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QUALITY CONTROL CIRCLES AND THE UNITED STATES

BY

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A CULMINATING PROJECT PRESENTED TO THE

FACULTY OF THE GRADUATE SCHOOL OF THE

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ABSTRACT

The Quality Control Circle attempts to solve management and production problems using a participative management style. This study represents an analysis of how the Quality Control Circle emerged in Japan and efforts in the U. S. to Americanize the concept. It is important to note that participative management represents a single management style. This style is not recommended for every organization. Organizations must select the appropriate management style to accomplish conceived goals and the style must fit within their particular corporate culture. The Quality Control Circle is an outgrowth of participative management and is not all inclusive of participative management ideals.

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CHAPTER I

INTRODUCTION

The Quality Control Circle is a Japanese phenomenon. An outgrowth of World War II reconstruction, a new concentrated effort in quality occurred in Japan and the Quality Control Circle emerged. Since the topic of this paper is Quality Control Circles and the United States, it is necessary to view the development of Quality Control Circles in a comparative light, emphasizing the culturally divergent societies of the United States and Japan. A thorough understanding of the Japanese quality developmental standards is mandatory to comprehend the concept of the Quality Control Circle. Another problem is the attempt to Americanize this Japanese technique. This particular aspect will be a primary consideration and the basis for a review of the major management industrial trends in the United States. The Quality Control Circle is an outgrowth of participative management and is an element in the overall trend in this area. Analysis will be centered on how the Quality Control Circle is managed as part of the overall system of participative management. Various applications in United States industry will be examined and reviewed. Summary will include a general overview and a specific plan of action to successfully implement the Quality Control Circle concept.

CHAPTER II

HISTORICAL DEVELOPMENT OF THE QUALITY CONTROL CIRCLE

Before developing a discussion concerning Quality Control Circles (QC Circles) in the United States, some background information is appropriate. First, the concept of QC Circles evolved from Japan's desire to shake their reputation of a country producing inferior industrial goods. "In the 1950's, General MacArthur sent a quality control expert, Dr. W. Edwards Deming, to work with the Japanese people on improving quality control. Combining Deming's suggestions with the theories of prominent behavioral scientists, Dr. Kaoru Ishikawa organized the first quality circles in 1962. Ishikawa was an engineering professor at Japan's Tokoyo University, and the circles were sponsored by the Union of Japanese Scientists and Engineers (JUSE)."[1] "As of December, 1979, there were more than one hundred thousand QC Circles officially registered with the 'QC Circle Headquarters of the Union of Japanese Scientists and Engineers.' This figure does not include any of the estimated one million additional unregistered circles."[2]

After World War II, the Japanese focused on teamwork, a new beginning, and building a productive, responsive, and high quality industrial base: "The Japanese 'economic miracle' is 30 years young--and it shows few signs of impending old age. 'Made in Japan,' once the mark of shoddy, copycat merchandise, is now a badge of quality on everything from automobiles to videotape recorders. Even in the troubled 1980's the Japanese

juggernaut seems unrelenting. The United States and much of Western Europe are in recession, but Tokoyo's trading companies and manufacturers continue to grow, pushing exports to record levels and offsetting their huge energy bills with impressive gains in productivity."[3] A group of islands the size of Montana, with few natural resources, has become one of the most powerful industrial complexes known. One of the primary reasons is sheer determination and tenacity of the Japanese; another reason is the development of the QC Circle.

CHAPTER III

JAPANESE VERSUS AMERICAN CULTURE

How did Japan turn chaos after World War II into an economic system envied throughout the world? It is important to first understand the social system in Japan. In development of a social system we first observe behavior, then we analyze behavior. From this analysis, beliefs about behavior are formed. Out of the observation, analysis, and belief formation, expectations develop. Then rules and norms are set up to make our beliefs come true. This is the culture. Out of the culture the social system evolves. Japan has always been a nation of strict castes. Older are over younger, the men are superior to the women, and wealthy superior over the poor. In this system there is also a definite hierarchy or pecking order. Politically, it is an oligarchy. Japan has always been ruled by the chosen few. The social system evolved from centuries of cultural mores. Each group's members know where they are in society, how far they can expect to go, and what their life will be like. In no way does this mean competition is non-existent, nor the Japanese people are sedentary and apathetic. In fact, it's quite the contrary. Out of this social system the Japanese have stressed the welfare of the group. Goals are group goals and individual needs are subservient to the group. In Japan three of the most prized personal values are obligation, duty, and endurance. Again these values are group oriented in implementation.

In contrast Americans still suffer from the Horatio Alger syndrome, where one can become all rich and powerful. The United States is a younger society based upon democratic principles and without a strict caste system. Arguments can be made that castes do exist but for the purpose of this discussion they will not be addressed. Hierarchies are existent only where they are created, by law, by practice, or by an organization itself. The older person in America is seldom more influential because of his age and the man is in competition with the woman. In the United States we have weak group expected behavior. We work hard for ourselves. The Japanese work for the welfare of the group.

Regarding the work ethic, Japan and the United States are similar. In the United States we believe that work is imperative and our identity is determined by work; the Japanese agree. In the United States idleness is a sin; so it is in Japan. In the United States work is creative; the Japanese concur. Americans believe work is a means to success, to get ahead; so do the Japanese. Americans maintain work is a calling because of our religious heritage; the Japanese do not.

Socially, the Japanese and American cultures are divergent. What has necessarily worked for one society may not work in another. The QC Circle is a Japanese phenomenon. It works well in Japan because the concepts of the QC Circle and the social concepts of the Japanese people fit. The QC Circle is a group activity and the Japanese are group oriented in tradition.

Their hierarchy supports the circle in its place within industry without fear of boundaries being encroached upon. Most of all Japanese personal values of obligation, duty, and endurance fit quality circle participation.

Since our work ethic is similar, it is basis for formation of QC Circles in the United States. Some argue for the QC Circle because of its success in Japan. This is an easy assumption and one that neglects the social interface between the two countries. Understanding of the divergent cultures of the United States and Japan is a step in comprehension of the concepts underlying the Japanese QC Circle.

CHAPTER IV

INDUSTRIAL MOVEMENTS IN THE UNITED STATES

Is the QC Circle the latest panacea for United States management or is it a valid, workable concept? What other trends have we grasped onto throughout industrial development in the United States?

The first major industrial movement was called industrial democracy. Spurred on by World War I it took shape in the early 1900's. "Woodrow Wilson, writing from the Paris Peace Conference in May 1919, urged Congress that the labor question was the most pressing concern before the nation and that it would fall only to 'a new form and spirit to industrial organization'--a 'genuine democratization of industry' that would give all those who worked the right 'to participate in some organic way in every decision which directly affects their welfare or the part they are to play in industry.'"[4] This movement never received serious attention but it did prompt the formation of committees to look into worker complaints.

Another concept that was to encourage the work force beyond wages was profit sharing, often in the form of stock option plans. "Between 1886 and 1889, when profit sharing articles could be found everywhere in the middle-class press, some thirty firms installed profit sharing plans, the Proctor and Gamble soap-works outside Cincinnati the most prominent among them."[5] This failed miserably but continued to struggle along through the 1920's. The common laborer needed immediate gratification and did not relate to investments in the future. When the dividend was

received, it was unrelated to anything immediate and the connection between involvement in the company and concern for the worker was seldom forthcoming.

Various other management techniques have come and gone. The 1960's brought us a new awareness and involvement in all facets of industrial techniques. New organizational development programs flourished as well as sensitivity training. The early seventies ushered in the quality control circle with the same promises as earlier management programs. Promoters chanted the same old song. Bring decision-making closer to the problem. People involved are more committed. All of this will end in increased productivity, improved moral, and greater communication.

Few pause to question the obvious. Does a committed employee produce more? Do people want to be involved in the decision process? We have to ask where we are now before we know where we are going. We have to begin by setting long-term goals especially with employees. At present, most organizations fit people to the job. We must begin by fitting the job to the person.

CHAPTER V

QUALITY CONTROL CIRCLE DEVELOPMENT

The Japanese developed the QC Circle and it fits their specific culture and their people. "What is unique about the Japanese productivity system is not the ingredients or pieces that go into the system, but how the pieces are put together. Productivity is like a jigsaw puzzle--all the pieces must be fitted together before the entire picture can be seen. Japanese companies seem to have mastered the art of putting together a workable productivity system."[6]

One of the primary reasons for Japan's workable productivity system is their emphasis on quality, especially the QC Circle.

"A QC Circle is a voluntary group of perhaps eight to twelve employees who perform similar or related work. The members of the circle meet on a regular basis--perhaps one hour per week; ideally on company time--to identify, analyze, and develop solutions to a variety of work-related problems they experience."[7]

OBJECTIVES OF THE QUALITY CONTROL CIRCLE

It is important to differentiate between the objectives a QC Circle has and has not, how it fits into the total management sphere, and what its primary purposes are.

