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**Authors:** Thomas E. Reinkober

**Performing Organization:** Defense Systems Management College

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STUDY TITLE:
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STUDY PROJECT GOALS:
To investigate what effect rapid technological change has on the employee, i.e. alienation.

To study various companies who have employed humanistic techniques and their results.

STUDY REPORT ABSTRACT:
The purpose of this paper was to examine the effects of technology on the employee in terms of alienation and job satisfaction. The results of the research indicate, that the technological impact on the employee has been one of overt alienation. Industry has been slow to respond in a concerted effort to counter this alienation. There is an increasing effort on the part of many industries to accept innovativeness and apply humanistic techniques that could lead to a satisfying job and industrial environment.

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NAME, RANK, SERVICE
THOMAS E. REINZEBER, MAJ, USA

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INDIVIDUAL STUDY PROGRAM

TECHNOLOGY AND IT'S IMPACT
ON THE EMPLOYEE

STUDY PROJECT REPORT
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THOMAS B. REINKOBER
MAJ
USA

FORT BELVOIR, VIRGINIA 22060

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Study Project Report
Individual Study Program

Defense Systems Management School
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by
Thomas E. Reinkober
Major USA
May 1976

Study Project Advisor
Major Don Fugii
EXECUTIVE SUMMARY

The purpose of this paper was to examine the effects of technology on the employee in terms of alienation and job satisfaction. The inquiry was conducted through the medium of library research. The results of the research indicate, that the technological impact on the employee has been one of overt alienation. Alienation, rampant throughout the work world, must be eliminated in face of increased social, political and environmental pressures. Industry today has the responsibility of not only providing products and services but must consider the social implications of man and his environment. There is more to survival than money: Creativity, competence, performance, pride etc, must be engrained into the industrial environment. The ill of alienation is curable but industry has been slow to respond in a concerted effort to counter this alienation. There is an increasing effort on the part of many industries to accept innovativeness and apply humanistic techniques that could lead to a satisfying job and industrial environment.
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SECTION I

Introduction

"A factory environment, infused with an atmosphere of trust and respect for all individuals is the dream of many managers, but that dream often must remain an idealized image as day to day problems monopolize their energies."¹ Technological change, which is proceeding at an incredible rate, creates constant problems of obsolescence, demand for new services, and the expansion of existing services and facilities. With the advent of automation and computers, the work environment has become highly unpredictable. As the social and personal needs of workers become recognized in the technological environment, industry must look to conditions that increase job motivation, give work a sense of meaning and identification and create a sense of autonomy.

Industry has evolved into a complicated, technically engineered system with a philosophy of maximum production and profit, totally disregarding the needs of the human element. The history of industry records numerous studies and attempts in terms of human engineering, related only to

design of man-machine systems and physical plant layout and design. Engineer design values have always considered the worker as an asset of production in this context. Individual self-respect, intrinsic in employee recognition or identity within a structure, was considered an extrinsic value in dealing with management/production oriented industry. This preponderant philosophy has created social conflict, bitterness, alienation and distaste that could lead to an inevitable rebellion.

People are required to operate a technical system. Therefore employee relationships and adjustments to the system reflect the degree of satisfaction through performance and productivity or alienation through absenteeism, sabotage, sub-quality production and etc. Efforts to explain and provide techniques for dealing with employee satisfaction within the technical environment are in a state of evolution. These efforts and techniques have had many titles:

**JOB ENRICHMENT**- to provide more varied and challenging content in the work.

**PARTICIPATIVE DECISION MAKING**- to enable the information, judgements, and concerns of subordinates to influence the decisions that effect them.

**MANAGEMENT BY OBJECTIVES**- to enable subordinates to understand and shape the objectives toward which they strive and against which they are evaluated.

