

In day to day operations, self-managed work groups face many decision making opportunities. The way in which these decisions are made are reflective not only of the leadership within the group, but also of the kind of training and experience possessed by the group members.

Brilhart and Jochem (1964) have developed a what they call a problem

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solving sequence for small groups that makes use of a well known principle of creativity. Their sequence suggests that in limiting one's perspective, a person is limiting what he or she is able to think about a problem. This typically first comes about when a group sets criteria during a brainstorming session that limits group member's ideas. While Brilhart and Jochem agree that criteria are important, they suggest that the criteria be set after the group has generated as many ideas as possible. Brilhart (1982) summarized the decision making agenda in five steps or questions:

1. What is the nature of the problem facing us (present state, obstacles, goals)?

2. What might be done to solve the problem (or first subproblem)?

3. By what specific criteria shall we judge among our possible solutions?

4. What are the relative merits of our possible solutions?

5. How will we put our decision into effect? (pp. 202-203)

Many other approaches to decision making are used. The nominal group technique (NGT) sometimes generates more alternatives and higher quality decisions (Wilson & Hanna, 1986). The procedure was originally created to avoid the problems sometimes caused by group interaction. The steps are described by Delbecq, Van de Ven and Gustafson (1975):

1. Silent generation of ideas in writing.

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2. Round-robin recording of ideas.

3. Serial discussion for clarification.

4. Preliminary vote on item importance. (pp. 7-16)

This technique minimizes differences among group members and assures relatively equal participation, something that is difficult to accomplish in many groups. The caveat is that the process is best used in meetings that are concerned with judgmental decision making involving creative decision making (Wilson & Hanna, 1986).

Decision making, while important, is not the most crucial aspect of group dynamics. If a group is not a cohesive team, it will not perform consistently or to the level of the abilities of its individual members (Shaw, 1981). Productivity of a group is not, however, maximum for those groups displaying the highest levels of cohesiveness. Fisher (1980) stated that the relationship between cohesiveness and productivity "breaks down toward the upper end of the two continuums. Extremely cohesive groups are more likely to have moderate to low productivity" (p. 31).

So what are the determinants of group cohesiveness? According to Wilson and Hanna (1986), they include the elements of similarity of attitudes; group success; clear sense of how to achieve goals; conflict management style; and frequent and positive reinforcement. Building group cohesiveness is a

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primary function of the group leader. Drawing on the mutually shared interests of the group's members and tapping into this reservoir is a key task of the leader. How leaders of various groups have completed this task is discussed next.

Applications of a variety of team models are well documented. Kilmann (1989) states the purpose of team building "is to help each work group use all its information and expertise in managing complex problems (p. 110, emphasis in original). In discussing his strategies for improving organizations, he profiles several companies that have dramatically changed their paradigm of management from authoritative control to a more participative approach. Nora, Rogers and Stramy (1986) describe the transformation of a major General Motors plant in Livonia, Michigan from one that epitomized the struggle between labor and management to a model for employee involvement and participation in the process of running the factory.

In the development of the team process to be used at the Livonia plant, Nora, Rogers and Stramy (1986) described the methods used by the group charged with the implementation responsibility. This method included visits to other plant sites that had accomplished (and not accomplished) similar missions--the increased involvement of employees through teaming--and resulted in many interviews with various personnel. Among the topics of interest to the

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implementation group were: leadership; worker participation; training; strength and timing; consistency at the top; incentives and rewards; performance measurement; and organizational philosophy. Of particular note were their findings in the areas of leadership, worker participation, consistency at the top, and organizational philosophy. Their findings in these key areas were as follows:

Leadership. In successful approaches first line managers or supervisors were either carefully selected for or fully trained in the skills required to facilitate implementation. They understood and supported the overall change process. In unsuccessful approaches first line managers or supervisors were unprepared to assume their roles, lacked an in-depth understanding of the approach and/or did not support the change process.

Worker participation. In successful approaches the union and hourly employees were involved in developing the approach from its inception and actively supported implementation. In unsuccessful companies the plan was developed by management and then "sold" to the union and hourly employees.

Consistency at the top. Successful organizations were almost invariably characterized by a top management and union leadership that projected an image consistent with the approach being implemented. Leaders of

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> less successful plants failed to project an image consistent with their intended approaches, either through a misunderstanding of their role or because they lacked the insight or skills to project an image.
>
> Organizational philosophy. In successful approaches the improvement plan grew organically from a clear overall statement of philosophy or mission. In less successful approaches the organization had no guiding philosophy. (pp. 53-55)

The findings described by Nora, Rogers and Stramy (1986) support, in several ways, the definition that leadership is "an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes" (Rost, 1991, p. 102.) Their findings do in fact suggest that if leadership is indeed the process which moves a company through the substantive change from autocratic management to one that is employee centered, then there are leaders and followers engaged in the relationship; there is a need for influence by the leaders on the followers; and that the intended change reflects the mutual purposes of the leaders and followers.

But how have these ideas been put into action by American companies? What have their experiences been to date? And how do these experiences differ from those of the Japanese, for the last 20 years touted as the world's most productive and successful economy? The next section will explore the Japanese

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experience, and examine the culture of the Japanese that has contributed to their success. Following that is a look at some American companies and their attempts at implementing self-managed work teams.

The Japanese Experience

When discussing the Japanese, performance has to be the final judge. In the fiscal year ending March 31, 1989, 454 leading companies on the Tokyo Stock Exchange showed pre-tax profits up 25 percent (Teresko, 1989.) When you consider the relatively high value of the yen, the results are even more spectacular. So what is it about the Japanese way of doing things that has eluded American manufacturers, and how can we regain some of the losses of the last twenty years?

One of the things that the Japanese seem to do very well and for which American businessmen continually criticize them for is what I will call "patient progress." By this I mean the slow but continual improvements that are made in maintenance, quality, inventory and other plant systems. These improvement are immediately visible on the profit line. Americans, on the other hand, seem to be more interested in making large investments in high profile systems, such as computer aided drafting (CAD) or material requirements planning (MRP II) which often cost more than the savings they produce. But that is just an example of a philosophy that is quite different than ours. The real reasons for

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the differences seem to come from two things--people and the management style of the Japanese. While there is little debate about the fact that the Japanese have had an advantage in the fact that they have literally rebuilt there industrial base in the post World War II years, the fact remains that they view their people resources in a completely different way than most Americans. Akio Morita, Sony's chairman, summed it up by referring to his employees as "family."

This feeling about the organization's people extends to the management-employee relationship. Japanese organizations give their employees broader responsibilities and cross functional teams rotation and job training--all within companies that have much lower barriers between company disciplines such as production and design engineering. The ability to act as "teams" seems to be the catalyst that makes Japan work. The Japanese are trained in primary school to solve problems as a group and they are encouraged to continue this in their working careers. This effects many things, including the layout of many offices, where the rule seems to be open and partitionless which encourages discussion and communication, as opposed to many American offices, where design engineering may be in a different building from production--and even they are working in cubicles that stifle interaction. This team view of projects even affects how data are stored. It is much more

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common in a Japanese office to find data stored in a central area because all offices tend to share a similar view of the project. Oral communication creates a big advantage in that information travels faster than typed memos that have to be distributed. And, since most of the offices--including those of the executives--are in the open, meetings can be called instantly and are usually shorter and more informal. And, as pointed out by Ouchi (1981) in Theory Z, the decisions that are reached are made through a collective process in which as many employees as necessary participate in the decision. This consensus approach, while time consuming, yields more creative decisions and more effective implementation than does individual decision making. The approach has been taken to an extreme in some organizations, to the extent that who is responsible for what decisions is intentionally ambiguous. The ability to communicate quickly and efficiently is so important in Japan that it is considered a "moral issue", (Teresko, 1989) and is reflected in the intense training many newcomers to an organization receive--four to six hours per day for several months--in the department's purpose and mission and a complete status of the business. In one company, employees in the research and development department who received cross functional training had some product training as well as some shop floor experience, which tends to lower barriers between departments. This approach continues during employees'

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careers via job rotation, creating the communication and understanding necessary to translate new technology into new products.

The philosophy of management toward the employee manifests itself in other ways as well, including the now famous "lifetime employment" attitude that is true in some ways and in some companies. In large firms, for example, there is usually a personnel policy often described as lifetime employment. Employees are hired as they emerge from high school or college and they stay until they retire--typically between the ages of 55 and 60. The exceptions are senior and top management. As management candidates advance toward executive status, they are no longer subjected to the "early" retirement process. With this system, job-hopping by employees is relatively rare in Japan, a practice discouraged by losing most, if not all, of the retirement benefit. The net effect, which is reinforced by the customary union, is enhanced loyalty, cooperation and productivity. Graduates know that the job they are seeking will be a lifetime proposition and that the success of the company is easily transferred into their own personal success. A side effect of the lifetime employment practice is a different attitude toward training and employee education. First of all, since new employees are almost always new graduates by definition, substantial orientation and training are required. Yet management is not reluctant to make this training commitment and investment because there

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is little fear that employees will quit and run to the competition, as is common in the United States. And, since employees feel secure, there is no resentment created by technological change, automation or the need to be cross functional. Compare this with the typical American worker, who is very resistant to automation and change for fear that he may lose his high paying position.

Examples of how far Japanese companies will go to preserve the lifetime employment of its employees abound. In 1983, Nippon Steel saw international competition and a rising yen cause its profits to plummet to 1/30th of their 1979 level (Teresko, 1989.) Rather than lay off some or all of its workforce, the company decided to diversify its manufacturing base into areas that had more promise. In the city of Kamaishi, the company closed two of its blast furnaces and started up a computer software business, a mushroom farm, a business that transforms iron powder into hand warmers and deoxidizing agents, plus an international joint venture that is producing ceramic electronic components.

To assure maintaining the pay levels of employees transferred to the new subsidiaries and start-ups, Nippon Steel directly subsidized salaries and benefits until the new operations were established. Through these steps and by applying automation and technology to their steel business, profits were increased 16 times by 1984--a time when the bottom had fallen out of the international

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market for steel.

Concern for employees is not limited to involvement and lifetime employment. The cleanliness and tidy nature of the country and most businesses is a testament to their concern for the environment and people. Ricoh, a manufacturer of copy machines and other photographic equipment, scientifically selects colors for its factories to help create an environment intended to enhance the well being of employees (Teresko, 1989.) Creativity is also rewarded in several unique ways. At Toshiba's Research and Development Center, management has devised three incentives to encourage individual contributions from its employees. One incentive permits each researcher to allocate up to 10 percent of his regular work hours to pursue self-directed interests.

A second incentive is a research proposal system that permits ideas to be presented to the R & D director without intermediate management approval. Toshiba believes that goal-oriented middle managers might neglect ideas and proposals not directly related to current goals.

The third incentive for creativity comes from the synergism among Toshiba's varied group of researchers from many backgrounds--such as electronics, electrical engineering, physics, chemistry, metallurgy and mathematics.

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Perhaps the ultimate example of teamwork in Japan comes at the national level, in the form of the Ministry of Trade and Industry (MITI.) More than just an instrument for guiding commercial and national interests, MITI also represents the Japanese approach to managing risk by sharing it with industry. For example, MITI has a project that is investigating the potential of artificial intelligence type control devices for robots in dangerous environments. Another example of Japanese innovation is the application of "fuzzy logic" technology to industrial control situations. Fuzzy logic is a concept that enables computers to work with such imprecise concepts as "hot" or "expensive", enabling them to mimic the human mind. MITI has opened the Laboratory for International Fuzzy Logic Research, with almost 50 companies participating. Intra-industry cooperation is evident in the relationships between major corporations and their suppliers. Instead of being on an adversarial basis as is common in America, Japanese corporations assist subcontractors with financial aid as well as technical assistance by helping them explore technology that could help them all. In addition to being able to direct more research at a common problem, this risk sharing also involves suppliers at a very early phase of product development, substantially saving time in the development cycle. Some American companies, such as Ford and Caterpillar, are doing the same thing, but this trend is not as far along in this country as it needs to be for Americans

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to compete effectively. This kind of cooperation between the government and industry, and within industry itself, is virtually unheard of in the United States and serves as a real hindrance to progress in high technology industries.

Obviously, there is no one thing the Japanese are doing that can explain their phenomenal success in manufacturing and other industries. Their strengths are

> deeply rooted and go beyond single factors such as low capital costs, attitude or organizational design. The Japanese have successfully integrated technology and market risk, and have coordinated the way schools, government and business handle their most precious resource--people. Inherent in the Japanese integrated business systems is the flexibility to cope with rapid change in a global economic environment. (Teresko, 1989, p. 70)

With all of this reported success of the Japanese manufacturing machine, one would think that the workers in Japan would be the envy of the manufacturing world, that all is running smoothly and that there are no problems. This, of course, is not the case. Others argue that all is not well in Japan--that there are serious problems just beginning to rise to the surface, especially in the thousands of smaller, less publicized businesses. In fact, it seems that Western business people understand very little about the Japanese--

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both good and bad. According to Sakai (1990),

> It seems the myths of the 1960s are still alive and well. The most prominent and enduring of these myths is the notion that Japanese industry is made up of a handful of powerful giants with factories spanning the nation and workers forming an army of loyal employees who are cared for until retirement by a paternalistic corporation. This is absolute nonsense. (p. 39)

In reality, most of the Japanese industrial system is made up of thousands of small, family owned businesses. The Japanese Ministry of Finance reported in 1988 that more than 600,000, or 30 percent of their registered businesses were capitalized at less than $14,000. Roughly another 30 percent were capitalized between $14,000 and $36,000, and another 15 percent at less than $70,000. In other words, over 75 percent of all registered Japanese companies are capitalized under $70,000--not what anyone would call major industry (Sakai, 1990). This proliferation of small companies is the result of the major companies, such as Hitachi, Matsushita, Toshiba, Sony and Fujitsu establishing what are known as *han*--small, feudal fiefdoms similar to those established hundreds of years ago in Japan's agricultural economy. Except today the fiefdoms include hundreds and thousands of the small manufacturers who are literally told what to produce, how to produce it, when to deliver it and how

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much they will get paid for it. This system hardly sounds like one where the employees--whom ever they might work for--are the most important asset of the company and where their welfare is of the utmost concern of the company managers. Indeed, the system of employee loyalty seems to be breaking down.

> When Japanese companies had to lay off employees during the oil shocks of the 1970s, it became apparent that this [paternalistic attitude] was an illusion. Big companies take care of themselves first and their employees second. Young people today especially realize that big companies and impressive sounding keiretsu are no longer a guarantee of anything. A majority of young people leaving college 15 or 20 years ago would be proud to join a prestigious group like Mitsui and wear a Mitsui pin in their lapels, regardless of there being better jobs elsewhere. Today this "I'm a Mitsui man" way of thinking is disappearing fast. (Sakai, 1990, p. 45)

We in America and other countries need to look at the Japanese experience--and the experience of our own successful companies--to develop a model for creating the environment that will produce the kinds of people involvement and systems to make American business as successful within the American culture. Another important source will be the experience of companies who have tried to implement Japanese strategies directly (see Dillon,

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1990; Oliver & Davies, 1990; Cowan, 1988). The experiences of a few American companies will be the topic of the next section.

The American Experience

Naisbitt and Aburdene (1985) have looked at what companies in America are doing and take the approach of predicting the future of American business by highlighting the successes of several major companies. In their analysis, "The companies that create the most nourishing environments for personal growth will attract the most talented people" (p. 46). They see the move from Taylorism--breaking the job down into its smallest elements--to one of job enrichment. Examples noted include a TRW, Inc. plant that reduced the number of job classifications from over 200 to fewer than 100 in their attempt to bring creativity and flexibility to the work place. In this move to encouraging personal growth, Naisbitt and Aburdene outline what they believe will replace the old, bureaucratic structure: the small and cross disciplinary team approach. One company they cite using this approach is Advanced Micro Devices in California's Silicon Valley. A computer chip manufacturer, this company of 5,000 employees has more than 20 company teams, "from the Mail and Literature Distribution Team to the MOS Static RAM Design Team" (p. 31).

The benefits of teaming in American manufacturing are also well

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documented. Parker (1990) reports that at Minnesota Mining and Manufacturing (3M), a company that bets its future on creativity and innovation, the reasons for teaming include greater productivity, more effective use of resources, better problem solving and better quality products and services. At the Livonia, Michigan plant discussed earlier, the benefits reported included a reduction in customer complaints by 40 percent; warranty costs lowered by 56 percent; costs per delivered end product cut in half; and an increase in employee suggestions received of several hundred percent (Nora, Rogers & Stramy, 1986).

There are many other examples of companies who have moved to involve employees in their jobs. The first two examples are greenfield sites. The third is an example of a change at an existing, nonunion facility. The last is from an existing, unionized facility.

The first example is a relatively new manufacturing facility within the Cummins Engine Corporation (Guest, 1989). Located in Jamestown, N.Y., this facility is approximately 10 years old. From its inception, the planners of the facility wanted to create an environment where all employees shared in the operation of the plant, from the planning of the work to the decision of the hours that were worked.