It's important also to realize that Japan's concept of QC Circles differs from the United States. "Japan describes the program to potential members as a means to increase the

skills and knowledge of the people, while U.S. participating companies basically view and proclaim circles as a way to increase productivity."[8]

"Supervisors of experienced QC Circle participants serve as group leaders. Workers share ideas with no criticism allowed. The QC Circles concept is based on this fact--responsibility for suggestions affecting the workplace rests with those performing the work, not management. Unlike many programs designed to improve productivity, QC Circles start at the bottom; thus, hourly employees feel that this is their program and their responsibility."[9]

QC Circles can accomplish the following objectives:

- Quality becomes a primary objective rather than a side issue. Quality is identified so that positive actions can be taken.
- Quality is defined and measured. Both statistical (e.g., scrap rate limits) and general (consumer response) quality measurements can be formed.
- Changes in quality can be monitored. This allows a problem to be identified in its early stages, and the source isolated.
- Solutions to problems can be more easily reached, so quality awareness and the problem-solving process is instilled at all levels throughout the company.[10]

QC Circles can get off on the wrong foot or stray in the opposite direction intended. Therefore, it is strategic to point out what QC Circles are not.

QC Circles are not simply a suggestion program. It is a technique whereby problems are identified, priorities set, causes uncovered, and solutions proposed and (where possible) implemented.

QC Circles are not established to respond to particular problems. It is an ongoing process that continues whether or not a specific problem has been found or solved. This unique quality of QC Circles is one of it major assets.

QC Circles are not an Organizational Development (OD) effort. OD is much broader in scope and aimed at general issues such as communication, organization, working conditions, etc.

QC Circles are not a form of participative management where workers operate at higher levels within the organization. Instead, they involve decision-making efforts only at the level applicable to the work group. Thus, issues such as pay, working conditions, etc., are not addressed.[11]

MISCONCEPTIONS CONCERNING QUALITY CONTROL CIRCLES

"Although the QC Circle is well-known in Japan, the concept as it is understood in Japan is still relatively unknown in the U.S."[12] Two misconceptions persist concerning the QC Circle. "First, the study group does not consist of quality control specialists with extensive prior technical training."[13] Members of the quality circle include rank-and-file personnel and managers. Most of their technical expertise occurs once they become members of the QC Circle. "Some see the inclusion and training of foremen, who usually serve as circle leaders, as the most innovative characteristic of the Japanese approach to quality control."[14]

The second misconception is that problems are strictly related to quality control. "According to a 1979 survey, the kinds of projects being conducted by over five hundred of the QC Circles in Japan include (in order of importance) cost reduction, product quality control, improvement of workshop facilities, safety precautions, employee morale improvement,

pollution control, and continued employee education."[15] The Japanese believe that involvement in these areas creates a oneness that eventually results in higher productivity.

ORGANIZATION FOR QUALITY IN THE UNITED STATES AND JAPAN

The organization for quality has taken different directions in comparing Japan and the United States. First, the Japanese concentrate on top down management with few quality specialists. The quality concentration is dispersed among the work force through QC Circles. Little need exists for quality control specialists or quality control departments. In the United States we rely heavily on quality specialists and highly trained quality personnel. The concentration is oriented to the individual rather than the group. "The trend has been to formally planned systems that define departmental responsibilities as well as setting up the procedures, methods, data networks, and so on to carry out the plans. Wide use is made of central quality control departments staffed with quality specialists."[16]

Another important element in the organization for quality is how persuasive the total quality idea is in society. Paul Torrance from the University of Georgia maintains that quality has come a way of life in Japan. On visiting schools he made the following observation:

> In every preschool, primary school, and high school, I visited in Japan, I saw no problems of disorder, vandalism, or destruction. Even in the poorest (economically) school I visited, the children displayed obvious pride in their achievements in the visual arts, music, etc., the flowers and animals they cared for,

> the cleanliness and orderliness of the school building and grounds, the playground equipment, and the like. In a class of four year olds, I saw a committee (group of four children) rearranging the classroom for a new activity with no assistance from the teacher.[17]

All through their educational training, the Japanese children receive instruction in group related activities. Teamwork is prized as a vital ingredient to master as a member of Japanese society.

> During a two hour period my wife and I visited sixteen groups of fifteen each in their weekly creative problem solving time. These groups work for a half day each week to solve creatively some problem of the school. The first group we visited was doing research on the health habits and problems of the students in the school. A second group was working on problems of improving the playing fields and playground. A third group was working on problems of improving the care of the school animals.[18]

Quality is all pervasive in Japan. The drive for being the best, doing the best, and becoming the best is powerful. We in the United States lack the total commitment to quality as a way of life. In incorporation of the Japanese QC Circle on our ground we must be aware of the difficulties and of how and why it is successful in Japan. Only with this understanding can we begin to comprehend what the QC Circle really is.[19]

CHAPTER VI

PARTICIPATIVE MANAGEMENT AND THE QUALITY CONTROL CIRCLE

It is important to realize from the onset that development of a QC Circle program is more than a minor commitment. To succeed, considerable preparation and nuturing is needed. According to Perry Pascarella, executive editor of Industry Week, "QC Circles will be of little value unless the practitioners know the processes to which they are being applied, what is being produced, the pressures facing top management, and what the goals of the organization are."[20] He continues with a warning. "The 'movement' could be hurt by outsiders who rush in looking for QC Circles to deliver quick injections of profitability improvement. Although many of the meeting's attendees could point to quick, visible improvements, they insist that to endure the QC Circle concept depends on long-term commitment by management and an investment in training people--workers and executives alike."[21]

QC Circles are not a fad but an overall determination on the part of management to develop a conscious and concerned work force. "Philosophically, the concept is firmly grounded in the behavioral sciences. It is consistent with many of the management theories of Maslow, Herzberg, and McGregor, which are based on the belief that employees must be responsible for their own work and work quality. It is generally accepted that the absence of this sense results in significant motivational problems among employees. QC Circles can impart that sense."[22]

We have developed a work force that is unresponsive in the United States. The employer is "the boss," "the autocrat," "the other side." Many of us work at positions we dislike, yet make little effort to change the stigma. QC Circles are not the total answer but are a means to improve overall employee-employer relations. The worker agrees. "The QC Circle concept is also the answer to the complaint voiced most consistently be American workers as reported in a study supported by the U.S. Department of Health, Education, and Welfare in the early seventies. This research found that American workers complained that their superiors failed to listen to them when they made suggestions for improving work processes. According to this study, 'workers feel that their bosses demonstrate little respect for their intelligence; superiors are said to feel that the workers are incapable of thinking creatively about their jobs.'"[23]

QC Circles are a beginning, a step in the right direction. Best selling author Richard Tanner Pascale made the following observations: "Organizations in this country, explained Pascale, generally do a bad job of recognizing that people need that link between themselves and their work. A higher order or purpose is intended. 'And if that is understood and identified, and if an organization serves those things, it harnesses a tremendous power for commitment.'"[24]

QC Circles are not suited for many American industries. First management has to decide to make the investment in training, development, time, and proceed with an open minded approach.

participatory management is time consuming, difficult, and basically just hard work. All aspects involved in QC Circle formation should be carefully analyzed and discussed and an implementation plan initiated before action is taken. "QC Circles themselves, in which small groups of workers meet to solve problems, seem simple to copy, but in Japan they grew out of a value system that is in direct conflict with our western attitudes."[25] This is important to realize, but not to say QC Circles can not succeed in the U.S. It is merely stating that the approach we must take has to be in harmony with our culture and management style. "While QC Circles can work in any type of organization, the company structure must be supportive in order to maximize results. There are many key factors that contribute to the success or failure of QC Circles. Before attempting to incorporate Circles, a company must closely examine its internal structure to see what existing factors could help a QC Circle program work and what factors could hinder its success."[26]

NON-SUPPORTIVE FACTORS OF QUALITY CONTROL CIRCLES

There are "non-supportive factors that can hinder the success of QC Circles."[27]

Key factors that can hinder the success of QC Circles include:

> Organization systems that work against QC Circles. Examples include: communication channels that prohibit the free flow of data, discipline procedures that use threats of punishment as a motivator, and reward systems that emphasize short-term rather than

participatory management is time consuming, difficult, and basically just hard work. All aspects involved in QC Circle formation should be carefully analyzed and discussed and an implementation plan initiated before action is taken. "QC Circles themselves, in which small groups of workers meet to solve problems, seem simple to copy, but in Japan they grew out of a value system that is in direct conflict with our western attitudes."[25] This is important to realize, but not to say QC Circles can not succeed in the U.S. It is merely stating that the approach we must take has to be in harmony with our culture and management style. "While QC Circles can work in any type of organization, the company structure must be supportive in order to maximize results. There are many key factors that contribute to the success or failure of QC Circles. Before attempting to incorporate Circles, a company must closely examine its internal structure to see what existing factors could help a QC Circle program work and what factors could hinder its success."[26]

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> Organization systems that work against QC Circles. Examples include: communication channels that prohibit the free flow of data, discipline procedures that use threats of punishment as a motivator, and reward systems that emphasize short-term rather than

long-term results. QC Circles require an organizational system that emphasizes long-term results and positive reinforcement.