**SENSITIVITY TRAINING OR ENCOUNTER GROUPS**- to enable people to relate to each other as human beings with feeling and psychological needs.
PRODUCTIVITY BARGAINING- to revise work rules and increase management's flexibility with a quid pro quop whereby the union ensures workers a share in the fruits of the resulting productivity increases.2

Consequently, rigid working conditions must be reshaped to define the human element in terms of a democratic organizational concept in which the superior at least consults with subordinates, soliciting their responses, feelings or thoughts.3

"Work must not be simply the penalty what a man pays to survive; it must be something that offers meaning of itself."4

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SECTION II

BACKGROUND

The extensive advances in the industrial environment since Adam West in 1776 and culminating in the school of scientific management of the 1900's has resulted in unequal-vocal economic and technological achievements. The human element, often cited as the most important resource of industry is finally evolving as a statement of conviction rather than industrial rhetoric.\(^5\) The industrial environment is now realizing that people are capable of doing more than their jobs either require or allow, that if they actually enjoy their work they will perform better.

The humanization of industry is of recent origin in the United States. European industries have been in the forefront evoking numerous attempts to abolish authoritarianism and replace it with democratic management. The European attempts are in direct contrast with the prorogated movement in the United States. Although the United States has been the innovator and applicator of technology, the vast repertoire of knowledge developed on organizations, recruiting and testing and human relationships remains stagnant. Solutions are not easy to find. Technology itself imposes constraints that may be ameliorated but not removed. The vast body of knowledge which is available could provide the impetus necessary to

achieve an evaluation of jobs in terms of personal satisfaction and the future of industry.

The basic impetus in American industry were the observations of Frederick W. Taylor, often called the Father of Scientific Management. Taylor emphasized work being divided into the smallest possible components then relying on assembly techniques where men could be trained to work like machines. This type of environment would reduce costs, increase volume, and maximize profits. Henry Ford is cited as the first industrialist to apply Taylor's principles on a large scale. Ford viewed people in the same context as the interchangability of parts. His application of assembly line techniques symbolize the engineering mentality of the American industrial technical system. His system has become the model which has influenced the majority of mechanized work settings. The American work force under this production model received the highest wages in industrial history. The resultant affluence released the average worker from strictly economic concern and awakened his need for self respect and fulfillment. The pervasive social forces and rising level of education has contributed to the state of being now called blue collar blues, job alienation and etc. This has lead to a modicum of discussion but astonishingly little action or interest among industrial leaders.6

6Quigg, loc. cit.
SECTION III

TECHNOLOGICAL AGE

The twentieth century brought to man the age of technology. Gains in technological knowledge during the last fifty years surpasses all previous cumulative effort in history and this growth is accelerating. 7 Every facet of modern life in some manner has been affected by technological change. Some of these effects are limited, others are sweeping; some benefit health and welfare while others pose serious threats to human survival.

The technical system that has evolved includes the physical plant, machinery and the mechanical processes which are organized toward the goal of producing goods or services. The technical organization lays out the work and provides for the flow and allocation of materials. The technological factor, what the machine can do, and the concern for minimizing costs decisively affect the way work is organized. Taken together, the nature of cost limits the alternative methods of accomplishing the job.

The significance of technology must be considered as an environment within which the modern industrial worker lives and which limits or expands his chances of attaining a satisfying work experience. The technical system depends upon the

skills, motivation and discipline required by the mechanical process. This human dimension and the various determinants of job alienation or satisfaction are increasingly becoming an integral part of industry and the continued growth of production oriented technology.

The impact of technology on human relations has created a high degree of alienation in industry. The increased division of labor has brought an estrangement of the industrial worker from his work. The employee's job became simplified, and his area of responsibility diminished. The fragmented relation of the individual to his work robbed him of a sense of purpose. This loss took on the aspect of alienation. Alienation has been expressed as passive withdrawal, tardiness, absenteeism, turnover, and inattention on the job. Similarly, it may be expressed as pilferage, sabotage, deliberate waste, assaults, bomb threats and other disruptions of work routines. Alienation affects productivity and effects social costs incurred in the workplace. Alienation is not restricted to the blue collar segment of industry but extends to white collar workers and middle management. All segments have expressed discontent over the unresponsiveness of industry to meet basic human needs in the industrial environment.

Employee expectations, what is considered satisfying, is not always dependent on the type of job but on self respect.

\(^8\) Walton, op. cit., p. 71.
ability to excel in performance in his work, a chance to con-tribute something to his work. These expectations are often greater than the limits organizations are prepared to offer the employee. These expectations have been viewed by many as the roots of employee conflict in industry. The following employee conflicts are cited:

1. Employees want challenge and personal growth, but work tends to be simplified and specialties tend to be used repeatedly in work assignments. This pattern exploits the narrow skills of a worker, while limiting his or her opportunities to broaden or develop.