The plant employs approximately 900 persons, 500 of whom are direct

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labor personnel and the remainder administrative and managerial, although the term "managerial" has a different meaning in this plant than in traditional factories. Everyone in the plant is assigned to teams which have an average membership of roughly 15 to 30 persons. The teams are generally formed around logical work units, such as engine assembly or engine testing, but also come from support areas such as human resources or supplier quality assurance. The teams function semi-autonomously, in that there is no direct supervisor, although there is an appointed team "manager." It is interesting to note that in the original design of the work teams at Cummins, there was no team leader per se, but a team "advisor", whose duties included group facilitation and assistance when needed. After a short time, the teams themselves felt the need for more structured direction and the concept of team "manager" is now prevalent, where the manager has some of the traditional roles of supervisor, including the task of discipline for team members.

The next example of this type of organizational approach is at a General Electric (GE) facility in Bromont, Ontario, Canada (Posey & Nota, 1989; Rhea, 1986). The facility employs approximately 600 people and is responsible for producing close tolerance gas turbine engine components which are assembled into engines at other GE facilities in the United States. Another non-union site, this plant opened in 1982 and since its inception has adopted a participative

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management philosophy. The hierarchy at Bromont has three levels: the senior management team (SMT), the middle management and administrative level, known as the A-teams, and the manufacturing personnel, formed into what are known as the B-teams. Supervisors are not used at Bromont, but instead a unique system of "advisors" has developed utilizing members of the A level teams. For example, an engineer may be a member of a team that has responsibility for manufacturing planning. That person at the same time also has advisory responsibility to a B team, and is a member of one of 20 or so committees that have been formed to deal with issues ranging from plant improvements to communications. While this system of advisors and committees may at first seem awkward and difficult, at Bromont it seems to have created a feeling of belonging and has resulted in impressive results. Examples of the plant's performance include a 17 percent cost improvement since reaching a steady state operation in 1986, 8 percent less production loss since 1986, as well as numerous awards for such things as productivity, safety and quality since they began operation. The corporation has also selected the Bromont plant for expansion over other plants based primarily on their performance to date.

A significantly different employee involvement effort took place in the Midwest (Ippolito & MacInnes, 1989.) Located in a small city in Indiana, the

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company was approximately 40 years old and employed 400 people. The business was family held, and for years had been organized in a very traditional, autocratic structure.

Communication was poor throughout the plant; there was no shared vision of the future; people lacked trust in their management, and management did not have much belief in the workforce. The area, being economically depressed, had high unemployment and had suffered many plant closings over the past few years. All of this set the stage for what would be a difficult environment for change, especially change involving the workforce.

The company decided that it was at a crossroads in terms of its level of quality performance. It was about to be reviewed by a major automobile manufacturer for its quality systems, and a large contract was at stake. Other incentives for change at this time included market demands for improved quality; a desire to reenter the automotive market; a desire to increase profitability and a new chairman who believed that the company's people were its most important resource. One of the salient points about this example is the fact that this plant was not a greenfield site, and relations between management and the workforce had not been good for quite some time.

The plan for employee involvement at this facility involved three basic axioms. First, management commitment to change was seen as essential.

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Second, the vision of the change needed to be shared with the entire organization. Third, the work teams, as they would be called, needed a sound infrastructure to function effectively. To implement these three basic beliefs, the company felt that the teams had to be provided with the skills to do the job, i.e., training. The team development had to be on-going, and the teams would have to be recognized for their contributions.

After recognizing these important points, the management team set about implementing this change strategy. A vision was created with the assistance of an outside facilitator. Informal meetings were held and consensus building with all of management was achieved. Barriers to implementation were discussed and removed. Cross functional teams were established throughout the plant on a volunteer basis, and a steering committee was established to oversee the activity within the teams and to maintain the vision originally established. In the end, there were 13 process improvement teams and nine resource teams devoted to providing the assistance that any of the process teams might need. Resource teams were responsible for functions such as quality assurance, administrative systems and procedures, and health and safety.

The concepts of team development and the advantages of the use of teams in manufacturing are now well established. Forming the teams and understanding the process that can institute this kind of transformation is a

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different matter. I will explore this phenomenon next.

Leadership

"If we know all too much about our leaders, we know far too little about leadership. We fail to grasp the essence of leadership that is relevant to the modern agenda hence cannot agree even on the standards by which to measure, recruit, and reject it" (Burns, 1978, p. 1). It is no wonder that Burns began his seminal work on leadership in this way. For dozens of years and continuing even today, the focus of leadership studies has been on the leader rather than the process of leadership, and this has led to a number of superficial treatments of this important process.

Bennis and Nanus (1985) discuss leadership from the standpoint of leaders and define leadership as "the capacity to translate intention into reality and sustain it. Leadership is the wise use of this power: Transformative leadership" (p. 17, emphasis in original). Bennis' and Nanus' approach is very organizational and intended for executives who want to get more out of their businesses. They suggest that the way to be a more effective leader is to adopt certain strategies that have proven successful for other profiled executives and organizations. The four strategies Bennis and Nanus outline are a) articulating a clear vision, b) communicating to the entire organization in a clear and effective manner, c) trust through positioning, a process that "animates and

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inspirits the leaders's vision" (p. 154), and d) the deployment of self through positive self regard and the Wallenda factor, the way in which leaders respond to failures.

Kouzes and Posner (1987) offer their own version of leadership. In their approach, rather than defining what leadership is, they decided to describe what leaders do. Leadership then, according to Kouzes and Posner, is:

1. Challenging the process.

2. Inspiring a shared vision.

3. Enabling others to act.

4. Modeling the way.

5. Encouraging the heart (p. 8).

This definition of leadership was arrived at through interviewing some 42 managers and analyzing 1330 surveys of people who had "experienced" leadership. Their work goes on to describe in some detail the experiences of a few of these managers and how their use of one or more of these actions was effective in transforming an organization.

Each of the examples cited by Kouzes and Posner (1987) is, however, a manager. This rather limited look at leadership is typical of many of the available sources on the subject. The study of leadership, and examples of leadership at lower organizational or personal levels is difficult to find. It is as

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though leadership does not occur except in corporation boardrooms or at the level of elected politicians. Perhaps this type of leadership is not as glamorous or interesting and the belief is that no one will be interested in it. If the definition of leadership is to stand the test, however, leadership at any level must be recognized.

Lundy (1986) also decided not to define what leadership is but rather chose to describe the characteristics of leaders. His is a primer on how to be more participative in managing organizations so as to develop more effective teams. He stresses the correct use of power, the need for good communication, and, most importantly, a participative style of leading.

A different approach to leadership has been undertaken by several others. Kellerman (1984) makes the point that in America, leadership as a political act has been characterized by ambivalence and reluctance, and offers the rather simplistic definition of leadership as the process of "making things happen that would not happen otherwise" (p. 70). Sergiovanni (1984) argues that too much emphasis has been given to the tactical considerations of leadership, such as efficiency, rationality, measurability and objectivity, and far too little attention has been paid to the strategic considerations of leadership. "Missing from these tactical issues are holistic values of purpose, goodness, and importance. Missing is an emphasis on long term quality" (p. 106). Sergiovanni continues

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his analysis by stating that leadership acts are an expression of culture and,

> seek to build unity and order within an organization by giving attention to purposes, historical and philosophical tradition, and ideals and norms which define the way of life within the organization and which provide the bases for socializing members and obtaining their compliance. (p.106)

Agreeing and pointing to the need for social responsibility, Bellah, Madsen, Sullivan, Swidler and Tipton (1985) suggest that the degradation of the American way of life is, in large part, due to individualistic tendencies of people and that a return to civic republicanism, inspired by effective leadership of moral character, is needed to put the country back on track. Ferguson (1980) suggests that we are much further along. She describes a conspiracy of people, networking across the globe, working to bring about a better society and way of life for all mankind. This is grassroots leadership, the type that is available to all who seek to possess it.

A new school of leadership thought began with the work of Burns (1978). For the first time, a definition of leadership that emphasized process over traits was offered, and a difference was noted between management, which Burns called transactional leadership and true, or transformational leadership. Following in this vein, Rost (1988; 1991) and Foster (1986; 1988) offer far more process oriented versions of leadership than any of those before them.

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Key to Rost's definition are the elements of a) an influence relationship, b) leaders and followers, c) intended, real change and d) mutual purposes. To these basic elements, Foster adds that leadership must be critical, transformative, educative and ethical. It is this process view of leadership that needs to be explored if we, as a nation, are to move forward in our search for a more equitable world.

Team Formation and Leadership Within Teams

Most views of leadership explored thus far have been from the perspective of the executive of a corporation or the political leader of a nation. From the perspective of the individual in a group, far less has been written. It is this perspective that will be explored in this section.

Much has been written about the movement in this country toward work teams and participative management (Berry, 1989; Coates, 1989; Crosby, 1986; Ippolito & MacInnes, 1989), but far less has been documented on the kind of leadership needed to form the teams and keep work teams effective once formed, i.e., the leadership within the teams themselves. Allen (1989) took a unique approach in her discussion of leadership at "multiple levels." She questioned the traditional approach to leadership thinking that consistently points to those most visible in organizations and offered a view of leadership at a variety of levels and leadership that is instilled in many people within

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organizations. This could easily include work teams and groups but is not carried to this conclusion in her writing. Corey and Corey (1987) attempt to address this problem by describing the personal characteristics of the effective group leader. In their discussion, Corey and Corey list the following characteristics:

1. Courage. Leaders show courage in their willingness (1) to be vulnerable at times, admitting mistakes and imperfections and taking the same risks that they expect group members to take; (2) to confront another, even though they might not be sure they are right; (3) to act on their beliefs and hunches; (4) to be emotionally touched by another and to draw on their experiences in order to identify with the other; (5) to continually examine the inner self; (6) to be direct and honest with others; (7) to express to the group their fears and expectations about the group process.

2. Willingness to model. Group leaders teach mainly by example--by doing what they expect group members to do.

3. Presence. This involves being touched by others' pain, struggles and joys. At the same time they are moved by other's experiences, leaders must remain separate persons with their own experiencing.

4. Goodwill and caring. A sincere interest in the welfare of others is

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essential in a group leader. This means that group leaders must neither abuse their role by using the group mainly for their own purposes nor exploit members to enhance their ego.

5. Belief in group process. To lead, leaders must believe in the value of what they are doing and trust the therapeutic forces in a group.

6. Openness. To be effective, group leaders must be open with themselves, open to others in the group, open to new experiences, and open to lifestyles and values that differ from their own. Leaders must not only reveal their own experiences but also openly show their reactions to members of the group.

7. Nondefensiveness in coping with attacks. Group leaders who are easily threatened, who are insecure in their work of leading, who are overly sensitive to negative feedback, and who depend highly on group approval will encounter major problems in trying to carry out the leadership function.

8. Personal power. Personal power does not entail domination of members or manipulation of them toward the leader's end; rather, it is the dynamic and vital quality of the leader. Leaders have it when they know who they are and what they want. Their life is an expression of what they espouse.

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9. Stamina. A leader needs physical and psychological stamina to withstand pressure in order to remain vitalized throughout the course of a group.

10. Willingness to seek new experiences. Although it is not possible for leaders to experience directly everything they may encounter in others, they should at least be willing to identify ways in which they can draw on their own emotions in working with group members.

11. Sense of humor. The ability to laugh at oneself and to see the humor in one's own human frailties can be extremely useful.

12. Inventiveness. The capacity to be spontaneously creative--to approach the group with new ideas--is a most important characteristic for group leaders. (pp. 15-20)

While a fairly complete list of traits, this explanation of successful group leadership cannot explain the process of leadership within groups. Certainly there are successful group leaders that do not possess each of these traits, and there the logic of trying to form a model of leadership based on them fails.

Walton (1985) describes in a comparative case study the differences between two manufacturing plants--one that uses a control strategy for managing its workers, and another plant that has initiated a commitment strategy involving teams. In the control strategy plant, management used the

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traditional, Taylor-based approach. In the commitment strategy plant, a participative, work team effort is in effect with far greater success. Benson (1990) takes the description of this kind of effort beyond merely comparing one to the other and discusses the leadership within the work teams from a selection standpoint. At Federal Express, employees who want to be involved in the "management" of a team have to go through a program called LEAP--Leadership, Evaluation and Awareness Program. The purpose of this program is to evaluate the candidate's leadership traits based on a survey of his or her peers. Lawler (1988) states that team leaders are frequently appointed by management and sometimes have responsibility for more than one team. Lawler contends that "It is up to the team leader to see that the group process is effective and that the work is, in fact, getting done through the group process" (p. 105). He suggests that the leader's role changes over time but falls short of describing what the process of leadership really is.

Burns (1978) makes an attempt to describe leadership within groups, but his is a political perspective that lends little insight to private sector situations. Burns' discussion of the problems facing leaders of small groups is, however, enlightening, and supports the earlier discussion of conflict. "Leaders tend to be more divided than other group members because they respond more intensively to external contacts than do other members" (Burns, 1978, p. 293).

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In Nora, Rogers and Stramy's (1986) recount of the experience of the transformation of a General Motors plant in Livonia, Michigan, the authors emphasize the importance of leadership throughout the process of the transformation from the traditional management approach to one involving the employees. In describing a turning point in the challenge to develop the plant and a new operating philosophy, the authors speak of the answers coming from the "strength of the people at the plant level who would soon be chosen to plan and implement this major change. These hourly, union and management employees would fulfill the leadership role for the entire change process" (p. 19). The process itself, however, is never clearly described.

Parker (1990) gets closer to the crux of the matter than any other. In his research, he has found that there are four typical types of team players in organizations. He describes them as contributors, collaborators, communicators and challengers. Each of these types has certain characteristics that add to (and sometimes detract from) the team process, and each type has his or her own unique leadership qualities. Most of the characteristics, such as listening skills, modeling positive confrontational behavior or being willing to help out other team members, do not, however, relate to the process definitions of leadership offered by Rost and Foster. Further, Parker does not relate the details of the process of leadership at work, only the characteristics to be sought by those in

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control positions as they select potential team leaders.

Summary

Clearly, the popular view of leadership is trait oriented, with volumes written on the kinds of things leaders do, rather than on the way they do it. With few exceptions, we seem to be trapped in this mode of examining specific actions, not processes. Scholars and authors have for years referred to leadership when they really meant management (Bolman & Deal, 1988; Bass, 1985; Hunt, 1984). Mintzberg (1984) included leadership as one of ten major roles of the manager, adding even more to the confusion. In examining what has been said about leadership in groups, little is added to unravel the mystery. The reasons for this are elusive, but may stem from a desire on the part of the writers to separate themselves from a paradigm that has not produced the results that had been hoped for. So the literature is filled with information on management disguised as leadership and with traits of people in highly visible positions. Is this because of the ease with which these actions can be viewed, catalogued and discussed and the promise their imitation seems to hold for those who would modify the way they approach the issue of influencing people and creating change?

The need for leadership in the area of employee involvement has never been greater. As I noted earlier, the preeminence of American manufacturing

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has fallen sharply. Naisbitt and Aburdene (1990) indicate that without a dramatic change in the way Americans run their businesses, we will decline even further in the coming decade. "Thirty years ago the Pacific Rim's gross national product equaled only half of the United States' and one-third of Europe's. By 2000 its GNP will be about equal North America's and exceed Western Europe's" (p. 180). Understanding the common traits of leaders at the top of organizations will not, in itself, propel the United States back to a competitive position in the world's manufacturing arena. Understanding the process of leadership will give Americans a chance.

It was with this void of "the way leaders do it" in mind--particularly to and within self-managed work groups--that this research was undertaken.

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CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Research Design

The purpose of this research was to determine what the process of leadership is within self-managed work groups, and to determine if a process of leadership, as defined earliier, is dominant within the management of organizations in establishing and nurturing the work groups. These purposes were accomplished through the collection and analysis of data from self-managed work teams from various companies and locations, and through interviews of a small sample of persons within these groups. The data consists of responses to survey instruments and interview questions. Judgements and conclusions have been made on the basis of the average of the responses to the instrument statements, responses to the interviews and open ended survey questions, and a literature review. The three sources serve to triangulate the data. Four different but related techniques have been used in the data collection and analysis: the case study method, the survey method, interviewing, and statistical analysis.

The Case Study Method

Cronbach (1982) stated that "all social scientists are engaged in case

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studies" (p. 75). This is because observations, regardless of where they are taken, gain their meaning from the "time and place, and from the conceptions held by those who pose the questions and decide how to tabulate" (p. 75). Yin (1984) defined a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidences are used" (p. 23). Denny (1978) defined the case study as an "intensive or complete examination of a facet, an issue, or perhaps the events of a geographic setting over time." Merriam (1988) took the approach of defining the case study by listing its characteristics as defined by others (Guba & Lincoln; Helmstadter; Stake; & Wilson), which include such elements as a conversational style format, flexible design, description of key issues, multiplicity of data, and holistic approach. Each of these definitions and descriptors are well suited to the approach that this research has taken, in that each of the survey sites could be considered a case in and of itself, where the characteristics of the self-managed work teams in place were examined.