Lack of top management support. QC Circles will not work without the full support and commitment of top management. When Circle members have doubts whether management sincerely believes in the effort, or they feel that management is more interested in output than quality, they will not put forth the needed effort.

Autocratic organization. When the company works strictly through an autocratic philosophy, QC Circles won't work. Top management must be willing to introduce a more favorable climate--one that instills support and reinforcement of the worker's abilities. Managers must commit resources to develop employees, build teamwork, and open communication channels. In short, QC Circles require that management dissolve its autocratic philosophies and manage more by participative principles.

Lack of middle management support. Most important to QC Circles is middle management support. Middle managers must not perceive QC Circles as a threat to their authority, or they will take steps to undermine the Circles. Middle managers will react negatively in other ways to QC Circles when they don't fully understand them. They may complain that they don't have enough time to be involved. And when they are not willing to spend the time to learn, they certainly won't spend the time to make it work.

Other signs of middle managers' nonsupport are: They feel improved productivity can only result from improved technology or management guidance; they believe negative relationships between managers and employees are desirable; and/or they plan to use the Circles to push their own ideas and projects.

Poor selection of facilitators/leaders. A facilitator is necessary to oversee the QC Circle work groups and help solve such problems as group boredom, apathy, conflicts, rivalries, low performance, and lack of communication. Left unattended, these problems can lead to failure.

However, it is important that the facilitator is not perceived as a puppet of management. He or she must be well trained, credible, and have the time and support to properly carry out the needed action. Circle leadership must be carefully chosen as well. Without proper leadership, internal conflicts can dominate a Circle. A well-trained leader can allow members to vent their feelings through constructive activities.

Union opposition. Unions often perceive QC Circles as just another attempt to get more out of workers without giving more in return. They also fear that the resulting teamwork between managers and employees may reduce the need for a union. To overcome these fears and perceptions in unionized companies, include a union representative when planning and implementing QC Circles.

Inadequate planning. Planning is critical to QC Circles. QC Circles must be fully explained to all Circle participants before implementation. The aid of professional assistance may be necessary. Once QC Circles are put into effect, coordination is ongoing. Without this, meetings will not be held regularly, when held there will be no prepared agendas, and results will be minimal. Normally, to overcome these potential problems, a steering committee is formed. It defines goals, policies, and, when necessary, provides support.[28]

Clarification of non-supportive factors is essential in identification of the conditions for QC Circle growth. Proper environment or lack of it is a major determinent on whether or not a QC Circle program will work in an organization.

THE QUALITY CONTROL CIRCLE AS COMPARED TO OTHER PROBLEM SOLVING GROUPS

Other factors hindering the success of QC Circles include misidentification of the groups central purpose. Many use the term QC Circle interchangeably with task force or problem solving. This creates more confusion. "There are major differences between the way QC Circles operate and the way task forces or problem solving groups operate."[29] QC Circle participation is voluntary. Members of a task force are usually appointed. "Participants in a QC Circle are usually from the same group because the development of relationships is an important part of the QC Circles' program."[30] Task force members are chosen from specific areas to insure a wide spectrum of representation. QC Circle members usually work together over a long period of time. Task-force groups meet infrequently and limit meetings to one or two hours. Another distinction between QC Circles and the task force is the level of experience. QC Circles do not require any prior knowledge or training, where the task force concentrates on the highly skilled to bring results. "Another difference is in project selection. In a QC Circle, the members themselves select the project they work on so that they can learn how to do an effective job of selecting projects as well as analyzing and carrying them out. In a task force the project or objective is usually selected by management."[31] "The goal of QC Circles is to facilitate joint labor-management problem solving. Employees are encouraged to identify problems in their own areas and to recommend ways of solving them."[32]

A camaraderie is developed between management and the workers if the Circle is implemented correctly. In some organizations QC Circle implementation is not recommended. Organizations must be honest and evaluate whether or not they possess the supportive system required to implement QC Circles. If not, step one is to develop the management techniques that will enable the QC Circle to function. This process might involve a change in overall philosophy, or just a redirection of efforts. Unless total acceptance and cooperation is evident on the part of upper management, QC Circles will fail. This does not mean that a "Z" organizational structure is required. A participatory management style is a style that encourages involvement in the daily operations and trust on the part of the worker toward management and vice versa.

> We have the most wonderful agent of change there is, and that is the competitive marketplace. We have exhausted the gigantic subsidy of research and development created during World War II and which much of American industry has been living off for the last 30 years. We have exhausted the subsidy of cheap energy, air and water. We no longer, in effect, can increase our national wealth by using up these cheaper sources. Now we are at the point where the only way we are going to cause the size of the economic pie to increase is to increase worker productivity. That is the simple fact. Skill in organizing and managing people will have a bigger effect on the economic success of organizations than anything else.[33]

Before a management commitment to adopt QC Circles, a new view of the work force is needed. We are too anxious in America to lay blame. "American managements consistently blame

their workers for the problems occurring at the work place. Instead of probing into the true roots of problems, they have used their workers as convenient scapegoats."[34] If this was true, how could one "explain that the quality of goods and workmanship vastly improved when the Japanese took over Motorola?"[35]

We have a management gap. It's people as well as process centered. We still use the old K.I.T.A. (Kick in the Ass) approach even though its effect is questionable at best. A participative style "assumes that the real cause of problems is unknown and that only by providing employees with adequate tools and techniques for quantifiable problem solving will it be revealed."[36] Participative management is initiated from the top down. It is a climate that is all pervasive in the organization, a climate that encourages interaction without reproach and an open communications system.

> In Japan the company supports QC Circle activities by providing materials and equipment necessary for workers to conduct experiments, arranging QC Circle meetings on company premises and during working hours, sponsoring contests, organizing visits to other companies, and sending its managers and foremen to training sessions conducted by JUSE.[37]

The Quality Control Circle is aimed at bringing decision-making closer to the people. Through this technique increased productivity, improved morale, and greater communication can be acquired. Every organization maintains a management system, some of which are not participative or conducive to quality circle formation. Analysis of ones present condition and style must be in accord with QC Circle principles or failure is imminent.

> QC Circles are a participative, problem-solving process which are not appropriate for every organization, in spite of what the literature and major QC Circle consulting firms say. While it is true that the process can work in any type of organization, the management practices, climate, and culture of an organization must be at least somewhat supportive of the participative ethic. A certain minimum level of "readiness" needs to exist in order to give QC Circles a fair chance to survive.[38]

One of the primary reasons for QC Circle failure is not having the proper management climate. QC Circles are not for every organization and will not work unless the system supports its ideals.

IMPLEMENTATION OF THE QUALITY CONTROL CIRCLE

Once it is decided to implement QC Circles, several points must be considered. The voluntary nature of QC Circle membership must be primary and pressure to join is not conducive to the general operation of the group. People must participate willingly and the power of teamwork to solve problems must be the driving force. Objectives of the group should be in harmony with company goals and objectives. "Top management must support and encourage each and every QC Circle, regardless of how many or how few are in operation. Outstanding performance must be given recognition and reward (although not necessarily monetary incentives). Most important, any increases in productivity must not threaten jobs. Finally, failures must be accepted and patience--miracles should not be expected overnight."[39]

Once the management commits time, money, and support, QC Circle implementation can begin. Management needs to "become people builders rather than problem solvers. The first perspective is people building. The development of employees at all levels is the first and most important priority of the QC Circle program."[40] The beginning level for training must be at the first-line supervisory position. The idea must be sold to management personnel at this level before a pilot program can be initiated. Instruction at this level should include group training strategies, brainstorming techniques, data gathering measures, use of pareto analysis, cause-and-effect analysis, histograms, scatter diagrams and any other QC Circle instructional tool specific to the organization.

Group training strategy emphasizes the group as an element in the overall management sphere. The first line supervisor needs to cultivate listening skills, a receptive attitude toward suggestions, and an openness for all ideas presented. Most important of all, he needs to become a motivator, a developer of group awareness, and a careful and thoughtful group leader, who allows a free flow of thought without developing a sense of frustration, resentment, or anger. At present, most supervisory personnel direct, dictate, and schedule without employee intervention. The basis for QC Circles formation is opposite of this. The supervisor must become a promoter of group ideals, a director of group thought, and coach of a team where each participant has a say.