2. Employees want to be included in patterns of mutual influence; they want egalitarian treatment. But organizations are characterized by tall hierarchies, status differentials, and chains of command.

3. Employee commitment to an organization is increasingly influenced by the intrinsic interest of the work itself, the human dignity afforded by management, and the social responsibility reflected in the organization's products. Yet organization practices still emphasize material rewards and employment security and neglect other employee concerns.

4. What employees want from careers, they are apt to want right now. But when organizations design job hierarchies and career paths, they continue to assume that today's workers are willing to postpone gratifications as were yesterday's workers.

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5. Employees want more attention to the emotional aspects of organization life, such as individual self-esteem, openness between people, and expressions of warmth. Yet organizations emphasize rationality and seldom legitimize the emotional part of the organizational experience.

6. Employees are becoming less driven by competitive urges, less likely to identify competition as the "American Way". Nevertheless, managers continue to plan career patterns, organize work, and design reward systems as if employees valued competition as highly as they used to.10

10 Walston, loc. cit.
SECTION IV

AUTOMATION

The technological impact of mechanization and mass production techniques have extended and are now integrated with electronic computers. The advent and use of the computer in production processes unfolds into the "second industrial revolution." The title is representative of the integration of machines into continuous process production, controlled by computers with built in feedback that automatically makes adjustments.\(^\text{11}\) The initial receptive implication of automation suggested a world of automatic factories and business concerns run by computers without workmen. The stigma of massive unemployment resulting from this technology created doubt and fear throughout labor. The fear that automation would eliminate man's ability to survive in a world of machines run by machines.

Automation is no single form of technology. There are many stages and types of automated products. The possibilities of automation depend on the nature of the end products and on the extent to which a company is willing to commit itself to standardization. The impact of automation on labor must be viewed in terms of the technical system employed and the alienation of the employee to this system. Employee

\(^{11}\text{Otis Linstreu and Kenneth Read, "Transition to Automation," Series in Business: University of Colorado Press, }^1, \text{(March 1964), p. 3}\)
reaction to automation is dependent on many variables to include the nature of the work setting prior to automation and the ability to respond to this new environment.

Automation has extended itself into every realm of production and service industry. It has been instrumental in increasing our productivity and national output. The concept embodied in automation has become a national output. The concept embodied in automation has become a national resource that includes almost every aspect of daily life.  

Automation has improved physical working conditions through greater safety and elimination of most hazardous jobs. Work in the factory has become lighter and cleaner. Manual skills have declined in importance. Automated processes require workers who are more adaptable and flexible than the average mass production or low skilled employee. The generally held belief is that automation will heighten employee responsibility, enlarge jobs and free men for more creative work. The final scope of automation engrains the idea that the distinction between factory and office and between hand and brain will be eliminated. Blue collar workers in the new, clean office-like factory will be responsible employees, much like the white collar employees.

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in the new, more mechanized factory-like office. 14

Automation in the negative has been viewed as the cause of heightened technological unemployment. It has lead to the dominance of machines over human beings and thus the loss of interest in work and by human nature increased alienation. Many employees sense overwork in terms of increased physical and mental burdens creating unlimited tension. A common view of employees, as a result of automation, has been a reduction of solidarity among workers and a total lack of inter-personal relations. 15


15 Diebold, op. cit., p. 145-149.
SECTION V

EFFORTS TO COUNTER ALIENATION

"Beyond the technological and conceptual innovations of automation lie problems and opportunities on a scale seldom encountered in human history."16 The speed and rapidity of change poses a serious challenge to industry as a whole. "What employees expect from their jobs is different from what organizations are prepared to offer them."17 Opposition to change by management has been just as provoking from labor unions, both being distrustful of change and fearful of losing their authority. Labor has exerted increased pressure to effect a change of these attitudes towards the humanization of work.

Labor has experienced tremendous economic gains from the ability to protest through grievance procedures. Historically, from this development, management-employee relations and practices have fundamentally been predicated on the assumption of mistrust. Mistrust has limited management's ability to implement policies or practices that could improve the responsiveness and lessen the alienation of employees. This trend, in and of itself could eventually provide successful humanistic practices, but management's hesitation may only heighten this alienation.