Guba and Lincoln (1981) described four typical purposes for case studies:

1. To chronicle, that is, to develop a register of facts or events in the order (more or less) in which they happened.

2. To render, that is, to depict or characterize.

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3. To teach, that is, to provide with knowledge, or to instruct.

4. To test, that is, to "prove" or to try. (p. 371)

Applicable to this research are the purposes of rendering and testing. Of additional value is the fact that since the case study focuses on individuals in their unique situation and context, I have been able to use the results from various companies to determine the leadership process present (or not present) as well as to compare and synthesize the data from each plant site with all others (Labovitz and Hagedorn, 1971).

Survey Methods

The survey method played the major role in data gathering for this research. Fowler (1988) suggested three main characteristics of surveys:

1. The purpose of the survey is to produce statistics--that is, quantitative or numerical descriptions of some aspects of the study population.

2. The main way of collecting information is by asking people questions; their answers constitute the data to be analyzed.

3. Generally, information is collected about only a fraction of the population--that is, a sample--rather than from every member of the population. (p. 9)

This research produced statistics about the subjects and their attitudes about leadership. These attitudes are reflected in participant responses to a set

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of statements prepared to provide information about the leadership process at work in their teams and the upper management personnel who are ultimately responsible for the teams. The survey instrument used is included as Appendix B. This method of data collection does involve limitations. Fowler (1988) stated that questionnaires are limited to closed (as opposed to open-ended) questions, because asking people to respond to questions in their own terms increases the rate of non-response for many types of respondents. Secondly, with no interviewer present to probe and clarify responses, the data obtained may be useless. A third concern is that the subject population must have adequate reading and writing skills. Although these are valid concerns, I have mitigated them by conducting interviews with five respondents (two from one team and three from a different team) to provide the clarification necessary. Additionally, the respondents chosen were people who tend to be highly motivated individuals (due to the very fact that they are working in a self-managed work group) and so the non-response rate was a relatively low 40%. It is interesting to note that one of the participating companies contacted me after the surveys were sent to them. My contact's comment was that several people did not want to complete the survey because they did not want to sign the consent form required by the university. This concern on the part of potential participants may have contributed to the 40 percent non-response rate.

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Literacy was not a problem since all of the participants were people who are required to read and write numerous instructions and communications daily in their normal work setting. This proved to be true as virtually all participants responded to the open ended questions provided at the end of the survey, and in a way that suggested they knew how to read and write.

Advantages of self-administered survey approaches are numerous. Among them are the consistency of data received, the ease of data analysis and the relatively low cost to produce and distribute. Survey results can also be generalized to a larger population within known limits of error (Marshall & Rossman, 1989). This fact was very useful in fulfilling two of the goals of this research, that is, modifying a model of leadership for self-managed work teams, and describing the characteristics of successful self-managed work teams.

The validity of the survey instrument is an important consideration. According to Fowler (1984), there are only three steps to the improvement of the validity of subjective measures:

1. Make the questions as reliable as possible.

2. When putting people into ordered classes along a continuum, it is probably better to have more categories than fewer.

3. Ask multiple questions, with different question forms, that measure the same subjective state; combine the answers into a scale. (pp. 95-96)

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The survey instrument used in this research is shown in Appendix B. It was designed to measure attitudes about the four key elements of leadership as defined earlier, of both those within the teams ("Internal" to the group) and among those responsible for the implementation of the teams ("External" to the group). These elements are the influence relationship; the presence of leaders and followers; intended, real change; and mutual purposes of leaders and followers. Each of these eight elements (the four elements for the members of the teams, and each of the four for the persons responsible for team implementation) is addressed by at least three separate statements in the survey. The following groups of questions were established for each of the categories:

Internal to the group

Category I: Leaders and Followers	Questions 1, 5, 9, 13, 20, 21
Category II: Influence Relationship	Questions 3, 7, 11, 15, 19, 22, 23, 24
Category III: Intended, Real Change	Questions 2, 10, 14, 18
Category IV: Mutual Purposes	Questions 4, 8, 12, 16, 17

External to the group

Category I: Leaders and Followers	Questions 25, 30, 32
Category II: Influence Relationship	Questions 27, 31, 35

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Category III: Intended, Real Change Questions 6, 28, 34

Category IV: Mutual Purposes Questions 26, 29, 33

Five response alternatives were offered, intended to address the second issue raised by Fowler. To make the questions as reliable as possible and eliminate vague wording and presentation, I did a pilot of the survey with one group of four subjects and determined that the survey did not require modification based on their input. Designing the questions to address only those elements identified through the literature review also added to their validity. One final check on validity was to see if respondents responded to certain statements as anticipated. Widely varying or unexpected results would have indicated either confusion, dishonesty, or ambiguity in the subjects' interpretation of the statements. This was not found in the results.

Reliability of the survey instrument was tested in similar ways. I looked for consistency of responses among those respondents from the same company. Additionally, since there were at least three statements measuring attitudes about each of the key leadership elements, I was able to determine if the results were reliable based on a comparison of the responses in each category for each subject. The results of this analysis were positive. Of more concern were the results of the correlation analyses that were performed to determine if the responses to the statements within a particular category (e.g., Internal Leaders

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and Followers) had high or at least positive correlation with one another. A negative correlation would, at first look, appear to indicate that the statements do not measure the same element of leadership. Several of the correlation results did come out negative. Additional discussion of this phenomenon is included in Chapter 4.

Interviewing

The second key element to the data collection in this research was interviewing. Out of convenience to the researcher, interviews were conducted with an available sample of work group members from organizations within San Diego County. The purpose of the interviewing was to provide additional data not obtainable through the survey instrument, and to help clarify issues that arose from the open ended questions that are at the end of the survey instrument. As pointed out by Dexter (1970), "No one should plan or finance an entire study in advance with the expectation of relying chiefly upon interviews for data..." (p. 17, emphasis in original). For this reason, interviews were used as a source for triangulation and not as a sole data source. "Multiple operations research--the concept of which is embedded in the warning above--or triangulation of methods is the best means of ensuring that one will be able to make sense of data collected through interviews" (Guba & Lincoln, 1981, p. 155). A list of the interview questions used for subjects is included as

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Appendix C. These questions served as the starting point in the interviews; as the interviews developed, additional questions were asked depending on the responses received and the additional information sought. Analysis of the interviews was done using an approach similar to that described by Hycner (1982), which includes bracketing, delineating units of general meaning, delineating units of relevant meaning, and clustering. While this technique was described for phenomenological interviewing, I felt it served well in this case for collecting and comparing the responses. A total of five interviews were conducted from two different plant locations.

Participant and Site Selection

Hinkle, Wiersma & Jurs (1988) described several types of sampling procedures normally applicable to this type of research. They included simple random sampling, systematic sampling, cluster sampling and stratified random sampling. None of these procedures could be used in their basic form, however, since none would have provided the kind of sample required for the study. To ensure that only manufacturing companies were selected, and that they were involved in the use of self-managed work groups, I selected the companies based on published data found in the literature and other sources, such as proceedings from symposia and conferences. To begin with, I gained approval for this research at some of the companies described in the review of

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the literature section. Normally, this was accomplished by discussing the research project with the Director of Human Resources of the facility. A sample of these companies was contacted. Every attempt was made to locate companies from various areas of the country. I contacted those companies in the various areas and moved to another area when one agreed to participate. Based on their willingness to participate in the research and their geographic location, they were included in the study. Unfortunately, not all companies contacted were willing to participate in the research, for various reasons, nor was I able to find appropriate companies in all areas of the country. In order to get a large enough sample of participants, I then went back to certain areas where additional potential companies were located and sought their participation. In the end, two locations were found in the Midwest; one in New Mexico; one in New York; three in San Diego County, California; and one in Riverside County, California. Participants were identified by the companies and requested to complete the survey instrument. All participants were volunteers. Table 1 shows the coded names of the participating companies; where they are located, the type of manufacturing business they represent, and whether or not their (team) employees are represented by a bargaining unit.

The number of participants per company varied. As can be seen in Table 2, the number of participants per team varied from three to 13. This number

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was determined by the way each company had structured the self-managed work teams, how many team members decided to respond to the survey, and how large these teams were. It should be noted that the team identified as "Elcajon" actually represents the combined input from three separate teams within that company. The make-up of the teams also varied. Average age varied from a low of 27.4 years to a high of 46.1 years; number of months on the team varied from a low average of 5.1 months to a high of almost 12 years (138.7 months). Men and women were both well represented, with 82 men participants and 23 women participants. I requested that representative teams--i.e., not the best performing and not the worst performing teams--be selected for participation in the study, and that all members of the team be included, not just team leaders or supervisors.

Data Collection and Analysis

In order to determine if the leadership process within and external to the teams compared with an existing model of leadership, I selected a model based on its relative simplicity as well as its general applicability to any work situation. To determine if any modifications to the model were needed, I used the average of the responses of all the instruments to compare with the model. If the average response was above 3.5 (3 being "No Opinion") for the average of all responses to the questions in the group for the category being analyzed,

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Table 1.

Descriptions of participating companies

PARTICIPATING COMPANIES			
TEAM	LOCATION	BUSINESS	UNION?
BLUE	ILLINOIS	CAP. EQUIP	YES
GREEN	ILLINOIS	CAP. EQUIP.	YES
ORANGE	CALIFORNIA	ELECTRONICS	NO
PINK	NEW MEXICO	ELECTRONICS	NO
WHITE	CALIFORNIA	CAP. EQUIP.	YES
NY	NEW YORK	DIESEL ENG.	NO
TEMCL	CALIFORNIA	MED. PRODUCTS	NO
ELCAJON	CALIFORNIA	AEROSPACE	NO

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Table 2

Descriptions of participating teams

PARTICIPANT DEMOGRAPHICS					
TEAM	NUMBER	TIME ON	AVG AGE	MALE	FEMALE
BLUE	10	11.6	42.6	6	4
GREEN	10	41.6	46.1	10	0
ORANGE	13	5.2	32.8	3	10
PINK	11	5.1	30.9	6	5
WHITE	5	16	27.4	5	0
NY	3	138.7	49	2	1
TEMCL	14	14.2	33.5	9	5
ELCAJO	40[a]	22.6	33.8	37	3

[a]The number represented here is actually a composite of three teams from the same company.

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I considered that there was agreement between the observed process and the model. Survey forms were color coded so that I could tell which company the responses came from, although for the purposes of this study this information was not pertinent. Number values were assigned to the responses, for example, 5 = strongly agree, 4 = agree, 3 = no opinion, 2 = disagree, 1 = strongly disagree, so that numerical results could be achieved. For those questions that were worded negatively, i.e., questions 17, 18 and 19, the numerical values were reversed, so that 5 = strongly disagree, 4 = disagree, etc. An average formula was used to calculate the final number for comparison, i.e., each team participating received equal weight in the analysis, even though some of the teams had more participants. The average of the responses for each of the questions, by team, was entered into a new data base called "Summary", and an average calculated for each of the categories. The results for each of the teams and for the summary analysis can be found in Tables 3 through 11. The analysis of the open ended questions and interviews, along with the survey data, provided the foundation for a description of the general characteristics of successful self-managed work groups and provided the basis for any needed modifications to the test model of leadership. A summary of this data is shown in Table 12.

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Table 3.

Summary Statistics for Blue Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	10	4	.9428091	2	5
Q2	10	4.5	.5270463	4	5
Q3	10	3.8	.7888106	3	5
Q4	10	4.7	.4830459	4	5
Q5	10	3.8	.9189366	2	5
Q6	10	4.2	.6324555	3	5
Q7	10	4.2	.9189366	2	5
Q8	10	4.2	.6324555	3	5
Q9	10	4.3	.6749486	3	5
Q10	10	4.7	.6749486	3	5
Q11	10	3.4	1.173788	2	5
Q12	10	4.6	.5163978	4	5
Q13	10	3	.9428091	2	4
Q14	10	4.2	.7888106	3	5
Q15	10	4.2	.7888106	3	5
Q16	10	4	.8164966	2	5
Q17	10	4	1.154701	2	5
Q18	10	3.9	1.37032	1	5
Q19	10	4	.9428091	2	5
Q20	10	4.2	.6324555	3	5
Q21	10	3.4	1.173788	1	5
Q22	10	3.8	1.135292	2	5
Q23	10	3.5	.9718253	2	5
Q24	10	4.4	.6992059	3	5
Q25	10	4.1	.9944289	2	5
Q26	10	3.8	.6324555	3	5
Q27	10	3.5	.8498366	2	5
Q28	10	3.4	1.074968	1	5
Q29	10	3.6	.9660918	2	5
Q30	10	3.6	1.074968	2	5
Q31	10	4.3	.6749486	3	5
Q32	10	3.6	1.349897	2	5
Q33	10	4.3	.8232726	3	5
Q34	10	3.1	.9944289	2	5
Q35	10	3.3	1.159502	1	5
TIME	8	11.625	2.386719	6	14
AGE	8	42.625	6.390562	35	54

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Table 4.

Summary Statistics for Green Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	9	4.444445	.7264832	3	5
Q2	9	4.111111	1.269296	2	5
Q3	9	3.555556	.7264832	2	4
Q4	9	4.333334	1.322876	1	5
Q5	9	4.333334	.5	4	5
Q6	9	4.555555	.5270463	4	5
Q7	9	3.888889	1.166667	1	5
Q8	9	3.777778	1.20185	1	5
Q9	9	3.555556	1.130388	1	5
Q10	9	4.333334	.5	4	5
Q11	9	3.333333	.8660254	2	4
Q12	9	4.333334	.7071068	3	5
Q13	9	2.444444	.7264832	2	4
Q14	9	3.777778	.6666667	2	4
Q15	9	3.666667	.7071068	2	4
Q16	10	4	0	4	4
Q17	10	4.1	.9944289	2	5
Q18	10	4.1	1.100505	2	5
Q19	10	4	.9428091	2	5
Q20	10	4.1	.875595	2	5
Q21	10	4	.6666667	3	5
Q22	10	4	.9428091	2	5
Q23	10	3.4	.6992059	2	4
Q24	10	4.5	.7071068	3	5
Q25	10	2	.6666667	1	3
Q26	10	2.9	1.197219	1	5
Q27	10	3.5	1.080123	1	5
Q28	10	3.2	1.229273	1	5
Q29	10	3.8	.7888106	2	5
Q30	10	3.5	1.269296	1	5
Q31	10	3.5	.9718253	2	5
Q32	10	2.5	1.269296	1	5
Q33	10	4.4	.5163978	4	5
Q34	10	3.5	.7071068	2	4
Q35	10	3.6	.6992059	2	4
TIME	10	41.6	24.88284	1	60
AGE	10	46.1	6.838616	37	58

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Table 5.

Summary Statistics for Pink Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	11	3.818182	.9816498	2	5
Q2	11	4.454546	.522233	4	5
Q3	11	3.545455	.9341987	2	5
Q4	11	4.545455	.522233	4	5
Q5	11	3.909091	.9438798	2	5
Q6	11	4.181818	.6030227	3	5
Q7	11	4.181818	.7507572	3	5
Q8	11	4.363637	.8090398	3	5
Q9	11	3.818182	.9816498	2	5
Q10	11	4.636364	.504525	4	5
Q11	11	3	1	2	5
Q12	11	4.363637	.504525	4	5
Q13	11	3.636364	1.286291	1	5
Q14	11	3.727273	.904534	2	5
Q15	11	3.181818	1.32802	2	5
Q16	11	4.181818	.6030227	3	5
Q17	11	4.181818	.8738629	2	5
Q18	11	3.818182	1.250454	1	5
Q19	11	3.909091	.8312094	2	5
Q20	11	4.272728	.6466698	3	5
Q21	11	3.727273	.6466698	3	5
Q22	11	4.272728	.6466698	3	5
Q23	11	3.545455	.8201996	2	5
Q24	11	4.272728	.904534	2	5
Q25	11	3.909091	.700649	2	5
Q26	11	3.818182	.9816498	2	5
Q27	11	3.454546	.9341987	2	5
Q28	11	4.090909	.9438798	2	5
Q29	11	3.636364	1.566699	1	5
Q30	11	4.363637	.6741999	3	5
Q31	11	3.636364	.9244163	2	5
Q32	11	2.727273	1.00905	1	5
Q33	11	4.545455	.522233	4	5
Q34	11	3	1.183216	2	5
Q35	11	3.545455	1.035725	2	5
TIME	10	5.1	3.573047	2	14
AGE	10	30.9	5.646041	23	40

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Table 6.