Brainstorming is a group technique where group members freely voice their ideas in solving a particular problem. Frequently, this exchange sparks excitement and brings to light ideas that are unique and original. In using brainstorming, all ideas are accepted, no matter how wild. Criticism of ideas or ridicule is not permitted. Ideas exchanged are usually recorded for future evaluation.

Data gathering measures might include just check sheets or simething as sophisticated as a computer. Before analysis of a particular problem can occur, data concerning the problem must be accumulated.

Cause-and-effect analysis usually occurs after the particular problem has been identified.

> A "cause-and-effect" diagram (also called a "fishbone" diagram), allows the circle to review all of the possible causes in a systematic and analytical manner. This diagram divides all contributing causes of the problem--such as improper scheduling of work, lack of training, wrong equipment, or faulty materials--into simple categories and then shows their relationship to the problem. The most commonly used categories are the familiar "4m's"--manpower, machines, methods, and materials--but others can be tried that are pertinent for a specific problem.[41]

Pareto analysis is a technique that analyzes the data collected and ranks the data in order of importance. "Pareto analysis follows the fule that 80 percent of the problems are caused by 20 percent of the work."[42] Emphasis is concentrated on the key elements (the 20 percent) and this becomes the point of attack for problem resolution.

Histograms and scatter diagrams are other analytical tools used by Circle members. Histogram is a graph, "a representation

of a frequency distribution by means of rectangles whose widths represent class intervals and whose heights represent corresponding frequencies."[43] A scatter diagram usually has two variables, where the differences are plotted. This is useful in identification of the various components of a problem.

First-line management personnel should have a working knowledge of the above techniques before any QC Circle formation. Their training sessions should include actual practice in the techniques as well as open discussion on what their objectives are and are not as QC Circle leaders.

This instruction is either handled by a member of the organization specially trained in QC Circle formation or a consultant. If the individual is within the organization, he is usually called the facilitator. The facilitator begins by conditioning the work force. "Unless employees have a complete understanding of the concept, purpose and benefits, they may feel they are being manipulated by management."[44] "This individual is also responsible for training the Circle leaders--the supervisors of the work units--as new circles are formed."[45]

The facilitator may use video tapes provided by either the Quality Circle Institute or the International Association of Quality Circles. Each organization provides a variety of services, including video tapes, books, instructional specialists, and other learning aids. An informed and concerned inner plant facilitator is the best idea where practical. A consultant is not always familiar with the culture of the organization and may not have its best interests in mind. Several large

corporations however, have used a combination of both, especially where interface with union officials was necessary in the initial formation of the QC Circle. "Crucial to the success of QC Circles is the facilitator who organizes, trains, and works with the circles. The facilitator is also responsible for coordinating the work of the various circles, and in many organizations cooperates with a steering committee that has general coordinating responsibilities for the circles."[46] Therefore, if any new position is required to support and promote QC Circle development, it is the position of the facilitator.

The facilitator is the circle spokesman. He formulates company policy regarding QC Circles by working with a group of upper management, usually referred to as the steering committee. His effort however, is the motivating force in QC Circle implementation.

> The QC Circle facilitator carries the burden of circle success on his or her shoulders. The facilitator trains the leaders, initiates new circles, attends circle meetings, counsels leaders to improve their skills, keeps all levels of management informed, coordinates resources, is a member of and meets with the steering committee, arranges meeting facilities, promotes the growth of the program, and facilitates the interpersonal process issues within the circle. Selection of a competent person to handle these responsibilities is one of the first tasks for the steering committee.[47]

The steering committee is the management group who get the QC Circle off the ground. They initiate instructional methodology, interface with other management groups, and select the facilitators who will provide impetus for QC Circle program development. Once the basic structure is in existence,

training of facilitators and circle leaders complete, emphasis on development can occur. Again, this is a grass roots structure, based upon people involvement in a day-to-day business environment. The only contact with the circle most workers have is through the circle leader. This contact must be positive and professional.

> The circle leader has the responsibility for the actual internal actions of the group. Good circle leaders are just as important to the success of QC Circles as the facilitator. Since most leaders will initially be line supervisors, they should already possess the necessary expertise within their specific work area. However, they usually need additional training from the facilitator in group leadership, theories of learning, communication, motivation, work measurement, and problem solving.[48]

Once on the move, the circle leader will help the group select the QC Circle project. Present conditions will be analyzed first in order to establish goals. The circle leader will promote quality control activities through the use of pareto diagrams and cause-and-effect diagrams. "Pareto diagrams and cause-effect diagrams are not even known to many American engineers--much less used. The key here is managements emphasis on training in the use of these techniques and encouraging their use."[49]

Management has now developed the steering committee, appointed facilitators, and conducted instructional seminars. The actual QC Circle formation is now ready to begin. Membership in each group should be limited to under ten members. Circle leaders are chosen from first line supervisory personnel. They are acquainted with the people, have a working knowledge

of QC Circle techniques, and are the first to benefit from any positive action. The group meets for about one hour per week. First objective is to identify problematical areas and then to develop solutions by using the analytical tools of brainstorming, cause-and-effect diagrams, pareto analysis and other analytical measures. The last step in the process is recommendation to management of the QC Circle's findings.

EXAMPLES OF QUALITY CONTROL CIRCLES IN THE UNITED STATES

Several QC Circles will be discussed in detail. The first is at the Norfolk Naval Shipyard (NNSY), located in Portsmouth, Virginia. The shipyard employs more than 10,000 personnel. It is the oldest government shipyard in the continental United States, and the largest shipyard operated by the United States Navy to overhaul and maintain ships."[50] The management set into action the steering committee, who in turn appointed coordinators to train the facilitators. The program followed basic QC Circle format with the exception of the coordinator. Three areas were selected for pilot programs. They were production, maintenance and supply. For the first several months the program suffered growing pains with the collapse of several QC Circles. Failure was traced to poor QC Circle leadership training, causing disinterest, confusion, and frustration. Consultants were hired to beef-up the training. Instructional manuals, audio-visual materials, and careful guidance provided the necessary lacking ingredients.

> QC Circles at NNSY generally meet during working hours, usually for an hour, near the work site or shop. The circle leader conducts the meeting and directs the discussion. Once in operation, the circle identifies problems that affect it, recommends solutions, and (with management's approval) implements the remedial actions. Usually, a QC Circle identifies a number of problems with each circle member participating. Then the circle, as a group, prioritizes the problems and selects one for analysis.
>
> Someone is chosen to keep minutes of previous circle meetings and record specific actions for individual circle members to work on between meetings. A shipyard facilitator is present to ensure that the circle remains focused on the problem and to offer encouragement during difficult situations.[51]

After one year of operation, savings climbed to over a quarter million dollars. One of the QC Circles in the maintenance division suggested a new tool distribution system that involved reorganization of the tool room but reduced waiting time of the tool crib window from 12 minutes to five minutes. This time savings, when multiplied out, saved over $200,000 in reduced man hours. Electrical sub-stations at the facility were cumbersome to move around. The production QC Circle in this particular group suggested acquisition of new electrical dollies to facilitate movement. Time saved in moving the sub-stations from place to place was cut 50%.[52]

Once off the ground the QC Circle program at NNSY served as a major contributing factor in smoother operating conditions. The program developed an enthusiastic following and continues today. "After the first year, the QC Circle program at the shipyard had a "benefit-cost" ratio of 4 to 1."[53]

Western Publishing Company, of Racine, Wisconsin, was one of the first organizations in graphic arts to implement QC Circles.

> At Western Publishing, the program started out as a very small one-circle pilot operation in November 1979. In April 1980 it was expanded, with the ultimate goal of establishing about 20 circles in the company's plant in Poughkeepsie, New York. That facility, which prints by web and sheetfed offset and letterpress, employs about 1,000 persons.[54]

One QC Circle studied film usage and after several months recommended changes in purchasing and routing to move film more expediently and eliminate waste. Savings on this recommendation amounted to $27,000.[55] This same group went on to evaluate "film preparation and plate making."[56] The recommendations to management for improving this area accounted for an annual savings of $21,000.[57]

Western Publishing found the intangible benefits even more appealing. From the inception of the QC Circle idea, union leaders were involved in the development. What turned out was a warm and congenial union-management relationship after many years of discontent. Their cost-benefit ratio on QC Circles would not be released, however the program continues.

Mercury Marine, one of the largest producers of outboard motors, has recognized similar success. The QC Circle program, "started in 1978, had the following objectives set by the steering committee: improve quality; reduce waste; better communication; learn group problem solving; and work satisfaction."[58]

Pilot programs were started at their plants in Wisconsin and Florida. After initial success, QC Circles were extended plant wide. One group in the machine shop studied costly deburring operations and recommended other material to be used in the casting process that would eliminate burrs and not compromise product quality. Their recommendation was studied and implemented by management. Another QC Circle group in the electrical assembly area recommended training procedures for new employees. Their suggestions were implemented and led management into a standardized production system, which included detailed process instructions and photographs of each assembly step.[59]

Brunswick Corporation, following the lead of other organizations, initiated QC Circles in their Bridgeton, Missouri facility. They call their group "Circle 80."