Alienation, job satisfaction, and democracy in the

16 Diebold, loc. cit.
17 Malton, loc. cit.
factory has been the subject of numerous studies, investigations and books. The preponderant theories/observations have extended or adapted themselves to every conceivable industrial extreme. The implicit factor that becomes evident, after reading principle and viewing application, is that every industry has an individual personality. Firms implementing practices to counter alienation find that some typical practices may adapt to their organizations. More often than not, they find that atypical techniques become necessary to effect a desired response. The important aspect is that industry is finally recognizing the existence of a problem. The recognition of the problem will eventually provide the impetus necessary to find a desirable solution to alienation and provide employee satisfaction.

Humanization is inclusive of all efforts to reduce alienation and increase satisfaction through job enlargement and etc. Efforts have been extended to areas including motivation, security, pay, advancement, working conditions and relations. Approximately one-fourth of the average man's life is spent at work. The necessity for providing conditions that provide satisfaction are ever more present in today's technological environment. The condition of having good morale doesn't necessitate job satisfaction or that increased productivity will result. The employee must be a part of the total system. A system to which he can respond and the system respond to his needs.
SECTION VI

APPLICATION OF HUMANISTIC TECHNIQUES

Increasingly, industry is recognizing the importance of employee participation in all aspects of the work environment. Participation in its many and varied forms instills a sense of worth in the employee. The central theme is the fulfillment of the employee and industrial need.

Perhaps the most cited example of successful application of humanistic techniques is the General Foods Topeka, Kansas plant. In 1968, General Foods was planning an additional plant. Their existing manufacturing facilities indicated rampant alienation in the form of employee indifference and inattention. These attitudes lead to plant shutdowns, employee walk-outs, product waste, costly recycling, sabotage and occasional occurrences of violence. General Foods decided to innovate change in relation to employee expectation, coupled with the continuous process technology. 18

The basic philosophy that the organizational structure assumed is described as "open, total or sociotechnical." It was totally inclusive of employee participation into all aspects of the work environment to include decision making and design. The central theme was the fulfillment of employee, industrial and social needs. 19

18 Walton, op. cit., p. 74.
The approach was formulated on the experience of conventional plant operations and analysis in terms of human needs. The organizational development and design extended over a two year period. The basic planning factors included employee performance, self-esteem, sense of accomplishment, autonomy and increasing knowledge. The manufacturing process was designed to encompass a minimal work force to curtail specialized functions and to pass decision making procedures to the employees. The basic structure and design is described:

Employees were organized into teams. Teams normally consisted of eight man processing teams, sixteen man packaging/shipping teams and office duty teams. The plant operates on a twenty-four hour basis and accounts for about ninety employees. Normally under similar circumstances, an operation of this type would require cleaners, helpers, process operators, quality control technicians, boiler operators, mechanics, fork lift operators, grain unloaders, and others on each shift.

Technology was innovative in design and eliminated most of the dull routine jobs. Each team member is encouraged to learn all the jobs his team performs, with his pay increasing as he learns. Once he masters all the jobs, he can move to another team if his colleagues recommend him. Everyone learns at his own pace, his progress being judged by his fellow team members. The employee can move up the pay scale regardless of seniority or how many others are moving up at the same time. In addition, teams meet at least once a week to discuss job assignments, operating and maintenance problems and to interview and hire prospective employees when they are needed. Occasionally, under certain circumstances, teams can expel employees.

Each employee maintains his own equipment.
cleans his own working space and is held responsible for his mistakes. There are no executive dining rooms or parking spaces. All employees come in through a single entrance. There are no time clocks to be punched or set hours for lunch or breaks. The carpeting on the floor of the executive offices is identical to that in the workers locker room.20

The General Foods approach was totally effective in creating an atmosphere enabling the employee to identify and become totally involved with the structure, thereby improving quality and production and reducing cost. Overwhelming acceptance of this approach enabled General Foods to seek suggestions from employees on design for further plant expansion.