Summary Statistics for Orange Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	13	3.076923	1.115164	1	5
Q2	13	4.307693	.947331	2	5
Q3	13	2.923077	.7595545	1	4
Q4	13	4.538462	.5188745	4	5
Q5	13	3.384615	.9607689	2	5
Q6	13	3.615385	1.325296	1	5
Q7	13	3.538461	1.05003	2	5
Q8	13	3.538461	1.126601	2	5
Q9	13	3.307692	1.182132	1	5
Q10	13	4.538462	.6602253	3	5
Q11	13	2.384615	.8697185	1	4
Q12	13	4.230769	.5991447	3	5
Q13	13	4	1.224745	1	5
Q14	13	3.692308	1.1094	2	5
Q15	13	3.692308	.947331	2	5
Q16	13	3.384615	1.043908	2	5
Q17	13	3.923077	1.037749	2	5
Q18	13	4	.8164966	2	5
Q19	13	4.153846	.3755338	4	5
Q20	13	3.769231	.7250111	2	5
Q21	13	3.923077	.6405126	2	5
Q22	13	3.384615	.9607689	2	5
Q23	13	2.615385	.8697185	1	4
Q24	13	4.538462	.5188745	4	5
Q25	13	3.615385	1.26085	1	5
Q26	13	3.615385	1.120897	1	5
Q27	13	3.230769	1.012739	2	5
Q28	13	3.384615	1.192928	1	5
Q29	13	3.307692	1.1094	1	5
Q30	13	4.076923	.6405126	3	5
Q31	13	3.769231	.9268087	2	5
Q32	13	3.461539	1.126601	1	5
Q33	13	4.461538	.6602253	3	5
Q34	13	3.076923	1.115164	1	5
Q35	13	2.538461	.9674179	1	4
TIME	13	5.153846	2.511512	1	9
AGE	13	32.84615	7.081033	21	43

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Table 7

Summary Statistics for White Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	5	4.6	.5477226	4	5
Q2	5	4.8	.4472136	4	5
Q3	5	4.4	.5477226	4	5
Q4	5	4.4	.5477226	4	5
Q5	5	4.4	.5477226	4	5
Q6	5	4.2	.4472136	4	5
Q7	5	3.6	1.140175	2	5
Q8	5	4.2	.4472136	4	5
Q9	5	3.2	1.095445	2	4
Q10	5	4.2	.4472136	4	5
Q11	5	4.2	.83666	3	5
Q12	5	4.6	.8944272	3	5
Q13	5	2.4	1.140175	1	4
Q14	5	3.6	1.67332	1	5
Q15	5	3.2	1.095445	2	4
Q16	5	3.8	.4472136	3	4
Q17	5	4.4	.8944272	3	5
Q18	5	4.2	.83666	3	5
Q19	5	3.4	1.140175	2	5
Q20	5	3.8	1.095445	2	5
Q21	5	4.2	.4472136	4	5
Q22	5	4	1	3	5
Q23	5	2.8	1.303841	1	4
Q24	5	3.8	1.095445	2	5
Q25	5	3.8	1.095445	2	5
Q26	5	4	.7071068	3	5
Q27	5	3.8	.4472136	3	4
Q28	5	2.6	.8944272	2	4
Q29	5	4.2	1.303841	2	5
Q30	5	3.8	.4472136	3	4
Q31	5	4	.7071068	3	5
Q32	5	2.8	1.303841	1	4
Q33	5	4	1.224745	2	5
Q34	5	4.2	1.303841	2	5
Q35	5	3.6	1.140175	2	5
TIME	5	16	7.842194	3	22
AGE	5	27.4	10.45466	18	43

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Table 8.

Summary Statistics for Newyork Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	3	2.666667	1.154701	2	4
Q2	3	3.333333	1.154701	2	4
Q3	3	2.333333	1.527525	1	4
Q4	3	3	1.732051	1	4
Q5	3	3	1.732051	1	4
Q6	3	4	0	4	4
Q7	3	2.333333	1.527525	1	4
Q8	3	2.333333	1.527525	1	4
Q9	3	3.333333	1.154701	2	4
Q10	3	4	0	4	4
Q11	3	3	1.732051	2	5
Q12	3	3	1	2	4
Q13	3	3.666667	1.527525	2	5
Q14	3	4.333334	.5773503	4	5
Q15	3	4	0	4	4
Q16	3	3.333333	1.154701	2	4
Q17	3	3	1.732051	1	4
Q18	3	3.333333	1.154701	2	4
Q19	3	2.333333	1.527525	1	4
Q20	3	3.333333	1.154701	2	4
Q21	3	3.666667	.5773503	3	4
Q22	3	3.333333	1.154701	2	4
Q23	3	3.333333	1.154701	2	4
Q24	3	2.333333	1.527525	1	4
Q25	3	3.333333	1.154701	2	4
Q26	3	3	1	2	4
Q27	3	2.666667	.5773503	2	3
Q28	3	3.333333	2.081666	1	5
Q29	3	3.333333	1.154701	2	4
Q30	3	4	0	4	4
Q31	3	3.666667	.5773503	3	4
Q32	3	3.666667	.5773503	3	4
Q33	3	4	0	4	4
Q34	3	4	0	4	4
Q35	3	1.666667	.5773503	1	2
TIME	3	138.6667	20.13289	120	160
AGE	3	49	12.28821	40	63

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Table 9.

Summary Statistics for Temecula Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	14	4.142857	.7703289	2	5
Q2	14	4.071429	.8287419	2	5
Q3	14	2.714286	.7262731	2	4
Q4	14	4.142857	.3631365	4	5
Q5	14	3.714286	.8254203	2	5
Q6	14	3.928572	1.071612	2	5
Q7	14	3.785714	1.121714	2	5
Q8	14	4	.7844645	2	5
Q9	14	3	1.037749	2	5
Q10	14	3.928572	.9168748	2	5
Q11	14	2.571429	.7559289	2	4
Q12	14	4.071429	.8287419	2	5
Q13	14	2.214286	.6992932	1	4
Q14	14	3.571429	.9376144	2	5
Q15	14	3.571429	1.283881	1	5
Q16	14	3.285714	1.204388	1	5
Q17	14	4.214286	.5789343	3	5
Q18	14	3.928572	1.141139	1	5
Q19	14	4.142857	.7703289	2	5
Q20	14	4	.6793662	2	5
Q21	14	3.142857	1.027105	2	4
Q22	14	3.285714	.9944903	1	4
Q23	14	2.857143	.6629936	2	4
Q24	14	4	1.176697	1	5
Q25	14	3.285714	1.437336	1	5
Q26	14	3.857143	.8644378	2	5
Q27	14	2.642857	.9287828	1	4
Q28	14	3.142857	1.231456	1	5
Q29	14	4.142857	.8644378	2	5
Q30	14	3.642857	.9287828	2	5
Q31	14	3.142857	1.167321	1	5
Q32	14	2.214286	.9749613	1	4
Q33	14	4.5	.5188745	4	5
Q34	14	2.428572	.8516306	1	4
C35	14	2.714286	1.204388	1	4
C36	14	14.21429	10.42319	1	42
C37	13	33.53846	6.777603	21	44
C38	14	1.357143	.4972452	1	2

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Table 10.

Summary Statistics for Elcajon Team Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
C1	40	4.175	.9841695	1	5
C2	40	3.425	.8439073	1	5
C3	40	3.225	.6975231	1	5
C4	40	4	.5991447	2	5
C5	40	3.875	.9388346	1	5
C6	40	3.65	.6222375	3	5
C7	40	3.225	1.049725	1	5
C8	40	3.55	.9044052	1	5
C9	40	3.325	1.248332	1	5
C10	40	3.9	.928191	1	5
C11	40	3.1	.9001424	1	5
C12	40	3.925	.7970297	2	5
C13	40	2.5	.9336996	1	4
C14	40	3.475	.640012	2	5
C15	40	3.375	1.004796	1	5
C16	40	3.5	.9058216	2	5
C17	40	3.4	1.194002	1	5
C18	40	3.1	1.007663	1	5
C19	40	2.8	1.181047	1	5
C20	40	3.75	.8697185	1	5
C21	40	2.8	.9922779	1	5
C22	40	3.45	.9594336	1	5
C23	40	2.8	.9660918	1	5
C24	40	4.025	.9996795	1	5
C25	40	3.6	.8412445	2	5
C26	40	3.7	.6868733	2	5
C27	40	2.85	.8335897	1	4
C28	40	3.125	.96576	1	5
C29	40	3.35	.8335897	2	5
C30	40	3.625	.7741828	1	5
C31	40	3.45	.875595	2	5
C32	40	3.275	.9333562	1	5
C33	40	4.35	.6222375	3	5
C34	40	3.2	.9922779	1	5
C35	40	2.475	1.03744	1	5
C36	38	22.63158	30.23549	0	144
C37	39	33.79487	11.53069	19	61
C38	39	1.102564	.3073548	1	2

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Table 11.

Summary of Results for All Responses by Category

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
IL&F	48	3.614583	.5878159	2.2	4.6
IIF	64	3.507813	.6048231	2.3	4.5
IIRC	32	3.99375	.4287548	3.1	4.8
IMP	40	3.93	.53407	2.3	4.7
EL&F	24	3.445833	.602155	2	4.4
EIF	24	3.270833	.5908573	1.7	4.3
EIRC	24	3.545833	.5770835	2.3	4.6
EMP	24	3.858333	.4680363	2.9	4.5

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Table 12.

Summary Results for All Participant Responses

Statistical Summary

Variable	Count	Mean	Std. Deviation	Minimum	Maximum
Q1	8	3.8625	.6501374	2.7	4.6
Q2	8	4.125	.5311712	3.3	4.8
Q3	8	3.3125	.6664137	2.3	4.4
Q4	8	4.1875	.5303301	3	4.7
Q5	8	3.8625	.4240536	3	4.4
Q6	8	4.05	.3207135	3.6	4.6
Q7	8	3.5875	.6220645	2.3	4.2
Q8	8	3.75	.663325	2.3	4.4
Q9	8	3.475	.4131759	3	4.3
Q10	8	4.2625	.3159453	3.9	4.7
Q11	8	3.175	.4949747	2.5	4.2
Q12	8	4.1375	.5180665	3	4.6
Q13	8	2.975	.7025464	2.2	4
Q14	8	3.8	.29277	3.5	4.3
Q15	8	3.625	.3575712	3.2	4.2
Q16	8	3.6875	.3563205	3.3	4.2
Q17	8	3.9	.4690416	3	4.4
Q18	8	3.7875	.3870677	3.1	4.2
Q19	8	3.5875	.6957781	2.3	4.2
Q20	8	3.9125	.3136764	3.3	4.3
Q21	8	3.5875	.4703722	2.8	4.2
Q22	8	3.7	.3779645	3.3	4.3
Q23	8	3.1	.3625308	2.6	3.5
Q24	8	3.9875	.7259231	2.3	4.5
Q25	8	3.45	.6480741	2	4.1
Q26	8	3.5875	.412094	2.9	4
Q27	8	3.2125	.435685	2.6	3.8
Q28	8	3.2875	.4155461	2.6	4.1
Q29	8	3.6625	.3461523	3.3	4.2
Q30	8	3.825	.3150964	3.5	4.4
Q31	8	3.6875	.3603074	3.1	4.3
Q32	8	3.0375	.5604526	2.2	3.7
Q33	8	4.325	.212132	4	4.5
Q34	8	3.3125	.5767829	2.4	4.2
Q35	8	2.9325	.6810863	1.7	3.6
C36	8	31.87812	44.71357	5.1	138.7
C37	8	37.01563	7.818921	27.4	49

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The summary statistics in Tables 3 - 10 represent the first analysis of the responses to the surveys. The first column, labeled "Variable" represents the statements from the survey. Variable Q1 corresponds to statement 1; Variable Q2 corresponds to statement 2, etc. The "Count" column shows how many people responded to the individual statements. In some cases, not all participants gave responses, as can be seen for the last two rows of Table 3, where only eight of the ten participants responded to the questions on age and time on the team.

The third column in each table represents the mean or average of the responses for each statement, using the number value system described earlier. The standard deviation for each statement is shown in the fourth column. In most cases, this is value is a small number (less than 1.0) and indicates that the responses were very close together, representing a high degree of consensus from the participants within given teams.

The last two columns in each of the tables present the minimum and maximum numerical responses to each of the survey items, and allows for a quick view of the degree of difference among the respondents.

Tables 11 and 12 show the results for both the eight categories (Table 11) and the averages for each of the teams (Table 12). The significant items in each of these tables is in the standard deviation values which are all less than

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.72, a relatively small value indicating close agreement of the responses.

Ethical Considerations

Research subjects were exposed to two types of observation: a survey instrument and interviews. All surveys were anonymously distributed and scored. Interview information was recorded on note sheets, but no names were recorded during the process. People are reported by their position only, and no sensitive information about any company is included in the analysis, nor are the identities of companies revealed. Only volunteers participated in this research and their identities are known only to myself and their management who gave permission for the research to be conducted at any particular facility. (It should be pointed out that although the companies knew which people received surveys, they did not know who actually responded or what the responses for any individual were because the responses were mailed directly to me by the participants.) Subjects participated when it was most convenient for them and at no time were they placed at any risk. All subjects signed a consent form, a sample of which is contained in Appendix A.

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CHAPTER IV

DATA ANALYSIS

Survey Instrument Validity

To assure that the data collected actually provided insights into the process of leadership, and to assure that the test model was actually being tested, the survey was designed using the model as a base. Each of the eight areas of interest were represented by at least three statements to provide for valid averages. These statements were reviewed and approved by an expert panel of three professors of leadership prior to using the instrument.

In addition to careful construction of the survey statements, another check for instrument validity is whether certain statements were responded to as expected. In reviewing the results of all participants (Table 12), certain statements received fairly high response levels, while others received relatively low response levels. Those that received the high response levels were expected to receive high responses. These were, among others, statements two, four and ten, which dealt with issues such as change resulting from the team's efforts, believing in what the team is trying to do, and constantly trying new ways to improve things. These issues should be common to the kinds of teams I was investigating, and indeed, the teams reflected this in their responses.

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Other statements, such as 13 and 35, dealt with the issues of changing leadership within the team and influencing upper management's views. These items were not expected to score high due to the nature of the relationships between operating levels and management that I have seen in manufacturing companies. Based on these results the instrument is considered to be valid.

Survey Instrument Reliability

To test the reliability of the survey instrument statements, a regression analysis was performed for each of the statement response averages within each of the eight categories. For this analysis, a new data base was created using the average response to each statement for each of the eight teams. These were then compared for each of the categories to determine if any significant correlations existed. According to Hinkle, Wiersma and Jurs (1988), correlation coefficient (r) values above .70 indicate high to very high correlation (p. 118). Appendix B contains the survey instrument used; Tables 13 through 20 show the correlation analysis results for the various category statements. High correlations are indicated with an asterisk (*).

For the category "Internal Leaders and Followers", statements 1, 5, 9, 13, and 21 were analyzed. High correlation is shown between statements one and five as well as statements one and 13 (r values of .8129 and -.8562, respectively.) The negative correlation result does present some reason for

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concern, however. Statement 1 read: "This team has a clear leader." In examining the other statements in closer detail, negative correlations were found between statements 5 and 13: "The team, as a group, is willing to follow the leader" and "The leadership within the group changes frequently." These three statements, while designed to measure the internal leaders and followers element as described by Rost (1991), are measuring different attitudes about the nature of the relationship between leader and follower even though they fall in the same category. In manufacturing situations, and especially within the teams that I have been involved with, it is very unusual for a leadership position to change frequently. Statement 13, therefore, could be considered as negatively stated, at least as perceived by the participants, which would make the correlation result positive.

Statements 1 and 13 also showed negative correlation. Statement 1 said: "This team has a clear leader." Again, although this statement gets to the essence of Rost's leader and follower element, it is quite conceivable that while a clear leader is present within each of the teams, this does not necessarily mean that the leadership changes often. Statements 20 and 13 likewise show negative correlation. Statement 20 was: "This team welcomes my inputs and feedback." The intent of this statement was to examine the two way nature of the leader-follower relationship so much a part of the Rost model. In these

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Table 13.

Correlation Results for Internal Leaders and Followers Category

Correlations

	Q5	Q9	Q13	Q20	Q21	Q1
Q5	1.0000					
Q9	0.0673	1.0000				
Q13	-0.4879	0.2239	1.0000			
Q20	0.5625	0.5759	-0.2382	1.0000		
Q21	0.4127	0.0570	0.2410	0.0012	1.0000	
Q1	0.8129*	0.0651	-0.8562*	0.5700	0.0029	1.0000

*|r|>.70

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Table 14.

Correlation Results for Internal Shared Purposes Category

Correlations

	Q7	Q11	Q15	Q19	Q22	Q23
Q7	1.0000					
Q11	0.1009	1.0000				
Q15	-0.1911	-0.2220	1.0000			
Q19	0.8544*	-0.1379	-0.0330	1.0000		
Q22	0.6441	0.5345	-0.4440	0.3151	1.0000	
Q23	0.2787	0.0080	0.3527	0.0227	0.5109	1.0000
Q24	0.8506*	0.0189	-0.2188	0.8255*	0.4269	-0.0706
Q3	0.5966	0.8369*	-0.3792	0.2838	0.7657*	0.0946

	Q24	Q3
Q7		
Q11		
Q15		
Q19		
Q22		
Q23		
Q24	1.0000	
Q3	0.4994	1.0000

* $|r| > .70$

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Table 15.