> Bridgeton's circles tackled two major projects: one dealing with cost savings to be generated in the scrap and molding department; the second involving increased efficiency by changing equipment in the bottling line.[60]

QC Circle development continues at Brunswick and very positive attitudes prevail. Brunswick would not discuss specific cost savings, but admitted to a warmer union management relationship and successful program development.

One aspect of the Japanese QC Circle that is really the basis for change is as follows:

> Quality problems were not considered to be motivational problems but were considered to be technical problems. Improvements were use of modified hand tools, modified assembly procedures, modified operator training, and the use of check lists.

> This system allowed for a systematic, analytical approach instead of a personal attack on specific individuals.[61]

This concept is the motivating force behind the QC Circle. The Japanese contend that the level of technical expertise and how people are managed has a marked effect on production.

Kyocera International of San Diego has developed QC Circles over a three year period. At first the program failed because American value systems were ignored. Now, firmly entrenched, QC Circles are making headway. Kyocera's Vice Chairman of Kyoto Ceramics, gives the following advice.

> "Everything comes from unity and harmony. What we work for is not just putting the individual ahead, but a common cause, a company that will support us," he says. As is common in Japanese companies, attitudes are judged most important, coming before even performance in salary reviews. Such priorities are likely to be difficult for United States managers to adopt, Jonishi admits.[62]

In "Americanizing" the QC Circle program Kyocera International did the following:

> Kyocera International Inc. has taken Japanese management ways further than any other firm operating in the United States. One reason for its success with them, says personnel manager George E. Woodworth, is the slow step-by-step approach the firm has taken since it moved to San Diego, California, in the early 1970s. Another is that 48% of its workers are Asian-American, primarily wives of servicemen. (San Diego itself is the favorite United States expansion site for Japanese firms and the area is working to attract more.)
>
> The techniques used at Kyocera are based on those that succeed in Japan and all are directed toward building unity and harmony, says Woodworth. They include:

- Daily meetings between outgoing and incoming shifts, to keep a flow of information constant.
- Daily stand-up meetings in each department, with a different topic and speaker each day.
- Company jackets worn by everybody, up to and including executives, and group exercises.
- Honor employee status won by six months of perfect employment by hourly workers. The prize is exemption from punching the time clock and immunity from firing.
- Special raises given by supervisors on their own authority.
- A cultural exchange program with Japan for children of employees who have won exempt status.
- No layoffs.

Furthermore, Kyocera uses a meeting system, called a "compa," that is like a QC Circle in its group dynamics, but focuses on other problems. It helps iron out any personality or attitudinal conflicts and is held outside work hours. Other hallmarks of this type of operation are a lack of a formal chain of command and more meetings of all kinds than for any United States company. Also, executives work long hours, averaging a 55-hour week.[63]

Japanese organizations have problems in adapting in the United States. Some differences end up on the picket line. "A dispute over wages led to a strike by the United Auto Workers at the Ann Arbor, Michigan plant of Nippon Seiko, a bearing manufacturer."[64] In Japan, plaques and a pat on the back are enough. In the United States, Japanese corporations find this to be a poor incentive. Japanese corporations are male dominated. This does not work in the United States and suits of discrimination are abundant. The Japanese find it hard to acclimate themselves to our mobile management base after being used to a very stable middle management group in Japan. What is intriguing, however, is the Japanese managers' ability at getting to the crux of the problem, whatever it is, and bringing a mutually compatible resolution. This particular

aspect is evident in how the Japanese managed Motorola's Consumer Division after takeover.

The Motorola facility was old, staffed with all bargaining unit personnel. At the time of Japanese takeover, Motorola's

> factory ran at a fall off rate of 150 to 180 per 100 sets packed. This means that 150 and 180 defects were found for every 100 sets packed, or 1.5 to 1.8 per set. Three years later the fall off rate at Quasar (the new name of the factory) had gone down to a level of about three or four per 100 sets or only about one-fourteenth of the previous level.[65]

It is interesting to note that "in Japan the fall off rates are about 0.5 per 100 sets, which is more than two orders of magnitude lower than the Motorola performance."[66]

The Japanese removed the "reject lines" at Motorola, repainted all the buildings, spent millions in automatic testing equipment, and many hours retraining management personnel. The Japanese are hard line businessmen. They will not hesitate in removing featherbed positions or managers who are uncooperative. They are serious in making a profit and a product of high quality with no compromise. They expect long hours, hard work, and complete dedication to their goals and in this they are emphatic. So it would be false to paint a glossy image of the Japanese manager in the United States. The Japanese play "hard ball" with the best of them. The Japanese know where they are going and how to get there. Japanese success in takeover of many United States companies is proof of their management ability, cultural assimilation, and business tenacity.

One of the largest QC Circle companies in the United States is Hewlett-Packard. Hewlett-Packard is a type Z company as described in Theory Z by William Ouchi. This is a company with a participative management style conducive to the growth of the QC Circle concept. Hewlett-Packard stated their objective as follows: "To help HP people share in the company's success, which they make possible; to provide job security based on performance; to recognize their individual achievements; and to insure the personal satisfaction that comes from a sense of accomplishment in their work."[67] The QC Circle concept is working at Hewlett-Packard. Management has instituted flex time for all employees, removed time clocks, and seem to have harnessed the best of two worlds. They provide enough "individual" incentives to balance group interaction required for the QC Circle program. The whole management system is geared to support and sustain the participative management style.

In my occupation, it was necessary to visit Hewlett-Packard to evaluate new equipment acquisition. My initial feelings were uneasy because the plant in Boulder, Colorado seemed loosely managed. Careful scrutiny and questioning proved otherwise. The employees clock in anytime between the hours of seven and ten and out between the hours of three-thirty to six-thirty. When arriving they pick up their "ticket" that has their particular job for the day recorded on. Each person works in a cubicle surrounded by panels on three sides. All entry into the facility and work at the facility is computer monitored. At break time the company provides free orange juice, soda, and

snacks brought through the plant on carts. An employee may option for ten-hour days and a four-day week and if the particular project he is working on is on schedule, there is automatic acceptance. What was so impressive with the operation was the fact that no one fit the normal bargaining unit mentality. Everyone I met was sociable, positive, and supportive of the company's techniques. Even though the atmosphere was casual, business continued as usual. In fact, managers at this facility maintained an increase in production since time clocks were removed and flex time introduced. Their QC Circles were very active and were responsible for many positive recommendations. Their managers were low-key, personable, casually dressed, intelligent and perceptive. No one in the group left Boulder without positive feelings and respect for a giant in the electronics industry.

Other organizations using the QC Circle program include Ford, Tektronix, and Micro Devices. Tektronix has this to say about QC Circles:

> In Beaverton, Oregon, Tektronix Inc. is moving fast to implement the program. William D. Walker, executive vice president and chief operating officer, sees it as conflicting little with American ways. The Japanese method "will work here in the States, because many of them are simple, straightforward, common sense things that need to be done and not neglected." Tapping employee skills and suggestions to improve quality and reliability, in fact, can work anywhere.
>
> In this area, however, Tektronix might have a head-start. According to Walker, its workers always "have participated heavily in the decision making processes." Certainly, from a 1979 start, the company now has some 250 QC Circles made up of some 2,500 volunteers and growing so fast

> supervisor training cannot keep pace with them. Moreover, Tektronix sees even more potential in extending them to include vendors. "The me-first attitude can be largely overcome if companies begin to work to make their goals compatible with those of individuals."[68]

REVIEW OF QUALITY CONTROL CIRCLE FORMATION

Organizations from service to manufacturing are instituting QC Circles. Within these organizations many QC Circles will dissolve while others are formed. This is a commonplace practice. Once the QC Circle has been in operation certain standard operating procedures can be formulated for future use. "These would include regulations and perimeters of QC Circle activities (in relations to other company work regulations and standards) to avoid possible confusion in work responsibility and authority."[69]

> Companies with unions will find it particularly important to structure the QC Circle program as a cooperative venture between the company and the union. This is necessary or unions will perceive the growth of QC Circles as a potential anti-union vehicle. To head off labor problems, joint advisory committees made up of both management and union representatives can be created to determine the scope of the program, set guidelines, and establish procedures that protect and benefit both the company and the union. Most unions advise their leaders to join QC Circles rather than fight them, but to push for equal say in and credit for the problem-solving process.[70]

QC Circle progress should be monitored to provide empirical evidence. Careful consideration has to be given so as not to hinder QC Circle operations. When developing the yearly financial plan or budget, costs incurred in QC Circle development should appear.

The most critical steps in assuring QC Circle succes are:

Phase I: Where to Start

After studying quality circles, get authorization from top management to:

A. Form steering committee
B. Select and train a facilitator
C. Familiarize employees with QC Circle concept and obtain volunteers
D. Develop plan covering all the practical aspects of the QC Circle process--location, time, membership, etc.
E. Develop goals and policies for QC Circles
F. Select initial circles

Phase II: Train QC Circle Leaders

The facilitator trains circle leaders for approximately 16 hours on:

A. Group dynamics
B. Group problem-solving techniques such as brainstorming
C. Group leadership skills

Phase III: Implement QC Circle Approach

The facilitator and circle leaders implement QC Circles by:

A. Training circle members for 8 hours (8 sessions)
B. Teaching circle members the problem-solving techniques of:
   - brainstorming
   - data gathering
   - check-sheets
   - cause-and-effect analysis
   - histograms
   - Pareto analysis
C. Distributing employee manuals to employees
D. Having circles:
   - select names for circles
   - begin to identify problems
   - use appropriate problem-solving techniques
   - present solutions to management
   - if approved by management at proper level of authority, implement solutions

Phase IV: Review Program Results

Review the QC Circle Program through:

A. Follow-up on the progress of the circles
B. Evaluation--Have the goals been reached? Are the circles cost effective? Based on data, the steering committee decides if expansion is appropriate.[71]

Here in the United States, we must address QC Circle implementation on a company-by-company basis. In Japan the Union of Scientists and Engineers (JUSE) give full support to QC Circle formation. They set up educational seminars, publish "a monthly trade journal called FQC (Quality Control for the Foremen), whose subscription reached over one hundred thousand in 1979."[72] No membership fees are charged. Financial renumerations are voluntary, with the exception of a small charge for training sessions. The JUSE ran a survey in 1979 and asked circle leaders and managers to cite what they considered to be the primary advantages of the QC Circle. Here are their findings:

Managers

1. Improved worker morale
2. Improved safety
3. Strengthened teamwork
4. Improved product quality
5. Led to better human relations

Circle Leaders

1. Provided good opportunity for learning
2. Improved communication with superior
3. Heightened problem awareness
4. Heightened consciousness to improve status quo
5. Improved working environment[73]

The JUSE also encourage inner-company rivalry between QC Circles and industry wide contests. QC Circles are industry wide and nationally supported. This is another reason for their enormous success. In the United States each company must struggle on alone, which may be another reason for failure.

REASONS FOR QUALITY CONTROL CIRCLE FAILURE IN THE UNITED STATES

QC Circle failures are abundant in the United States but this fits our short run philosophical attitude. Chief executive officers in many firms are protected by "golden parachutes," a wage guarantee for many chief executives, again placing emphasis on the short run. QC Circles are a long run phenomenon. Training and pilot programs might take up to a year to get off the ground. Since membership is voluntary, incentive to join has to be subtle and come from a work group convinced that the management is serious, committed and understanding. If previous union-management relations have been tolerable at best, it might take years before any positive results ensue. Poor union-management relations and emphasizing short-term gains, is not conducive to QC Circle development. QC Circles can only survive where there are good union-management relations and far-sighted goals.

The editors of Management Review, cite four basic reasons for QC Circle failure: "poor employee morale, poor selling effort, inadequate foremen training and poor (or no) management style."[74] Poor employee morale can occur where previous union-management relations have been strained and not enough corroboration occurs between them on the introduction of the QC Circle concept. Morale is also affected by a rigid policy or communication channels that are closed. The selling effort should include comprehensive training for facilitators, circle leaders, and guidance from a core steering committee which promulgates a

well thought out and complete package of policies and objectives. Foremen must carry the brunt of the program because they are in direct contact with the workers. All action comes from the QC Circle itself. The facilitator, steering committee, and management group provide the backdrop and environment for the QC Circle. If middle management is unsupportive and provides only lip service, and fails to gain union support, to outline objectives, to provide financial support or enthusiasm and drive, the program will never get off the ground.

Joseph Juran and E. Douglas Deming are Americans credited with having introduced to Japan the methods of statistical analysis and theories of "democratic" management that first set QC Circles a-spin."[75] The two management scientists maintain that over lack of success with QC Circles is related to our short-term results philosophy. QC Circles in many industries do not provide noticeable results in less than two years. Many maintain that costs may not be cut at all, and only better employee relations will occur. This is not an acceptable expenditure in United States industry. With the above factors in mind Juran and Deming agree that most programs fail because they do not fit our system of quick profit and immediate results.[76]

These are the obvious reasons QC Circles fail. Some of the more basic questions for failure lie in cultural, political, and financial realms. The Japanese business culture is a working partner of the Japanese political culture.

> Under the cozy government-business partnership known as "Japan, Inc.," the government gives companies direct and indirect support for productivity improvement. For companies in selected growth industries. The government provides direct support in the form of tax breaks, technology transfer, and preferential financing. The government also provides indirect support to all companies by funding the Japan Productivity Center (JPC), which it established in 1955 as a means of involving management and labor unions in a national movement toward achieving higher production.[77]

Unions in the United States and Japan are organized differently. Actually the percentage of union membership is higher in Japan.

> Unlike local trade unions in the United States, which are "outside" unions, the so-called enterprise unions in Japan (sometimes referred to as home unions) are based "inside" the company. Most Japanese companies consider their unions as friends, not as adversaries. Company managers involve union leaders in key decisions, socialize with them, and regard "bringing up good union leaders" as part of their responsibility. Such practices are unheard of, if not illegal, in the United States.[78]

Many Japanese companies are committed to lifetime employment and no layoff policies. Several United States companies, I.B.M., Eli Lilly, and Hewlett-Packard, to name a few, are committed to long time job security. These are the exceptions, not the rule. Retirement in Japan is between 55 and 60. In the United States we are trying to raise the age to 70.[79] Japanese people are group oriented from birth. They have strong group expected behavior and goals. "Japanese workers are prone to working in groups and teams, given the emphasis placed on traditional values of cooperation, harmony, and group consensus within the culture."[80]

These are the underlying and perhaps the real reasons for QC Circle failure in the United States. We have an uphill battle in installing QC Circles. The culture of the organization must establish a rapport contrary to United States societal habits. This is very difficult and anything less than total commitment on the part of industry will doom QC Circles from the inception.

QC Circles work in the United States. Under some conditions, they exist and flourish. Participative management is the first criteria for success. QC Circles cannot exist under strict bureaucratic management styles, or in an atmosphere that does not provide upper management support to the program. QC Circles is more than a group of people working to improve overall conditions, it is a management style and an organization built around close interplay between workers and management personnel. It is an intimate system that is contrary to our cultural mores, therefore its survival rate is in direct proportion to how it is proposed, implemented, and managed.

"The differences are large--history, geography, size and ethics all are involved," says Jonishi. "People in the United States are very individualistic; they largely came from Europe and are self-reliant. The advantage is creativity and originality; the disadvantage is a lack of faith in each other and distrust. "[81] "In the Japanese mind, collectivism is neither a corporate or individual goal to strive for nor a slogan to pursue. Rather, the nature of things operates so that nothing of consequence occurs as a result of individual effort."[82]

To reiterate, QC Circles can exist in the United States, but only when developed with our culture, management styles, and patience intact.

SKEPTICS AND FOES OF QUALITY CONTROL CIRCLES

Even though a success in many United States businesses, the QC Circle has its skeptics and foes. Migon Mazique, a research intern at the Center for Creative Leadership in Greensboro, North Carolina, has the following comments: "Japanese culture is much more homogeneous than ours, treating the organization as an extension of family life, and thus contributing to integration of work place innovations. (However, Mazique says, sociologist Robert Cole notes that the success of QC Circles in Japan is due less to Japanese cultural support than to management's commitment to improving productivity and the quality of work life)."[83] Mazique continues by emphasizing, "the structured auto assembly lines as not being good prospects for team cooperation."[84] Mazique also feels our supervisory personnel "may feel threatened with their new role of a facilitator of group action."[85] However, his main emphasis of opposition centers on our hierarchical business structure.

> Hierarchies hamper information flow. A culture that is supportive of QC Circles has to be participative rather than hierarchical, to foster free flow of information. Yet in many companies, structure hinders it. If the hierarchical approach is too firmly entrenched, it can destroy the effectiveness of QC Circles. Mazique concludes: "The organization must make some

> structural concessions: Change the reward system to benefit QC Circle groups and give individuals a better chance of being promoted; encourage managers to hear and act on recommendations from workers; modify the communication structure so information flows up as regularly and freely as it does down.[86]

Dr. Hans J. Bajaria, President of Mutiface Inc., has many serious reservations concerning QC Circle use in the United States. He starts by stating "If you consider your company or the United States as a boat, when that boat is sinking, you cannot fool around with any concept that is not among the most important."[87] Hans J. Bajaria lists twelve problems he claims are out of the realm of QC Circles. In his estimation these problems must be addressed first before the development of unnecessary and innovative programs.