Correlation Results for Internal Intended Change Category

Correlations

	Q10	Q14	Q18	Q2
Q10	1.0000			
Q14	0.2780	1.0000		
Q18	0.4979	-0.1513	1.0000	
Q2	0.6618	-0.2113	0.8703*	1.0000

* = > .70

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Table 16.

Correlation Results for Internal Influence Relationship Category

Correlations

	Q8	Q12	Q16	Q17	Q4
Q8	1.0000				
Q12	0.9374*	1.0000			
Q16	0.6679	0.6684	1.0000		
Q17	0.8862*	0.8936*	0.5385	1.0000	
Q4	0.8873*	0.9639*	0.6190	0.8098*	1.0000

* r > .70

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Table 17.

Correlation Results for External Leaders and Followers Category

Correlations

	Q30	Q32	Q25
Q30	1.0000		
Q32	0.1881	1.0000	
Q25	0.4127	0.4110	1.0000

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Table 18.

Correlation Results for External Influence Relationship Category

Correlations

	Q31	Q35	Q27
Q31	1.0000		
Q35	0.2336	1.0000	
Q27	0.6291	0.8419*	1.0000

* r > .70

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Table 19.

Correlation Results for External Intended Change Category

Correlations

	Q28	Q34	Q6
Q28	1.0000		
Q34	-0.4403	1.0000	
Q6	-0.0054	0.3050	1.0000

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Table 20.

Correlation Results for External Shared Purposes Category

Correlations

	Q29	Q33	Q26
Q29	1.0000		
Q33	-0.1216	1.0000	
Q26	0.4169	0.1675	1.0000

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successful teams, the duality of the feedback is not a necessary part of the relationship. The teams seem to function well with a more directive approach, probably based on the experiences of the participants in less participative environments. See Table 13.

To analyze the category "Internal Shared Purposes", statements 7, 11, 15, 19, 22, 23, 24, and 3 were compared. The results show high correlation between 7 and 19; 7 and 24; 11 and 3; 19 and 24; and 22 and 3 (r values of .8544, .8506, .8369, .8255, and .7657, respectively). Negative correlations in this category were found between statements 15 and 7; 15 and 11; 15 and 19; 15 and 22; and 19 and 11. Statement 15 said: "I never feel as though my suggestions have little value." The purpose of this statement in the survey was to gage the participants feelings on how closely their ideas matched with those of the leader and other team members. The other statements that correlated negatively with statement 15 were 7: "I have as much influence on the team leader as he/she has on me"; 11: My ideas have changed significantly because of the leader's influence"; 19: "Our discussions are typically dominated by the team leader"; and 22: "As a result of being a member of this team, my values have changed for the better." The negative correlations most likely appeared between statements 15 and 11 and 15 and 22 because of the fact that the team members' values and goals were in close alignment from the

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beginning and therefore there was no need for significant changes to occur. In hindsight, these questions' scores should have been reversed which would have provided for positive correlation results. Statements 7, 11 and 19 deal with the ability of the team members to influence the team leader with respect to values and goals. Since the responses for statement 19 were reversed when entered into the data bases, the correlations are in reality positive. See Table 14.

The "Internal Intended Change" category was analyzed using statements 10, 14, 18 and 2. The results show good correlation between statements 2 and 18 (r value of .8703). Negative correlations appeared between statements 18 and 14 as well as 2 and 14. Statement 14 read: "Doing things differently was clearly a reason for implementing teams." Statement 18 read: "Most of the change I have seen as a result of teaming has been insignificant and superficial." Since this statement was worded negatively, the results were reversed when entered into the data bases, so that in reality, the correlation is positive. Statement 2 read: "A lot of change has occurred as a result of the efforts of this team." This statement compares with 14 in the sense that it measures the amount of change that has occurred while statement 14 measure the initial intent of the team to create change. Both statements scored fairly high (averages of 4.125 and 3.8, respectively) and therefore support the Rost model; the negative correlation would suggest that there is not necessarily a

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connection between intent and achievement, something that Rost intentionally included in his model because of the fact that you can not measure leadership in the present if you must rely on the achievement of change in the future to measure the leadership in the present. See Table 15.

For the "Internal Influence Relationship" category, statements 4, 8, 12, 16 and 17 were compared. High correlations were observed between statements 8 and 12; 8 and 17; 8 and 4; 12 and 17; 12 and 4; 4 and 17 (r values of .9374, .8862, .8873, .8936, .9639 and .8098, respectively.) No negative correlations were found. See Table 16.

The external categories showed less correlation than the internal categories. The three categories of "External Leaders and Followers," "External Intended Change" and "External Shared Purposes" showed no high correlations between statements. The fourth category, "External Influence Relationship" showed high correlation between statements 27 and 35 (r value of .8419). Negative correlations were found in categories for External Intended Change and External Shared Purposes. In the change category, statements 34 and 28 had a correlation coefficient of -.4403. Statement 34 read: "If we accomplish nothing else, at least things will be different." Statement 28 read: "Upper management really wants to change the way people are managed." In looking at Table 12, one can see that both of these particular statements scored fairly

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low (3.3125 and 3.2875, respectively), indicating no agreement with the model. The correlation results may be explained by the fact that while changing the way things are, in a general sense, has little to do with people's perceptions of what management's intentions are. Indeed, it would seem that even in self-managed teams, workers are still somewhat distrustful of management's agendas. Statement 6 read: "Change was one of the main reasons for going to the team concept." This statement scored a fairly high 4.05 average response (Table 12) in comparison to statement 28, and had a correlation coefficient near zero (-.0054). It appears that while workers in the teams agreed that change was an important factor in establishing teams, the real reasons behind them may have been other than management's vision of a better way to treat people, and might have included such things as higher productivity, lower costs and improved quality.

In the category of External Shared Purposes, statements 29 and 33 had negative correlations. Statement 29 read: "I thought teams were a good idea before we started them." Statement 33 read: "I want to improve things just as much as anyone." Both of these statements scored above the threshold value of 3.5 for the average of the responses. In reflecting on these statements, the purpose of them was to determine if management and the participants shared the same feelings about the value of teaming and wanting to improve things in

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general. It appears that while both themes are strongly held values for the participants, there is negative correlation between the issues. See Tables 17 through 20.

In reflecting on these results, five of the eight categories had a number of statements with high correlation with other statements, indicating that they were measuring the same element of the leadership process, while three others did not show this tendency. This might be because the survey instrument was not reliable in these areas. However, I think the reason for the results lies in the fact that when dealing with the relationship of the external influences on the teams, the perceptions of the team members varies to a much greater degree from one team member to another. This is due to the differing amount of interaction various team members have with external people, as well as the amount of time team members have been with the group. In some cases, the team members were with the group for only a few months and did not benefit from direct knowledge of how the teams were formed or what influences outsiders had on the team's formation. This may have influenced their responses such that the correlation values did not behave as they were expected to. Also, since different teams at different companies will have established unique norms and values, comparisons of the type discussed may not always provide predictable results. The negative correlations, while surprising at first,

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can be explained if one examines the complex nature of the issues being examined in such short, simple statements. While I feel that the results of the analysis of the data and the conclusions drawn are valid, I would reword some of the statements and add several additional statements if the survey were to be used again to try to minimize the negative correlations found during this research.

In analyzing the results from the individual teams, you get a picture of how each team responded to the various statements. In general, the teams followed the pattern of the overall summary results. The few exceptions to the summary data can most likely be explained by the differences in perceptions and norms of the groups involved.

Research Questions

The purpose of the data collection was to answer four questions stated in the Introduction. Restated, these were:

1. What are the characteristics of successful self-managed work teams?

2. What leadership process is at work or has been used to create and perpetuate self-managed work teams at various companies?

3. How does the process of leadership compare with an existing model of leadership?

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4. What modifications to the test model are necessary based on this research.

These questions formed the basis for this research. I will address each of these questions in the following sections.

Characteristics of Successful Self-Managed Teams

This question really asks, "What does a typical, successful self-managed team look like?" Based primarily on the comments collected from the interviews and the open-ended questions on the surveys, and supplemented with information from the literature, many conclusions about successful work teams can be derived. In general, it appears that successful teams have the following traits or characteristics:

1. Appropriate leadership. The team leaders have the ability and willingness to lead the team using a model of leadership as described herein.

2. Suitable membership. Team members that are individually qualified and capable of contributing a mix of skills to ensure proper balance.

3. Commitment. Team members feel a sense of individual commitment to the aims and purposes of the team. This is fostered through participation in decisions, group spirit and important work.

4. Constructive climate. People feel relaxed, deal directly and openly, and are prepared to take appropriate risks.

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5. Achievement orientation. Energy is mainly devoted to the achievement of the team's purposes. Performance is reviewed frequently to see where improvements can be made.

6. Effective work methods and procedures. Roles are clearly defined, communication patterns are well developed, and administrative procedures support the team approach.

7. Empowerment. A general feeling that one can influence what happens and that sufficient information is available to accomplish team objectives.

8. Guiding principles. Principles for member behavior are specific and uniformly practiced throughout the team.

9. Rewards. Reward systems encourage collaborative, team oriented behaviors.

10. Creative strength. The team has the capacity to create new ideas through the interaction of its members. The team supports ideas from individual members or from outside. Good ideas are followed through into action.

11. Positive intergroup relations. Relationships with other teams have been systematically developed to provide open, personal contact and identify where joint working may give maximum team payoff. There is regular contact and review of joint or collective priorities with other teams.

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12. Regular team building activities. Effective teams are built over time through conscious effort and attention to group process and morale.

While not exhaustive, this list contains the basics that I found in each of the teams I examined through the surveys and interviews. In reality, the list represents the minimum characteristics that are needed for self-managed teams to be successful. Additional details of what team member participants felt on the subject of characteristics of successful teams can be found in Appendix D under the heading of Item 2--"What are the Characteristics of Effective Self-Managed Teams?".

The Leadership Process Used to Establish Effective Teams

As with the last question, this one is best answered from the comments collected from the interviews and open-ended questions. Appendix D, Item 1--"What was the Influence of Outsiders on Team Formation?", provides the best answers to this question. In summary, upper management needs to:

1. Be an administrator. This includes such activities as assisting in the goal setting process and establishing the boundaries within which the team can operate. It certainly does not mean abdicating responsibility to teams.

2. Coach. Teams, especially during start-up, need the mentoring of those who have the necessary skills in group process and problem solving.

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3. Advise. Teams often need help in getting resources, making decisions and resolving tough problems. Management can provide valuable assistance in this area.

4. Remove roadblocks. In union environments, this means getting the agreement of all parties that teams are beneficial to all involved so that meaningful goals can be established. In non-union as well as union environments, roadblocks can include company procedures and restrictions that hinder progress or the lack of resources to accomplish meaningful work.

5. Provide training. Often consultants are required to provide the training in group skills that are critical to team operation. A lack of training in these important areas can lead to a team's failure.

6.Be committed to the team concept. Management must be willing to spend the money and take the time to establish effective teams. This will not happen over night, and signs of payback may be slow to surface. A long term view of the investment in teaming must be adopted if teams are to be successful.

7. Give up authority. It is very difficult for some traditional managers to give up what has always provided a sense of self esteem for them--the ability to control the work of others. This is an obvious requirement of management if this concept is to be complete.

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Comparing the Leadership Process With An Existing Model

In comparing the leadership process within the teams studied with the Rost model of leadership, the survey data was used as described in the methodology section. Four separate categories were established for both the internal process and the external process. As shown in Table 11, the categories are abbreviated as follows:

IL&F	Internal Leaders and Followers
IIF	Internal Influence Relationship
IIRC	Internal Intended, Real Change
IMP	Internal Mutual Purposes
EL&F	External Leaders and Followers
EIF	External Influence Relationship
EIRC	External Intended, Real Change
EMP	External Mutual Purposes

Each of these categories shows an average score for the statements on the surveys that pertain to the respective areas. The criteria set forth was that agreement between the model and the surveyed teams was considered good if the mean score for the category was greater than 3.5; agreement was not present if the mean score was less than 3.5. Of the eight categories, six showed agreement. These were Internal Leaders and Followers; Internal Influence

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Relationship; Internal Intended, Real Change; Internal Mutual Purposes; External Intended Real Change; and External Mutual Purposes. The remaining categories of External Leaders and Followers and External Influence Relationship failed this criteria.

Modifications to the Test Model

Based on the data described, it appears that no major modifications to the model are necessary as far as the internal process of leadership is concerned. The model does, however, have certain inherent requirements that did not fit with the surveyed teams. One major difference in the leader-follower relationship. It is clear that in these manufacturing teams, the leadership within the teams does not change as required in Rost's model. Leaders instead seem to maintain their position as leaders for long periods and are recognized as the leader by the team members. In this same area, the data indicates that rather than a dynamic, two-way influence relationship as described by Rost, the influence is typically more one-sided--from leader to follower but not the other way.

The external process of leadership failed in the two categories of leaders and followers, and influence. The teams surveyed did not see a strong influence from outsiders (i.e., management). This is most evident in the responses to statements 25 and 32, where the statements referred to the

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formation of the teams and those people who may have influenced their formation yet never participated in the team operations. Apparently the teams were formed with little influence from management except for the "okay" to proceed. Likewise, upon closer examination of two of the statements that went into the category of "external influence relationship" one sees that statements such as 27: "The people who wanted to start teams changed my mind about a team's value" and 35: "Upper management's views have changed because of my ideas and suggestions since joining this team" scored fairly low. This is consistent with the perception that even successful teams have difficulty influencing upper management in this country, perhaps due to their (upper management's) perception of the working class as having little to contribute to the "big picture" of running a business. This is also consistent with the internal leader-follower relationship and the unilateral influence direction. The test model should therefore be revised to require 1) that management provide leadership in establishing the teams, i.e., having shared purposes and using influence, a comment consistent with the interview and open-ended question responses, and that 2) management allow the teams and team leaders to provide the influence once the teams are established--in other words, get out of the way.

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CHAPTER V

SUMMARY & CONCLUSIONS

Introduction

This research began with the intent of discovering something about one key element of successful work teams in American manufacturing companies. The original intent was to discover something new about the relationship between leadership as a process and successful self-managed teams. The reasons for my interest are many, but primarily fall into the category of concern for the institution of manufacturing in America.

Since the early 1970s, the United States has been declining as a major manufacturing power. Millions of jobs have been lost to overseas competitors, and thousands more are in jeopardy. Another serious sign of the decline is evidenced in the soaring negative balance of payments with our trading partners, most notably Japan and West Germany. And while this decline in manufacturing preeminence is due to a myriad of reasons, a significant factor is the way in which American managers have dealt with their most important resource--the workforce. Based primarily on Taylor's scientific management principles of a century ago, this outdated mode of people management will no longer suffice in the international marketplace of the 1990s. A different

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strategy is needed to organize and lead the workforce of today, one that is built upon the principles of employee involvement and leadership.

Employee involvement must, however, be substantive, not superficial. Over the past 40 years, employee involvement in the United States has meant suggestion programs and more recently, Quality Circle groups. And while these programs have provided some modicum of satisfaction for the workforce and increased productivity for the businesses that have used them, they do not go far enough to reverse the decline of American manufacturing. Giving employees a say in what they do, how they do it, and when they will do it--in self-managed teams--seems to be an answer.

Leadership is the key to unlocking the door. Much has been written about leadership over the past 100 years. Most of what has been written has been trait oriented and based on management principles of goal setting and task accomplishment. What we need in America is an understanding of leadership as a process--both as it applies to the formation of self-managed teams and within the teams themselves--if we are to implement this concept successfully and make the concept of self-management a reality in this country.

This understanding was accomplished by examining a small cross section of teams in various parts of the country. An underlying reason for attempting this project was to come to some conclusions about how managers can

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implement and sustain successful work teams. In this effort I feel success was achieved. In this section I will summarize these conclusions.

In examining the model of leadership chosen as the baseline for this research, I go back to the definition offered by Rost (1991): "Leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes" (p. 102). Rost continues by clarifying the four essential elements as follows:

1. The relationship is based on influence.
    a. The influence relationship is multidirectional.
    b. The influence behaviors are noncoercive.
2. Leaders and followers are the people in this relationship.
    a. The followers are active.
    b. There must be more than one follower, and there is typically more than one leader in the relationship.
    c. The relationship is inherently unequal because the influence patterns are unequal.
3. Leaders and followers intend real changes.
    a. Intend means that the leaders and followers purposefully desire certain changes.

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b. Real means that the changes the leaders and followers intend must be substantive and transforming.

c. Leaders and followers do not have to produce changes in order for leadership to occur. They intend changes in the present; the changes take place in the future if they take place at all.

d. Leaders and followers intend several changes at once.