> Some of the points he stresses are that "our repairs take too long, the material we receive is bad, our operations are improperly trained for their job, measuring devices are not calibrated, inspectors receive inadequate instruction, our lot sampling is not accurate, our operators deliberately produce bad quality, we lack scheduled maintenance, our purchase agreement doesn't specify machine-tool reliability; our drawings are not statistically toleranced, we have no statistical process control, workers are not motivated to produce quality, few reliability specifications are evident, and our engineers are not trained in quality discipline.[88]

Dr. Bajaria summarizes by saying:

> Yes, I would say, go ahead and put 15¢ into QC Circles if you at the same time are putting 85¢ into solving the real major problems. Drs. Deming and Juran have said that 85 percent of our problems are system related. But people have generated so much emotion on the QC Circle concept that killing it would do more harm than just letting it go at whatever nominal cost your organization can afford. But if you put your whole buck into QC Circles, you will need a quality rescue operation to get your boat off the bottom.[89]

The above conditions do occur in many United States firms but should not be taken as a blanket problem found throughout corporate structures. Many companies are well managed, and will support the QC Circle.

> Not every company should necessarily engage in QC Circle activity, but those that choose to use it as a vehicle for raising organizational effectiveness do so by building more effective people. They develop individual skills, which include the ability to work with others, share values, test ideas, and arrive at a consensus. Those that implement the concept do so to capitalize on people's thinking, not to smear it into some bland mixture. They are striving for participation--not submission. They know that as workers become more confident and committed, they are likely to be less submissive to dulling job descriptions worked out by management and union leaders.[90]

Union leaders have even come out to support the circles. In order to provide closer management-personnel relations and improve overall operations, union members are participating.

> At Jones & Laughlin Steel Corp's Aliquippa (PA.) Works, for example, two members of one such committee were among the workers laid off when J & L shut down blast furnaces last October 1. Since then, the two workers have insisted on returning to the plant once a week--without pay--to attend the regular meeting of their labor-management participation team.[91]

QC Circles are built on upper management support. They can exist only when the corporate environment is of the participatory type and has well developed inner relations between the work force and management.

> When well-designed, the QC Circle concept can provide important benefits. Initially, these are likely to be increased productivity of employees and improved employer-employee relations. These are results that everyone involved with the circles will enjoy.

> There are other benefits from participating in a QC Circle. Some employees may see their participation as an excellent way to develop themselves. It will also help individuals use their creativity and problem-solving skills to the fullest. Few other management techniques bring out these talents to such an extent.[92]

Kenneth M. Jenkins, Ph.D. at Portland State University, and Justin Shimada, Ph.D. at Portland State University, say there are two major benefits of QC Circles.

> There are two levels at which benefits from a QC Circle may accrue. The first consists of actual improvements in the quality of service. In addition to improvements, serious and sustained declines in various quality measures may be avoided through statistical monitoring. In the early stages of a circle, baseline measures of quality are established so that future changes attributable to the actions of the QC Circle can be monitored. This helps verify the effectiveness of the circle as well as identify those quality improvement efforts that are successful.
>
> The second level of benefits from a circle program stems from attitudinal changes on the part of participating employees. A QC Circle, in effect, redesigns a given member's job by adding new dimensions to it.[93]

The QC Circle concept developed by the team of Deming and Juran in the 1950's, and promoted by the Japanese, "creates in the individual a sense of participation and contribution. This technique recognizes the individual worker as a human being with the ability and desire to participate in solving quality problems."[94] This in itself, is probably the crux and fundamental element of providing for the QC Circles appeal and widespread acclaim. We live in a society of numbers, from social security cards, to licenses, credit cards, bank statements, and time clocks. The QC Circle provides a way of

removing the numbers and making the corporate structure personable and responsive. It fulfills the ego needs of the people involved and instills a sense of worth and a closer bond with the employer.

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CHAPTER VII

VARIATIONS OF THE QUALITY CONTROL CIRCLE

Whenever a new idea evolves, many variations of the original occur. The QC Circle has provided fertile ground for numerous spin-off concepts. One author, deciding the QC Circle encompassed mainly horizontal integration, decided to formulate his own circle which focused on vertical integration. Using the word vertical and team, Edmund J. Metz started the Verteam circle. The Verteam circle claims it incorporates vertical integration instead of horizontal QC Circle techniques. If properly administered vertical and horizontal elements are present in the QC Circle. Vertical integration is evident in the fact that top management organizes the steering committee and trains facilitators, who eventually oversee and nuture the QC Circle program. Yet it is still horizontal in nature because the actual working of the QC Circle group is within a limited scope, i.e., manufacturing, service, maintenance. Once recommendations emanate from the QC Circle, vertical integration is in play once more through upper management involvement in the initiation of directive action.

The Verteam circle is straight vertical integration, neglecting horizontal activities. It is primarily for management personnel and in this respect differentiates itself considerably from the QC Circle.

> The Verteam circle uses the same problem-solving techniques as the basic QC Circle, a key difference is the Verteam circle's degree of operational freedom. Verteam members enjoy freedom from ordinary

> organizational protocols and standard operating procedures. They have access to any information source appropriate to their investigation. This facilitates faster problem solving.[95]

Mr. Metz continues by comparing similarities between the QC Circle and Verteam circle and suggests a combination of both (See Table I Page 52). In this respect he claims full integration can occur.

To institute a semi-permanent vertical model, such as the one described, would be a duplication of effort. Management already has a hierarchical structure. Power flows vertically, even in Japanese organizations. What attention should be focused on, is the individuals who at present, have no say in the day-to-day operations. This is what the QC Circle provides.

Still another organization claims their "Managing the '80s" program to be the answer.[97] This is a program developed by Depositors Trust Company of Augusta, Maine.

> Unlike a QC Circle, the bank's "Managing the '80s" program teams employees from vastly different locations and managerial levels. Thus, a teller from one of the 37 branches scattered over Depositors Trust's 8,000-square-mile service area may well wind up sitting shoulder-to-shoulder with a central-office vice president at a productivity team's weekly one hour meetings, which are held on bank time.[98]

Another departure "from QC Circle approach, the banks senior officers formally review each problem-solving project to ensure that it fits into the bank's overall strategic plan.[99] Depositors Trust has claimed success with the program although it is still in the developmental stage. One comment from William T. Webster, the vice president, is enlightening. "After two years'

experience with this program, we can see it's much easier to get employees to work with rather than under us--to accept productivity improvements better if they have had a hand in shaping them."[100]

Other variations abound but the basic QC Circle still remains the model to be copied. Adaptation to our culture will mean some change from the Japanese original, but the basic format should remain intact.

TABLE I

BASIC QC CIRCLE AND VERTEAM CIRCLE COMPARISON

Differences

Basic QC Circle	Verteam Circle
° Homogeneous work group	° Heterogeneous work group
° Meets for one hour/week	° May meet for extended periods
° Solves problems members can control or have limited control	° Solves problems circle members have no control or influence over
° Supervisor is leader	° Leader appointed
° Decides problem to solve	° Problem to solve decided by top management
° Operates under regular organizational rules, procedures and protocols	° Has rules, procedural and protocol freedom
° Solves numerous problems	° Solves a single problem
° Generally blue collar	° Generally white collar
° Regular circle policy applies	° Special circle policy applies

Similarities

- ° Participation is voluntary
- ° Receives training in basic circle problem-solving techniques
- ° May implement solution
- ° Utilizes facilitator
- ° Steering committee monitors
- ° Requires no change in organization structure
- ° Results measured
- ° Members work as a team
- ° Makes management presentation on recommended solution
- ° Has a people-building philosophy[96]

CHAPTER VIII

CONCLUDING STATEMENTS

A prerequisite of incorporation of the QC Circle in United States industry is analysis of ones particular management style. After this is complete, one should review options that would meet successful acceptance within his present management culture. To adopt a QC Circle concept in an autocratic management environment is ludicrous. The whole program is based on a participative management style. Every organization has to develop within its own limits and style.

More basic than this is the question of quality itself. Are we concerned with products that are inferior? Is there a conscious effort to improve quality of workmanship in the United States or are we satisfied? We are not satisfied or the Japanese and Germans would not control the market of business they do within our borders. We the consumer, have decided that if quality can not be bought here, we will buy it overseas. The realization that we live in a world economy is still foreign to many of us. If a company makes the best product of its kind in the world, maintains competitive pricing, and provides aftermarket services of superior magnitude, their niche in the world market is guaranteed. We have lost touch with the basics in the United States: the basics of being proud of what we are doing, striving to do our best, and improving our quality of life in general. We are satisfied with shoddy merchandise that we were critical of when produced by the Japanese. We do not want to get involved but raise

complaints over our life style and working conditions. The facts are that foreign nations, like Japan, look upon their customers as long-term consumers. Consumer complaints are handled expeditiously and the customer leaves satisfied. They are out for the business and are getting it because of superior quality in product and performance.

What is even more frightening is the fact that the Japanese have recently introduced TQC's (Total Quality Control). Under this system the workers have direct power to halt a faulty assembly operation or any other activity that compromises product quality. This is an extension of the QC Circle concept.

> The QC Circle restores individual involvement in the modern production process. Workers receive detailed information about the marketplace. Each worker learns the daily production results and is kept advised of sales. Each knows how many customers have bought the product, what they think of it, and how it compares with competitors'. When they see how their own contributions fit it, workers take pride in improving operations within their area of responsibility.[101]

Do we care to ask? Is quality of work an issue with us? It should be. Our capabilities are awesome but we need to develop an attitude of pride and quality of work. QC Circles are not the total answer, only a step in the right direction. With QC Circles, the United States can encourage pride in workmanship and increase product quality. Once product quality is achieved, the market share can be regained. In order for the United States to accomplish this, industry must focus on long-term goals, develop a participative management approach, and emphasize quality as an overall philosophy.

FOOTNOTES

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[2]William Ouchi, Theory Z (Massachusetts, 1981), p. 262.

[3]Douglas Ramsey and Donald Kirk, "Lessons From Japan, Inc.", Newsweek (September 8, 1980): p. 61.

[4]Daniel T. Rodgers, The Work Ethic In Industrial America 1850-1920 (Chicago: University of Chicago Press, 1978), pp. 58-59.

[5]Ibid., p. 48.

[6]Hirotaka Takeuchi, "Productivity: Learning from the Japanese," California Management Review 23 (Summer 1981): 7.

[7]Dr. Zane K. Quible, "Quality Circles: A well rounded approach to employee involvement," Management World (September 1981): 10.

[8]Moskowitz, "Quality Control Circles: Will They Work in the U.S.?," p. 72.

[9]Editor, "Quality Control Circles--Part 1: What They Are," Small Business Report 7 (January 1982): 21.

[10]Ibid., p. 22.

[11]Ibid., p. 22.

[12]Takeuchi, "Productivity: Learning from the Japanese," p. 9.

[13]Ibid., p. 9.

[14]Ibid., p. 9.

[15]Ibid., p. 9.

[16]J. M. Juran, "Japanese and Western Quality: A contrast in methods and results," Management Review (November 1978): 43.

[17] E. Paul Torrance, "Education For "Quality Circles" in Japanese Schools," Journal of Research and Development in Education 15 (Number 2 1982): 12.

[18] Ibid., p. 12.

[19] Jerry Lyman and Alfred Rosenblatt, "A Special Report: The drive for quality and reliability, Part 1," Electronics (May 19, 1981): pp. 125-148.

[20] Perry Pascarella, "QC's may have become too popular," Industry Week (March 22, 1982): 23.

[21] Ibid., p. 23.

[22] Quible, "Quality Circles: A well rounded approach to employee involvement," p. 10.

[23] Ibid., p. 10.

[24] Mary Stearns, "Japan as a mirror for American Management," Data Management (October, 1981): 48.

[25] Larry Waller, "Yanks borrow Japanese Keys to quality," Electronics (December 4, 1980): 95.

[26] Editor, "Quality Control Circles--Part 1: What They Are, p. 22.

[27] Ibid., p. 22.

[28] Ibid., p. 23.

[29] C. Phillip Alexander, "Learning from the Japanese," Personnel Journal 60 (August 1981): 616.

[30] Ibid., p. 616.

[31] Ibid., p. 616.

[32] Robert Anderson and Kathleen Anderson, "HRD in "Z" Type Companies," Training and Development Journal 36 (March 1982): 21.

[33] Dr. Robert Koenigs, "An Interview with Dr. William Ouchi," Training and Development Journal 36 (March 1982): 39.

[34] Carla Visser, "What we can learn from the Japanese about QC's," Advanced Management Journal 47 (Summer 1982): 57.

[35] Ibid., p. 57.

[36] Ibid., p. 57.

[37]Takeuchi, "Productivity: Learning from the Japanese," p. 12.

[38]Edmund J. Metz, "Caution: Quality Circles Ahead," Training and Development Journal 35 (August 1981): 72.

[39]Editor, "Quality Control Circles--Part 1: What They Are," p. 23.

[40]Alexander, "Learning from the Japanese," p. 616.

[41]Carl W. Stenberg, ""Workers' Brains as Well as Their Bodies": Quality Circles in a Federal Facility," Public Management Forum (March/April 1982): 146.

[42]Ibid., p. 146.

[43]Editor, Webster's Seventh New Collegiate Dictionary (Massachusetts: G. & C. Merriam Company, 1965), p. 394.

[44]Editor, "Quality Control Circles--Part 2: A Step-By-Step Approach to Implementation," Small Business Report 7 (February 1982): 11.

[45]Quible, "Quality Circles: A well rounded approach to employee involvement," p. 11.

[46]Ibid., p. 38.

[47]Metz, "Caution: Quality Circles Ahead," p. 75.

[48]Editor, "Quality Control Circles--Part 2: A Step-By-Step Approach to Implementation," p. 13.

[49]Stephen Konz, "Quality Circles: Japanese Success Story," Industrial Electronics (October 1979): 27.

[50]Stenberg, ""Workers' Brains as Well as Their Bodies," p. 144.

[51]Ibid., p. 145.

[52]Ibid., p. 147.

[53]Ibid., p. 148.

[54]Editor, "Quality Circle Concept Gains Interest and Support of Both Workers and Management," Graphic Arts Monthly (January 1982): 123.

[55]Ibid., p. 124.

[56]Ibid., p. 124.

[57]Ibid., p. 124.

[58]Sud Ingle, "How to Avoid Quality Circle Failure in Your Company," Training and Development Journal 36 (June 1982): 54.

[59]Ibid., p. 54.

[60]Ibid., p. 54.

[61]Konz, "Quality Circles: Japanese Success Story," p. 27.

[62]Waller, "Yanks borrow Japanese Keys to quality," p. 95.

[63]Ibid., p. 100.

[64]Takeuchi, "Productivity: Learning from the Japanese," p. 15.

[65]Juran, "Japanese and Western Quality: A contrast in methods and results," p. 42.

[66]Ibid., p. 42.

[67]Ouchi, Theory Z, p. 136.

[68]Waller, "Yanks borrow Japanese Keys to quality," p. 96.

[69]Editor, "Quality Control Circles--Part 2: A Step-By-Step Approach to Implementation," p. 13.

[70]Ibid., p. 13.

[71]Stenberg, ""Workers' Brains as Well as Their Bodies": Quality Circles in a Federal Facility," p. 150.

[72]Takeuchi, "Productivity: Learning from the Japanese," p. 10.

[73]Ibid., p. 10.

[74]Editor, "Why Quality Circles failed at 21 firms," Management Review 71 (Summer 1982): 56.

[75]Louis E. Tagliaferri, "As "quality circles" fade, a bank tries "top-down" teamwork," ABA Banking Journal 74 (July 1982): 98.

[76]Ibid., p. 98.

[77]Takeuchi, "Productivity: Learning from the Japanese," p. 13.

[78]Ibid., p. 13.

[79]Ibid., p. 13.

[80]Ibid., p. 14.

[81]Waller, "Yanks borrow Japanese Keys to quality," p. 95.

[82]Ouchi, Theory Z, p. 50.

[83]Editor, "But Will Quality Circles work here?" Data Management 19 (October 1981): 33.

[84]Ibid., p. 33.

[85]Ibid., p. 33.

[86]Ibid., p. 33.

[87]Dr. Hans J. Bajaria, "Circles can't cope," Tooling and Production (May 1983): 69.

[88]Ibid., pp. 70-71.

[89]Ibid., p. 71.

[90]Perry Pascarella, "QC's may have become too popular," Industry Week (March 22, 1982): 24.

[91]Editor, "Will the slide Kill quality circles?," Business Week (January 11, 1982): 108.

[92]Quible, "Quality Circles: A well rounded approach to employee involvement," p. 38.

[93]Kenneth M. Jenkins, Ph.D. and Justin Shimada, Ph.D., "Quality Circles in the Service Sector," Supervisory Management 26 (August 1981): 6.

[94]Editor, "Quality Circles Pay Off Big," Industry Week (October 29, 1979): 19.

[95]Edmund J. Metz, "The Verteam," Training and Development Journal 35 (December 1981): 83.

[96]Ibid., p. 83.

[97]Tagliaferri, "As "quality circles" fade, a bank tries "top-down" teamwork," p. 98.

[98]Ibid., p. 99.

[99]Ibid., p. 99.

[100]Ibid., p. 100.

[101]Hajime Karatsu, "What makes Japanese products better?," Advanced Management Journal 47 (Spring 1982): 7.

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