4. Leaders and followers develop mutual purposes.

a. The mutuality of these purposes is forged in the noncoercive influence relationship.

b. Leaders and followers develop purposes, not goals.

c. The intended changes reflect, not realize, their purposes.

d. The mutual purposes become common purposes. (pp. 102-103)

Based on the data from this research, this model works very well for most of the elements described. Influence was exhibited by leaders within the teams but not by management as an "outsider." While this may seem illogical at first glance, it follows that if a team is truly self-managed, it would not perceive the influence by outsiders as significant. This same reasoning can be applied to the second area that did not pass the test, namely, external leaders and followers. As Rost described this element, the followers are active, and there is typically more than one leader in the relationship. Again, by their very

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nature, self-managed teams will not perceive an active leader-follower relationship.

In modifying the test model, the need for a strong leader follower relationship, from outside the team, with influence as a major force seems unnecessary. This may be replaced by a sense of ownership in what the team is trying to accomplish; a feeling of being part of the goal setting process that is so important in successful teams; the camaraderie that develops when people work closely together toward mutually shared purposes.

Implementing Self-Managed Teams

In addressing the issue of how managers can effectively implement self-managed teams, they (management) must first recognize the various stages of teaming that can evolve. Orsburn, Moran, Musselwhite and Zenger (1990) outline eight levels of employee involvement (p. 34):

Level	Action	Primary Outcome
1. Information sharing	Managers decide, then influence	Conformance
2. Dialogue	Managers get Employee input, then decide	Acceptance

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3. Special prob. solving	Managers assign a one-time problem to selected employees	Contribution
4. Intra-group prob. solving	Intact group meets weekly to solve local problems	Commitment
5. Inter-group prob. solving	Cross-functional group meets to solve mutual problems	Cooperation
6. Focused prob. solving	Intact group deepens daily involvement in a specific issue	Concentration
7. Limited self-direction	Teams at selected sites function full time with minimal supervision	Accountability

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8. Total self-direction	Executives facilitate self-management in an all team company	Ownership

With these categories in mind, it is clear that it is when stages six and seven are achieved that productivity improvement and employee satisfaction can reach their greatest levels. To achieve these states, managers need to take a cue from the participants of this research and provide the following:

1. A draft vision statement of where the teams are ultimately going (in terms of self-direction, empowerment, responsibility) and a set of guiding principles.

2. The leadership necessary to motivate individuals to see the need and promise of working together toward common purposes--and the wisdom to get out of the way once the teams are functioning effectively.

3. Assistance to the team in establishing realistic and challenging goals--goals that create and promote change in the way things are done and in the way people work together.

4. The continuous training in team processes necessary for people who have been inculcated in the techniques of individuality rather than the benefits of groups and their potential for synergy.

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5. Reward and recognition systems that celebrate group accomplishments and provide incentive for risk taking--rather than the individual incentives that proliferate manufacturing companies today.

6. An understanding of the various teaming approaches available and the insight to let the circumstances dictate which one to use in a particular situation.

7. Assistance to teams in selecting members, with the insight to respect the wishes of the team over the demands of management.

8. Boundaries within which the team can operate so that members understand the game plan and know what they are responsible for--and what they cannot do.

9. An understanding that behaviors alone cannot be emulated. Business managers cannot just read books and attend three day seminars on how to implement teams. They cannot imitate the actions of other executives who have implemented teams successfully at other companies and expect those actions to produce the same results in their company. Executives of all levels must understand the culture of their businesses and the wants and needs of the people who comprise the businesses if they are to be successful.

In addition to the above, corporate leaders must consider the impact of implementing teams on the people who see the teaming movement as detrimental to themselves--the current supervisors and middle managers that

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could inevitably be displaced. This feeling of uncertainty was vividly demonstrated in a survey conducted by Klein (1984). In this survey, first-line supervisors were asked about their attitudes concerning employee involvement programs of all types. Seventy two percent of the supervisors viewed the programs as being good for their companies; 60 percent saw the programs as being good for the employees; but only 31 percent viewed the programs as being beneficial to themselves. Without the support of these people, the transition to teams will be much more difficult if not impossible. Several suggested roles for current supervisors are offered (Glaser, 1990). Among these are:

1. Assist/teach team members to take on some of the responsibilities formerly held by management.

2. Become the human relations expert for the team. Many supervisors possess a high degree of technical and interpersonal skills that cannot be easily transferred to the team.

3. External representative for the team. In this role, former supervisors will facilitate the flow of production and service among teams and negotiate for the resources that the team needs to do its job.

Regardless of the role that former supervisors assume, many (Kerr, Hill & Broedling, 1986; Manz & Sims, 1986) believe there is a legitimate need for

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supervisors and managers of self-managing teams and that the positions are here to stay in some form. Drucker (1988) adds that "No job is going to change more in the next decade than that of the first line supervisor" (p. 45). It would seem that the best approach for supervisors to take is to expect to adapt to changing organizational needs. Glaser (1990) adds "Developing a successful self-managing group can be challenging and rewarding both personally and careerwise" (p. 6). I just hope that corporate leaders recognize the difficulties some will have with this transformation and assist them in the process.

Strengths of the Research

This investigation has several strong points. First, the data that was gathered came from existing teams within manufacturing organizations--teams that have proven to be successful to their companies. For this reason, the data has validity and can be generalized to other teams in manufacturing environments.

Secondly, a fairly large number of participants were included in the study, representing a cross section of America. And, since the results between participating teams was fairly consistent, the results have even more generalizability.

In choosing a model of leadership that was developed without a specific group as its basis, the investigation expands the body of knowledge about

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leadership by asking the questions: "Is this a valid model of leadership?" "Does the leadership process at the lowest levels of an organization compare with that at the higher levels of the organization?" "How do people on teams view the efforts of those in management regarding the structure of their work environment?" In answering these and other questions, the study has built upon the work of other researchers in describing successful teams and the process used in leading and creating them.

This study also contributes to the understanding of the dynamics of teams, and offers several suggestions on how to implement teams in existing companies that compliments and supplements those ideas already in the literature. Since the ideas are based on those who are currently in successful teams, these ideas have significant meaning.

As a member of one of the participating companies, I was able to monitor the development of at least one of the teams and verify, through observation of good decisions as well as poor ones, that the conclusions reached concerning the establishment of teams are valid. In addition, because of my proximity to several teams, I was able to discuss the team's formation with team members and managers alike. This added to my ability to judge the validity of the recommendations offered.

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Essentially, this study validates a theoretical model of leadership and translates scholarly opinion into reality. If for no other reason, this adds to the general understanding of one element of effective teams and how to expand this insight into reality. If this information assists one company in making the transition from autocratic management to a team environment, I will have succeeded in my efforts.

Limitations of the Research

This study has several weaknesses. Perhaps paramount among them is the fact that only teams within manufacturing companies were examined and surveyed. Although this was done by design, it certainly limits the generalizability of the data to manufacturing teams. And while I think that the best applicability for self-managed teams is within a manufacturing environment, there are certainly opportunities within banking, retailing and other service industries.

The fact that a survey instrument was used to collect the majority of the data analyzed also presents certain problems. Every attempt was made to minimize the problems of misinterpretation of the questions and false responses by the participants, but some of this surely entered into the data and analysis. As I indicated earlier, the fact that this study required each participant to sign a consent form caused many (as many as 45) of the participants to complete the

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survey without signing the consent form. This much data, if significantly different from the rest, could have influenced the results such that different conclusions would have been drawn.

In selecting a particular model of leadership to test, I limited the kind and amount of information collected about the leadership process within the teams. This adds some questions as to the true validity of the study and whether the data really reflects everything that is going on in this complex dynamic of teamwork.

The negative correlations within the leadership categories also present some concerns. Although I do not feel that the essence of the research was jeopardized, the appearance of these negative correlation coefficients certainly added some doubt to the overall reliability of the instrument designed for this work.

And finally, due to the cost involved in interviewing participants, the number was limited to five. If more could have been included in this important aspect of the study, additional important information about the teams and their formation could have been collected and included in the study.

Implications for Future Research

As with all research, this project has raised as many questions as it has answered. Future research might address the following issues:

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1. What are the most effective team structures, i.e. organizational forms?

2. What leadership process is at work in self-managed teams outside of America?

3. What leadership process is at work in teams in non-manufacturing companies?

4. What is the most effective training program to develop and nurture self-managed teams?

5. What are the most effective pay/incentive programs?

6. Which performance measurement programs are most effective?

7. What other leadership models and/or practices might be valid in teams?

8. Can the survey instrument developed be used for measuring the leadership process in contexts other than teams? If not, what modifications are necessary?

These and other questions could be incorporated into future research in this important area.

Concluding Remarks

America, and the world, have seen massive and momentous changes over the last 100 years. New technologies have literally developed before our very eyes, making this generation the most knowledgeable in the history of mankind.

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But the vast amount of knowledge increase has, until fairly recently, been limited to the "hard" sciences. Less has been discovered about people and how they can be motivated, excited, and made more productive in a work environment.

The move to team environments could change all of that. I believe we are just beginning to witness the promise for this method of allowing people in the workplace to reach their potential. With the coming years, we will see large numbers of companies moving to this technique.

It is the sincere hope of this researcher that I can be a part of this movement--one that I feel is required if America is to remain competitive in the global marketplace that now exists. Hopefully, this research will make a contribution to this movement.

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Appendix A
Consent Form

Steve Wirkus is conducting research to determine the effects of leadership on work groups in American manufacturing companies. The purpose of this research is to collect information about the leadership process at work in the formation of semi-autonomous work groups. Since I have been selected to participate in this study, I will be completing a survey instrument and may participate in an interview.

This data collection will take approximately 30 - 60 minutes. Participation in the study should not involve any added risks or discomforts to me.

In completing this instrument, I will be asked to respond to statements about the work groups I have been associated with and I will circle the response to each statement that most accurately describes my feelings about that work group.

This is an opportunity for me to share my experiences and at the end of the instrument, I will have the opportunity to express my opinions about work groups and leadership.

I understand that my research records will be kept completely confidential. My identity will not be disclosed without consent as required by law. My participation in this research is strictly voluntary and, if for any reason, I decide to withdraw from participation, I may do so.

Mr. Wirkus has explained this study to me and answered my questions. If I have any other research related questions or problems, I can reach Steve Wirkus at (619) 544-5135. There is no agreement, written or verbal, beyond that expressed on this consent form.

I, the undersigned, understand the above explanations and, on that basis, I give consent to my voluntary participation in this research.

_____ _____

Signature of Subject Date

_____ _____

Signature of the Researcher Date

_____ _____

Signature of a Witness Date

Done at _____, _____

City State

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Appendix B.

Survey Instrument

Instructions: Please read each of the following statements carefully. Circle the response that most accurately reflects your feelings about the work team that you are a member of or have responsibility for.

SA = Strongly Agree A = Agree NO = No Opinion
D = Disagree SD = Strongly Disagree

1.	This team has a clear leader.	SA []	A []	NO []	D []	SD []
2.	A lot of change has occurred as a result of the efforts of this team.	SA []	A []	NO []	D []	SD []
3.	I was inspired by the "picture of the future" painted by our team leader.	SA []	A []	NO []	D []	SD []
4.	I believe in what the team is trying to accomplish.	SA []	A []	NO []	D []	SD []
5.	The team, as a group, is willing to follow the leader.	SA []	A []	NO []	D []	SD []
6.	Change was one of the main reasons for going to the team concept.	SA []	A []	NO []	D []	SD []
7.	I have as much influence on the team leader as he/she has on me.	SA []	A []	NO []	D []	SD []
8.	The goals of the team closely match my personal values.	SA []	A []	NO []	D []	SD []
9.	I prefer to be a participating member of the team rather than the leader of the group.	SA []	A []	NO []	D []	SD []
10.	We are constantly trying new ways to improve our work.	SA []	A []	NO []	D []	SD []

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11.	My ideas have changed significantly because of the leader's influence.	SA []	A []	NO []	D []	SD []
12.	The team has a clear purpose and I support it.	SA []	A []	NO []	D []	SD []
13.	The leadership within the group changes frequently.	SA []	A []	NO []	D []	SD []
14.	Doing things differently was clearly a reason for implementing teams.	SA []	A []	NO []	D []	SD []
15.	I never feel as though my suggestions have little value.	SA []	A []	NO []	D []	SD []
16.	Team members are flexible in modifying their opinions in order to enhance team performance.	SA []	A []	NO []	D []	SD []
17.	If I had a choice, I would leave this team at the first opportunity.	SA []	A []	NO []	D []	SD []
18.	Most of the change I have seen as a result of teaming has been insignificant and superficial.	SA []	A []	NO []	D []	SD []
19.	Our discussions are typically dominated by the team leader.	SA []	A []	NO []	D []	SD []
20.	This team welcomes my inputs and feedback.	SA []	A []	NO []	D []	SD []
21.	I have had the opportunity to be the leader of the team on some important issue or problem.	SA []	A []	NO []	D []	SD []
22.	As a result of being a member of this team, my values have changed for the better.	SA []	A []	NO []	D []	SD []

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23.	The leader's values have changed as a result of my influence.	SA []	A []	NO []	D []	SD []
24.	When decisions are being made, each member of the team is given a chance to be heard.	SA []	A []	NO []	D []	SD []
25.	People in upper management had a lot to do with forming this team.	SA []	A []	NO []	D []	SD []
26.	I support the purposes of the teams as outlined by upper management.	SA []	A []	NO []	D []	SD []
27.	The people who wanted to start teams changed my mind about a team's value.	SA []	A []	NO []	D []	SD []
28.	Upper management really wants to change the way people are managed	SA []	A []	NO []	D []	SD []
29.	I thought teams were a good idea before we started them.	SA []	A []	NO []	D []	SD []
30.	When management introduced the team concept, I was ready to join a group.	SA []	A []	NO []	D []	SD []
31.	I feel differently about teams now that I've been part of one.	SA []	A []	NO []	D []	SD []
32.	The most significant people in getting teams started have never been members of this team.	SA []	A []	NO []	D []	SD []

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33.	I want to improve things just as much as anyone.	SA []	A []	NO []	D []	SD []
34.	If we accomplish nothing else, at least things will be different.	SA []	A []	NO []	D []	SD []
35.	Upper management's views have changed because of my ideas and suggestions since joining the team.	SA []	A []	NO []	D []	SD []

Please answer these questions as they relate to your team. Use the back of the sheet if you need more space.

36. What influence did people <u>outside</u> of the team have on its formation?

37. What do you feel would be the most effective steps to take in forming new work teams of this type in manufacturing companies?

38. Who (by job title) is the most influential person on the team and its day-to-day operations?

Please complete the following box to provide some data on yourself.

DEMOGRAPHIC DATA	
No. of months on team?	
Age?	
Male or female?	

Thank you for taking the time to complete this survey. Your knowledge and ideas are invaluable to me and I sincerely appreciate your help in this project.

Steve Wirkus

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Appendix C.

Interview Questions

1. What was the management philosophy of (Co. name) prior to implementing work teams? How were people supervised?

2. How would you describe the management philosophy as it applies to your work teams?

3. Is there one person you would consider as the leader of this team?

4. Describe the leader, i.e., what is it that he or she does which is different for others on the team?

5. What changes have been realized by implementing work teams at (Co. name)?

6. What are your feelings about what this company needs to do to make the changes it needs to make or has made?

7. What influence did the leader have over your feelings or ideas about this work team? Did they change over time?

8. What was the relationship between the team, its leader, and the rest of the team members and other members of management? Was there any one person in management that seemed to influence the formation of this team more than any other?

9. Have there been any significant changes in your value system as a result of your membership in this team?

10. Have you had the chance to be the leader of the team? Does every team member serve in this capacity, even if only occasionally?

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Appendix D.

Responses to Interviews and Open-ended Survey Questions

1. **What influence did outsiders have on team formation?**

One man (a processor) encouraged us and worked to get the union and management together

Upper management provided support

Management formed a support department

Management provided training in team operations

Management sold the idea to us as a way to save jobs

Management gave their consent to the idea, but we hold the team together

Upper management trained us, encouraged us and empowered us

Two people with knowledge of teams helped get us started

Management gave up some authority

Management supported us and provided guidance

Management wanted us to be a "role model" for the rest of the plant

Management was positive and excited about the concept

People were supportive and apprehensive at the same time

A "Structure Team" was established to set up team guidelines

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Management had a big decision to make to let us be self led or to continue with the old style of management. They decided to let us become self led and let the team have a chance

Upper management gave us carte blanche and wanted to see what we should come up with; they were and continue to be very supportive

Our manager helped us to set our expectations and helped us to visualize how to achieve them

Management provided direction and information

Management started the team and left after we were running

Management directed us to form teams in order to better address problems

Some of our company's teams would never have gotten off the ground without our supervisor and top level management support

2. **What are the characteristics of effective self-managed teams?**

Must have the right people coming together (difficult in union environment)

Let the team choose who the members should be, i.e., who fits in and who doesn't, to ensure that their goals are in the general direction of the team

Have committed, dedicated members

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Must have union/company cooperation

There needs to be defined goals at the beginning of its formation; teams could be more effective if they had a standard (but flexible) agenda for the meetings

Everyone must want to be a member

Cannot have autocratic leader

Trust, trust, trust! From members and between

Interview and select members carefully

Find a specific problem; get people on the team who have leadership ability and who believe in the team concept; keep everyone contributing

Management needs to understand the team concept so that they can relate to the teams and help with the inevitable problems

Define each team member's role and what is expected from them and from the team leader

Leadership training is very valuable

Listen to every idea--it just might be the one the company is looking for

What are the most effective steps in forming teams in manufacturing companies?

Provide some reading material to new teams; have new teams talk to teams already established

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Set expectations; give feedback; make resources available

Define guidelines for teams

Find people with a need and desire

Form a people involvement philosophy

Make people responsible

Start with people who want to be team players

Need effective training in teaming

Spend a lot of time on communications and trust; these are the main forces of the teaming effort

Ensure the team has a purpose; enlist the support of all areas; delegate responsibilities to all members of the team; follow agendas to establish effective accomplishments

Give people time to adapt to change

Have one facilitator work to train the team over a one year period

Training and picking the right people

Keep groups fairly small (4 - 7 people); bring in more people when the topic of discussion requires it

Identify candidates for team membership who can and will contribute to the cause; proper balance of direction and empowerment from management

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Have volunteers on the team; Train team leaders in meeting skills and team dynamics; provide time out from work for members to meet

Must have a fair leader--one who is dedicated to the concept of teams and who listens to all of those involved. This person must set an example for the group and share credit for achievements.Find good leaders and support them

Have successful teams talk to groups of employees about their successes

Train managers to let go--they need to coach and facilitate, not manage by Theory X

Need a person to motivate the team--push for goals, keep concept alive

Train in team behavior before goals are defined

Management must give "heart service", not "lip service"

Establish leader and co-leaders

Keep meeting minutes and train members

Be flexible and supportive

Ensure support from top management

Proper training in budgets, hiring/firing,management, discipline

Teach members how to communicate with themselves, their customers and suppliers and upper management

Show a video on the positive aspects of teams

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Training in how to communicate, hold a meeting, get information

Allow the teams the flexibility to manage and maintain their equipment and goals

3. **Who is the most influential person on team?**

The team is a group effort and no one single person dominates; (by the way, I am the team leader)

Production supervisor

Team leader

Co-leaders

Various team members

Team facilitator and team leader

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Appendix E.

Raw Data for Blue Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	4	4	3.0	5	4	4.0	4	4	5.0	5	5	5.0	2	4
Row 2	4	5	4.0	4	4	4.0	4	4	4.0	4	4	4.0	3	5
Row 3	4	4	4.0	5	3	4.0	4	4	4.0	5	2	4.0	2	5
Row 4	4	4	3.0	4	2	3.0	2	3	5.0	3	3	4.0	3	4
Row 5	5	5	4.0	5	4	5.0	5	4	4.0	5	2	5.0	2	5
Row 6	4	5	4.0	5	4	5.0	5	5	3.0	5	4	5.0	4	4
Row 7	5	4	5.0	5	5	4.0	4	4	4.0	5	4	5.0	4	4
Row 8	3	5	3.0	5	3	4.0	5	5	5.0	5	3	5.0	4	3
Row 9	5	5	5.0	5	5	5.0	5	5	4.0	5	5	5.0	2	5
Row 10	2	4	3.0	4	4	4.0	4	4	5.0	5	2	4.0	4	3

	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
Row 1	4	4	2.0	4	4	4.0	4	5	4.0	3	3	3.0	3	3
Row 2	3	4	3.0	4	2	4.0	3	3	3.0	4	4	4.0	4	3
Row 3	4	4	4.0	4	4	4.0	4	4	4.0	4	4	4.0	4	3
Row 4	3	2	3.0	2	3	3.0	1	4	4.0	5	5	3.0	3	4
Row 5	5	4	5.0	5	4	4.0	4	2	2.0	5	5	4.0	2	3
Row 6	5	5	5.0	5	5	4.0	5	5	5.0	4	5	3.0	4	4
Row 7	4	5	5.0	5	5	5.0	4	4	4.0	5	4	4.0	3	4
Row 8	5	4	5.0	5	4	5.0	4	4	3.0	5	2	4.0	3	1
Row 9	5	4	5.0	1	5	5.0	3	5	4.0	5	5	5.0	5	5
Row 10	4	4	3.0	4	4	4.0	2	2	2.0	4	4	4.0	4	4

	Q29	Q30	Q31	Q32	Q33	Q34	Q35	TIME	AGE	M/F
Row 1	3	3	3.0	3	3	3.0	3	12	35.0	2
Row 2	3	3	4.0	2	4	4.0	3	14	42.0	2
Row 3	3	4	4.0	2	4	4.0	4	12	54.0	1
Row 4	4	3	5.0	5	5	3.0	1	12	47.0	1
Row 5	4	2	4.0	5	3	2.0	4	12	39.0	2
Row 6	4	5	5.0	5	5	3.0	5	6	35.0	1
Row 7	5	5	5.0	2	5	2.0	4	12	44.0	1
Row 8	2	3	4.0	3	5	3.0	2	13	45.0	1
Row 9	5	5	5.0	5	5	5.0	4			
Row 10	3	3	4.0	4	4	2.0	3			

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Appendix F.

Raw Data for Green Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q11	Q11	Q11
												1	2	3	4
Row 1	5	5	3.0	5	4	4.0	4	4	3.0	4	3	5.0	2	4	
Row 2	4	4	4.0	4	5	4.0	4	3	4.0	4	3	4.0	2	4	
Row 3	5	5	4.0	5	4	5.0	4	4	5.0	5	4	5.0	2	4	
Row 4	4	5	4.0	5	5	5.0	5	4	4.0	4	2	4.0	2	2	
Row 5	4	4	4.0	4	4	4.0	4	4	4.0	4	2	4.0	4	4	
Row 6	5	5	4.0	5	4	5.0	4	5	4.0	5	4	5.0	2	4	
Row 7	3	2	2.0	1	4	4.0	1	1	1.0	4	4	3.0	3	4	
Row 8	5	2	3.0	5	4	5.0	5	4	4.0	4	4	4.0	2	4	
Row 9	5	5	4.0	5	5	5.0	4	5	3.0	5	4	5.0	3	4	

	Q11	Q11	Q11	Q12	Q12	Q12	Q12	Q12	Q12	Q12	Q12	Q12
	5	6	7	8	9	0	1	2	3	4	5	6	7	8
Row 1	4	4	4.0	5	4	4.0	4	4	3.0	5	1	3.0	3	4
Row 2	3	4	4.0	3	4	4.0	4	3	3.0	5	2	3.0	3	3
Row 3	4	4	4.0	2	4	4.0	4	4	4.0	5	2	2.0	4	2
Row 4	4	4	5.0	5	5	4.0	4	5	2.0	5	1	1.0	1	1
Row 5	4	4	4.0	4	4	4.0	3	4	3.0	4	2	4.0	4	4
Row 6	4	4	5.0	5	5	5.0	5	5	4.0	5	2	5.0	5	5
Row 7	2	4	2.0	4	2	2.0	4	2	4.0	3	2	2.0	4	4
Row 8	4	4	5.0	5	5	5.0	3	4	4.0	4	2	4.0	4	4
Row 9	4	4	5.0	5	4	4.0	4	4	3.0	4	3	2.0	3	3
Row 10		4	3.0	3	3	5.0	5	5	4.0	5	3	3.0	4	2

	Q23	Q30	Q31	Q32	Q33	Q34	Q35	TIME	AGE	M/F
Row 1	4	3	3.0	5	5	3.0	4	60	40.0	1
Row 2	2	4	4.0	4	4	4.0	2	60	58.0	1
Row 3	4	2	4.0	2	4	4.0	4	60	51.0	1
Row 4	4	1	2.0	3	5	4.0	4	60	43.0	1
Row 5	4	4	2.0	2	4	3.0	3	5	51.0	1
Row 6	5	5	4.0	1	5	2.0	4	60	48.0	1
Row 7	4	5	3.0	3	4	4.0	3	60	50.0	1
Row 8	4	4	4.0	2	4	3.0	4	1	37.0	1
Row 9	3	3	4.0	2	4	4.0	4	26	46.0	1
Row 10	4	4	5.0	1	5	4.0	4	24	37.0	1

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Appendix G.

Raw Data for Pink

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	4	4	3.0	4	4	4.0	5	4	2.0	4	2	4.0	4	2
Row 2	4	5	4.0	5	4	4.0	3	3	4.0	5	4	4.0	5	4
Row 3	5	5	5.0	4	5	5.0	5	5	5.0	5	5	5.0	4	4
Row 4	4	4	2.0	5	4	4.0	4	4	4.0	5	2	4.0	4	4
Row 5	5	5	4.0	5	5	4.0	4	5	5.0	5	3	5.0	1	2
Row 6	2	5	5.0	5	3	5.0	5	5	4.0	5	2	5.0	5	5
Row 7	4	4	3.0	5	5	3.0	4	5	3.0	5	3	4.0	3	4
Row 8	2	4	3.0	4	3	4.0	4	5	3.0	4	2	4.0	4	4
Row 9	4	5	4.0	5	4	5.0	5	5	5.0	5	3	5.0	5	4
Row 10	4	4	3.0	4	2	4.0	3	3	4.0	4	3	4.0	3	4
Row 11	4	4	3.0	4	4	4.0	4	4	3.0	4	4	4.0	2	4

	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
	5	6	7	8	9	0	1	2	3	4	5	6	7	8
Row 1	4	4	4.0	4	2	4.0	4	4	3.0	5	4	4.0	3	4
Row 2	3	5	4.0	2	4	4.0	3	4	4.0	4	4	4.0	3	5
Row 3	2	5	2.0	1	4	5.0	3	5	2.0	4	4	2.0	4	2
Row 4	2	4	4.0	4	4	4.0	4	4	4.0	2	4	2.0	2	4
Row 5	5	5	5.0	5	5	5.0	4	5	4.0	5	4	4.0	3	4
Row 6	2	3	5.0	5	4	5.0	3	5	5.0	5	5	5.0	5	5
Row 7	5	4	5.0	4	3	4.0	4	4	4.0	5	4	4.0	3	5
Row 8	2	4	4.0	4	4	4.0	4	3	3.0	4	4	4.0	3	4
Row 9	5	4	5.0	5	5	5.0	5	5	4.0	5	4	5.0	5	5
Row 10	3	4	4.0	4	4	3.0	3	4	3.0	4	4	4.0	3	3
Row 11	2	4	4.0	4	4	4.0	4	4	3.0	4	2	4.0	4	4

	Q29	Q30	Q31	Q32	Q33	Q34	TIME	AGE	M/F
Row 1	4	4	3.0	3	4	2.0	3 14	27.0	1
Row 2	1	5	3.0	3	5	2.0	3 6	27.0	1
Row 3	5	5	4.0	5	5	5.0	4		
Row 4	2	4	4.0	3	4	2.0	4 6	23.0	2
Row 5	5	4	4.0	3	5	3.0	4 2	38.0	1
Row 6	1	5	5.0	1	5	3.0	5 3	32.0	2
Row 7	5	5	3.0	3	5	3.0	4 3	37.0	2
Row 8	4	4	2.0	2	4	2.0	3 6	27.0	1
Row 9	5	5	5.0	3	5	5.0	5 6	29.0	1
Row 10	4	3	3.0	2	4	4.0	2 3	40.0	2
Row 11	4	4	4.0	2	4	2.0	2 2	29.0	1

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Appendix H.

Raw Data for Orange Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	4	5	4.0	5	4	5.0	4	4	2.0	5	2	5.0	4	5
Row 2	1	2	3.0	5	2	3.0	2	2	1.0	4	1	3.0	1	3
Row 3	2	5	3.0	4	3	4.0	2	4	4.0	4	2	4.0	5	4
Row 4	2	4	3.0	4	3	4.0	4	2	4.0	5	2	4.0	4	2
Row 5	3	5	3.0	4	4	4.0	3	4	4.0	5	4	4.0	4	4
Row 6	2	5	3.0	4	2	2.0	2	2	4.0	5	2	4.0	2	2
Row 7	4	4	2.0	5	2	1.0	4	3	5.0	5	2	4.0	4	2
Row 8	4	5	3.0	5	3	5.0	3	5	4.0	5	3	5.0	5	4
Row 9	3	4	1.0	5	4	4.0	4	4	4.0	3	2	4.0	4	4
Row 10	5	5	4.0	5	4	5.0	4	5	4.0	4	4	5.0	5	5
Row 11	4	5	3.0	4	4	5.0	5	3	2.0	5	2	4.0	4	4
Row 12														
Row 13	3	3	3.0	5	5	3.0	5	5	3.0	5	3	5.0	5	5
Row 14	3	4	3.0	4	4	2.0	4	3	2.0	4	2	4.0	5	4

	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
Row 1	4	4	2.0	4	4	4.0	2	4	2.0	5	5	5.0	4	5
Row 2	2	2	4.0	2	4	4.0	4	2	2.0	4	1	1.0	2	2
Row 3	4	2	3.0	4	4	4.0	4	4	2.0	4	4	3.0	4	4
Row 4	4	4	3.0	3	4	4.0	4	4	4.0	5	2	3.0	3	4
Row 5	3	4	4.0	4	4	4.0	4	4	3.0	5	4	3.0	2	3
Row 6	2	4	5.0	4	4	3.0	4	2	2.0	4	4	4.0	2	1
Row 7	4	2	4.0	4	4	4.0	4	3	2.0	4	2	4.0	2	2
Row 8	5	4	5.0	5	4	4.0	5	5	3.0	4	5	5.0	4	4
Row 9	3	2	3.0	4	4	2.0	4	3	1.0	5	4	4.0	3	3
Row 10	4	4	5.0	5	5	4.0	4	4	3.0	5	5	5.0	4	4
Row 11	4	5	3.0	4	4	5.0	4	3	3.0	5	4	3.0	3	4
Row 12														
Row 13	5	3	5.0	5	5	3.0	4	4	3.0	5	3	3.0	5	3
Row 14	4	4	5.0	4	4	4.0	4	2	4.0	4	4	4.0	4	5

	Q25	Q26	Q27	Q28	Q29	Q30	TIME	AGE	M/F
Row 1	5	5	2.0	5	5	5.0	2	6	40.0	2
Row 2	4	4	4.0	4	4	4.0	1	3	32.0	2
Row 3	3	3	4.0	3	4	4.0	3	1	38.0	2
Row 4	2	4	4.0	3	4	3.0	4	1	29.0	2
Row 5	4	4	5.0	3	5	3.0	3	3	33.0	2
Row 6	1	5	4.0	4	5	1.0	2	7	41.0	2
Row 7	4	4	2.0	4	4	2.0	2	6	28.0	2
Row 8	4	4	4.0	2	5	3.0	3	6	21.0	2
Row 9	3	4	4.0	4	3	4.0	1	7	43.0	1
Row 10	2	4	5.0	1	5	4.0	4	9	40.0	2
Row 11	4	3	3.0	4	4	2.0	3	7	23.0	1
Row 12										
Row 13	3	5	4.0	3	5	3.0	3	4	31.0	2
Row 14	4	4	4.0	5	5	2.0	2	7	28.0	1

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Appendix I.

Raw Data for White Team

	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Q 11	Q 12	Q 13	Q 14
Row 1	5	5	5.0	5	5	5.0	3	5	4.0	4	3	5.0	1	5
Row 2	5	4	4.0	4	4	4.0	2	4	4.0	4	4	3.0	4	1
Row 3	4	5	5.0	5	5	4.0	5	4	2.0	4	5	5.0	3	5
Row 4	4	5	4.0	4	4	4.0	4	4	4.0	4	5	5.0	2	3
Row 5	5	5	4.0	4	4	4.0	4	4	2.0	5	4	5.0	2	4

	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20	Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28
	1	1	1	2	2	2	2	2	2	2	2	2	2	2
	5	6	7	8	9	0	1	2	3	4	5	6	7	8
Row 1	2	4	3.0	5	5	4.0	4	4	1.0	4	4	3.0	3	2
Row 2	4	3	4.0	3	4	2.0	4	3	2.0	2	2	5.0	4	2
Row 3	2	4	5.0	4	2	5.0	4	5	4.0	5	4	4.0	4	4
Row 4	4	4	5.0	5	3	4.0	4	3	3.0	4	5	4.0	4	3
Row 5	4	4	5.0	4	3	4.0	5	5	4.0	4	4	4.0	4	2

	Q 29	Q 30	Q 31	Q 32	Q 33	Q 34	Q 35	TIME	AGE	M/F
	2	3	3	3	3	3	3			
	9	0	1	2	3	4	5			
Row 1	5	4	4.0	2	5	5.0	2	22	23.0	1
Row 2	5	4	4.0	3	2	5.0	4	3	18.0	36
Row 3	5	3	4.0	4	4	4.0	3	18	20.0	1
Row 4	2	4	3.0	1	5	5.0	5	22	43.0	1
Row 5	4	4	5.0	4	4	2.0	4	15	33.0	1

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Appendix J.

Raw Data for Newyork Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	2	2	1.0	1	1	4.0	1	1	4.0	4	5	3.0	4	4
Row 2	2	4	2.0	4	4	4.0	4	4	2.0	4	2	2.0	5	5
Row 3	4	4	4.0	4	4	4.0	2	2	4.0	4	2	4.0	2	4

	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
Row 1	4	4	1.0	2	1	2.0	4	2	2.0	1	4	3.0	3	5
Row 2	4	4	4.0	4	4	4.0	4	4	4.0	4	2	4.0	2	1
Row 3	4	2	4.0	4	2	4.0	3	4	4.0	2	4	2.0	3	4

	Q29	Q30	Q31	Q32	Q33	Q34	TIME	AGE	M/F
Row 1	4	4	4.0	4	4	4.0	1 %120	40.0	2
Row 2	2	4	4.0	4	4	4.0	2 %160	44.0	1
Row 3	4	4	3.0	3	4	4.0	2 %136	63.0	1

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Appendix K.

Raw Data For Temecula Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	4	5	2.0	4	2	4.0	4	3	2.0	4	2	3.0	3	4
Row 2	4	4	3.0	5	4	4.0	2	4	2.0	4	2	5.0	2	4
Row 3	4	2	2.0	4	4	2.0	4	2	2.0	4	2	4.0	2	2
Row 4	4	3	2.0	4	3	3.0	2	4	3.0	2	2	4.0	3	2
Row 5	4	5	3.0	5	4	5.0	5	5	5.0	5	2	5.0	4	4
Row 6	4	4	3.0	4	2	5.0	3	5	2.0	5	3	4.0	2	5
Row 7	4	4	3.0	4	4	5.0	4	4	2.0	4	3	4.0	2	4
Row 8	5	4	3.0	4	4	5.0	5	4	4.0	5	2	4.0	2	4
Row 9	5	4	2.0	4	4	4.0	2	5	4.0	4	3	4.0	2	4
Row 10	5	4	2.0	4	4	2.0	4	4	4.0	4	2	4.0	2	2
Row 11	4	4	3.0	4	4	4.0	4	4	2.0	4	2	4.0	2	4
Row 12	5	5	2.0	4	5	5.0	5	4	4.0	4	4	5.0	1	4
Row 13	4	4	4.0	4	4	4.0	4	4	3.0	4	3	2.0	2	4
Row 14	2	5	4.0	4	4	3.0	5	4	3.0	2	4	5.0	2	3

	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
Row 1	4	4	4.0	4	4	4.0	4	2	2.0	4	4	2.0	3	2
Row 2	4	2	5.0	4	5	4.0	2	4	2.0	4	2	4.0	3	2
Row 3	4	4	5.0	4	4	4.0	4	1	3.0	5	2	3.0	1	1
Row 4	2	1	3.0	1	4	2.0	2	3	3.0	1	3	5.0	3	4
Row 5	4	2	4.0	5	4	4.0	2	4	3.0	4	2	4.0	4	4
Row 6	5	5	4.0	4	5	5.0	4	4	3.0	5	5	5.0	3	3
Row 7	1	4	4.0	4	5	4.0	4	3	3.0	4	5	3.0	3	3
Row 8	5	4	4.0	4	4	4.0	2	3	3.0	4	5	3.0	3	4
Row 9	4	2	4.0	2	2	4.0	2	4	2.0	2	4	4.0	4	5
Row 10	4	4	5.0	5	4	4.0	2	2	2.0	4	4	4.0	2	3
Row 11	4	4	4.0	4	4	4.0	4	4	4.0	5	2	4.0	2	4
Row 12	1	2	4.0	4	5	5.0	4	4	3.0	5	1	4.0	1	1
Row 13	4	4	5.0	5	4	4.0	4	4	4.0	5	5	5.0	2	4
Row 14	4	4	4.0	5	4	4.0	4	4	3.0	4	2	4.0	3	4

	Q29	Q30	Q31	Q32	Q33	Q34	TIME	AGE	M/F
Row 1	4	3	4.0	2	4	2.0	4 14	29.0	2
Row 2	4	4	2.0	2	4	2.0	2 1	21.0	2
Row 3	5	3	3.0	1	5	2.0	1 7	27.0	2
Row 4	5	4	3.0	3	5	2.0	1 7	34.0	1
Row 5	3	2	5.0	2	5	3.0	3 9	40.0	2
Row 6	4	4	4.0	1	5	2.0	4 13	37.0	1
Row 7	4	4	4.0	2	4	3.0	4 14	32.0	1
Row 8	5	4	4.0	4	5	4.0	2 24	31.0	1
Row 9	2	2	4.0	2	4	2.0	4 18	36.0	1
Row 10	4	4	2.0	4	4	2.0	2 4	36.0	1
Row 11	4	4	2.0	3	4	3.0	3 24	44.0	1
Row 12	5	5	1.0	1	5	1.0	3 10	26.0	1
Row 13	5	5	2.0	2	5	2.0	1 42		2
Row 14	4	3	4.0	2	4	4.0	4 12	43.0	1

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Appendix L.

Raw Data for Elcajon Team

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Row 1	5	5	4.0	4	4	5.0	5	4	1.0	5	4	4.0	2	4
Row 2	5	4	3.0	4	4	3.0	2	1	1.0	4	3	4.0	2	4
Row 3	5	3	3.0	4	5	4.0	4	3	4.0	4	4	5.0	3	3
Row 4	4	3	3.0	4	4	4.0	4	4	2.0	4	4	4.0	2	3
Row 5	5	3	3.0	4	5	3.0	3	4	4.0	4	3	5.0	2	3
Row 6	5	2	3.0	3	5	3.0	2	3	5.0	4	3	2.0	2	4
Row 7	5	4	3.0	4	4	4.0	2	4	5.0	4	2	4.0	1	4
Row 8	4	4	3.0	4	4	3.0	4	3	4.0	4	4	4.0	3	3
Row 9	1	2	3.0	4	2	4.0	2	3	3.0	4	2	2.0	4	4
Row 10	5	3	4.0	4	5	4.0	4	4	4.0	5	4	5.0	3	4
Row 11	5	4	3.0	5	5	3.0	4	4	3.0	5	2	5.0	1	5
Row 12	4	3	3.0	4	4	3.0	2	3	1.0	4	2	4.0	1	3
Row 13	4	3	4.0	5	4	3.0	2	4	2.0	4	4	4.0	2	3
Row 14	4	4	3.0	4	4	3.0	4	3	4.0	4	4	4.0	3	3
Row 15	4	4	5.0	5	5	4.0	4	4	2.0	4	3	4.0	3	3
Row 16	5	4	4.0	4	5	4.0	4	4	4.0	4	2	4.0	2	4
Row 17	4	4	4.0	5	5	5.0	5	4	5.0	5	3	4.0	4	3
Row 18	5	4	3.0	4	4	4.0	4	4	4.0	3	3	4.0	3	4
Row 19	4	4	3.0	3	4	4.0	4	3	4.0	3	4	4.0	4	4
Row 20	5	3	3.0	5	4	3.0	4	5	5.0	4	4	4.0	1	3
Row 21	5	4	4.0	5	4	5.0	2	5	5.0	4	4	5.0	1	5
Row 22	5	4	3.0	4	4	4.0	4	5	4.0	3	3	4.0	4	4
Row 23	4	4	4.0	4	4	4.0	3	4	4.0	4	4	4.0	4	4
Row 24	4	4	4.0	4	4	4.0	4	4	2.0	5	3	5.0	3	3
Row 25	4	1	3.0	2	2	3.0	1	1	1.0	2	1	3.0	3	3
Row 26	4	3	3.0	4	4	3.0	4	4	4.0	4	3	4.0	2	3
Row 27	4	4	3.0	4	4	3.0	3	4	4.0	5	3	4.0	3	3
Row 28	4	3	4.0	4	4	4.0	3	3	4.0	3	3	4.0	3	4
Row 29	1	2	1.0	4	1	4.0	1	4	2.0	2	4	2.0	2	4
Row 30	4	3	3.0	4	3	4.0	3	3	4.0	4	3	4.0	2	3
Row 31	5	2	2.0	4	2	4.0	2	2	3.0	1	2	5.0	2	2
Row 32	5	4	3.0	4	4	3.0	4	4	4.0	4	3	2.0	2	3
Row 33	4	4	3.0	4	3	3.0	4	4	2.0	5	4	3.0	2	3
Row 34	2	3	3.0	3	4	4.0	3	2	5.0	2	5	4.0	4	3
Row 35	3	2	2.0	4	2	3.0	2	4	3.0	4	2	4.0	2	3
Row 36	4	4	3.0	4	4	4.0	4	4	2.0	4	2	4.0	2	4
Row 37	5	4	3.0	4	4	3.0	2	3	2.0	4	2	4.0	2	3
Row 38	4	4	3.0	4	4	3.0	3	3	4.0	4	2	4.0	3	3
Row 39	4	4	4.0	3	4	4.0	4	4	3.0	5	3	4.0	2	4
Row 40	4	4	4.0	4	4	4.0	4	4	4.0	5	4	4.0	4	4

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Raw Data for Elcajon Team

	Q 1 5	Q 1 6	Q 1 7	Q 1 8	Q 1 9	Q 2 0	Q 2 1	Q 2 2	Q 2 3	Q 2 4	Q 2 5	Q 2 6	Q 2 7	Q 2 8
Row 1	5	5	4.0	4	5	5.0	5	5	5.0	5	5	4.0	4	2
Row 2	4	4	1.0	3	2	4.0	2	2	2.0	5	3	3.0	3	1
Row 3	4	4	5.0	4	3	4.0	3	4	3.0	3	3	3.0	3	3
Row 4	4	2	4.0	3	2	4.0	4	4	3.0	4	2	2.0	2	3
Row 5	4	5	5.0	3	2	4.0	3	4	3.0	4	3	4.0	3	3
Row 6	2	4	3.0	4	4	4.0	2	2	3.0	5	5	3.0	1	2
Row 7	4	4	5.0	4	4	4.0	2	4	2.0	5	4	4.0	2	1
Row 8	4	4	4.0	2	4	4.0	3	4	3.0	4	4	3.0	3	3
Row 9	3	2	2.0	1	3	4.0	2	3	3.0	4	5	4.0	2	1
Row 10	3	3	1.0	3	1	5.0	3	5	5.0	5	5	4.0	3	3
Row 11	5	5	5.0	5	1	5.0	3	3	2.0	5	3	4.0	1	3
Row 12	3	4	4.0	3	5	3.0	3	3	2.0	5	3	4.0	3	3
Row 13	2	4	4.0	3	2	3.0	2	4	2.0	4	3	4.0	3	3
Row 14	4	4	4.0	2	4	4.0	3	4	3.0	4	4	3.0	3	3
Row 15	5	4	4.0	3	3	5.0	4	4	2.0	5	4	4.0	3	2
Row 16	5	4	5.0	5	4	4.0	2	4	2.0	5	3	4.0	2	4
Row 17	3	4	3.0	3	3	4.0	3	4	4.0	4	3	4.0	3	4
Row 18	3	3	3.0	3	4	4.0	2	4	4.0	4	4	4.0	2	3
Row 19	3	4	2.0	2	3	4.0	3	4	4.0	4	3	4.0	3	4
Row 20	3	3	5.0	3	4	5.0	3	3	3.0	2	3	4.0	3	4
Row 21	4	4	4.0	5	1	4.0	1	4	1.0	2	5	5.0	1	5
Row 22	3	4	2.0	2	1	4.0	4	4	3.0	5	3	4.0	4	3
Row 23	4	4	2.0	2	2	4.0	4	4	4.0	4	4	4.0	4	4
Row 24	3	4	2.0	3	3	4.0	3	4	4.0	5	5	5.0	4	4
Row 25	5	2	3.0	2	4	2.0	5	3	2.0	4	3	3.0	3	3
Row 26	2	3	4.0	4	4	4.0	3	3	3.0	4	2	3.0	3	3
Row 27	3	4	3.0	3	4	4.0	3	3	3.0	4	4	4.0	3	2
Row 28	2	2	3.0	2	3	4.0	3	3	3.0	4	4	4.0	3	4
Row 29	1	4	1.0	2	1	1.0	1	1	1.0	1	3	4.0	3	4
Row 30	3	2	3.0	3	2	3.0	2	3	3.0	4	3	4.0	3	3
Row 31	4	2	3.0	3	2	3.0	2	2	2.0	4	2	2.0	2	3
Row 32	2	3	5.0	5	4	2.0	3	4	4.0	5	4	2.0	2	4
Row 33	4	4	4.0	4	3	4.0	4	4	3.0	4	4	4.0	3	3
Row 34	4	4	3.0	1	1	4.0	2	3	3.0	4	4	3.0	4	5
Row 35	2	3	3.0	3	3	3.0	2	1	1.0	2	3	4.0	3	2
Row 36	4	2	5.0	4	2	4.0	2	4	2.0	4	4	4.0	4	4
Row 37	2	4	4.0	4	1	2.0	2	3	2.0	2	4	4.0	2	4
Row 38	4	2	4.0	3	3	3.0	1	2	2.0	4	3	4.0	3	3
Row 39	3	4	3.0	3	3	4.0	4	5	3.0	5	4	4.0	4	3
Row 40	3	3	2.0	3	2	4.0	4	4	3.0	4	4	4.0	4	4

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Raw Data for Elcajon Team

	Q29	Q30	Q31	Q32	Q33	Q34	Q35	TIME	AGE	M/F
Row 1	2	4	4.0	4	5	1.0	5	2	26.0	1
Row 2	2	3	4.0	4	4	2.0	1	5	26.0	1
Row 3	2	4	4.0	2	5	3.0	3	3	20.0	1
Row 4	4	4	3.0	2	4	3.0	3	18	47.0	1
Row 5	4	3	4.0	3	4	3.0	3	2	24.0	1
Row 6	2	3	2.0	3	4	2.0	1	10	31.0	1
Row 7	2	4	4.0	5	5	3.0	1	15	23.0	1
Row 8	4	3	4.0	2	4	4.0	3	%144	46.0	1
Row 9	4	4	5.0	4	5	2.0	1	76	34.0	1
Row 10	4	5	4.0	3	3	5.0	3	1	37.0	1
Row 11	3	3	5.0	2	5	1.0	1	18	41.0	1
Row 12	2	3	3.0	3	5	2.0	2	2	24.0	1
Row 13	3	3	4.0	3	4	4.0	3	6	26.0	1
Row 14	4	3	4.0	2	4	4.0	3	4	31.0	1
Row 15	2	3	2.0	3	4	3.0	3	60	36.0	1
Row 16	4	3	2.0	2	4	3.0	3	21	31.0	1
Row 17	5	5	3.0	4	5	4.0	3	86	44.0	1
Row 18	3	4	3.0	3	4	4.0	3	85	37.0	1
Row 19	4	4	4.0	3	4	4.0	3			
Row 20	3	4	2.0	5	5	4.0	1	0	25.0	1
Row 21	4	5	2.0	4	5	5.0	1	5	40.0	1
Row 22	3	5	5.0	4	4	4.0	3	12	45.0	1
Row 23	4	4	4.0	4	4	4.0	4	12	55.0	1
Row 24	4	4	3.0	3	4	4.0	4	30	36.0	1
Row 25	3	3	3.0	1	5	2.0	1	15	25.0	1
Row 26	3	4	4.0	3	4	4.0	3	12	35.0	2
Row 27	4	4	3.0	3	4	3.0	3	17	20.0	2
Row 28	4	4	4.0	4	5	4.0	3	12	50.0	1
Row 29	4	3	3.0	4	5	2.0	3	25	24.0	1
Row 30	3	3	3.0	5	5	3.0	2	13	22.0	2
Row 31	4	4	4.0	4	4	2.0	2	6	29.0	2
Row 32	3	1	2.0	4	5	4.0	1		59.0	1
Row 33	3	3	4.0	2	5	3.0	2	12	28.0	1
Row 34	5	4	4.0	4	4	4.0	2	53	26.0	1
Row 35	3	3	3.0	3	4	2.0	1	11	28.0	1
Row 36	4	4	2.0	3	4	4.0	3	15	61.0	1
Row 37	3	4	4.0	4	5	3.0	2	9	24.0	1
Row 38	3	3	4.0	3	5	3.0	3	4	19.0	1
Row 39	3	4	3.0	3	3	3.0	3	15	56.0	1
Row 40	4	4	4.0	4	3	4.0	4	24	27.0	1

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