There were numerous problems to be overcome both in design and at corporate level management during implementation of the plant. Channel of communication, built into the system were open and a workable solution was normally found or decided upon. Innovativeness represents radical change and many, both in management and production, resent change and presume that it implies a threat or that they are not doing their jobs.21

Since implementation of the plant, production has exceeded expectations. Productivity has increased forty-eight percent. Plant fixed overhead rate was thirty-three percent.

20 Ibid., p. 145-147.
21 Walton, op. cit., p. 76-77.
lower than the old plant and variable costs resulted in savings in excess of $600,000. The safety record is one of the best in the corporation.

The positive assessment and record of the General Foods Topeka, Kansas plant is indicative of innovative change that has considered the employee and his environment into its total design. The employee is given the opportunity to react to the environment and the environment to adapt to his needs. The innovative success of General Foods is evidence of an employee identifying and relating to the production process through fulfillment of need and reduction of alienation.

Another example of successful application of humanistic techniques is that of the Carling O'Keefe breweries. The emphasis there is on a total system of interaction between the employee, environment and industry. The following material was taken from Company news letters and bulletins and can be representative of what can be accomplished when industry and employees work towards a common goal. The goal being the responsibility for the common good of all.

Represented throughout the materials are examples of innovative management challenging accepted standards and traditions.

In 1972 Mr. Wilmat Tennyson was faced with the task of bolstering a badly lagging sales record that had fallen from an all time high of 50 percent of beer sales market in Canada to 26% at the time of his take over. Tennyson is an unortho-
dox man and he came up with an unorthodox solution to the problem. His brainchild was a new marketing program based on the assumption that most of the company's sales were to the so-called blue collar worker, the man on the hourly wage. So you would think that the answer would be found in a glittering media campaign, but instead this budget (advertising) was reduced.

The real force of the sales program is directed right at the heart of the beer market; and the method used to convey the message is through company participation in the community, in organized labour and in other people oriented programs by spending money normally channelled into expensive media advertising, directly into areas where it is needed. This program is based on a philosophy that a company should return some of its revenue to its source, in this case, to the people of the community and in hourly paid occupations. The idea didn't stop here, Tennyson became captivated by the rewarding side effects of the program and started to apply it across the entire corporation.

The new program is no mere tokenism. The changes it has wrought have been of such a sweeping and fundamental nature as to gain astonished approval from even the most radical of management/labour critics. In the Company's plants, physical evidence of the program can be seen in the newly renovated employee facilities. Working conditions have been upgraded and improved; in many cases, as a direct result of
suggestions made by the employees themselves. This is initial proof that the employees' suggestions, which are encouraged by many companies are seriously considered and often acted upon by Carling O'Keefe.

Perhaps not so readily evident, but even more important are the changes in the Company's basic attitudes toward employees. A charming manifestation of this is a small card, on which is printed a special number. The number, given to each and every employee, gives the individual direct and personal access to the company President, whether he be at his office, his home or his summer cottage and regardless of the time of day or night.

Many of the old school boy rules and regulations governing certain aspects of employee conduct have been abolished. They have been replaced by the sensible assumption that the conduct of the individual will be automatically controlled by his peers, who will take on this responsibility in order to safeguard their own positions, which might be threatened by anti-social behavior by one of the group.

Equally as important to the employee is the new policy regarding job security for those on the seniority list. The benefits of this policy extend beyond the individual to the community at large, for it provides that during slack production periods, employees, who might otherwise be laid off, are to perform much needed services for organizations and groups, whose objective is to assist the less fortunate. The
program stipulates that only work usually done by volunteer labour is to be performed by Carling O'Keefe employees. This is to discount the possibility of taking paid jobs from the already unemployed. Those engaged in these temporary slack season occupations continue to draw their full wages and benefits from the company.

A new rule for the hiring of sales personnel has been laid down. In future, candidates for sales or office positions will be sought from among the rank and file.

Does the whole thing sound too good to be true? Maybe. But the fact remains, that the effects of this program have already been felt by grateful citizens, employees and union groups across Canada. Innovation and trade-off are eminent in achieving a satisfactory work environment and a profitable business. Whether it be a brewery, steel mill or auto assemble line: productivity and employee satisfaction can be achieved.
SECTION VII

SUMMARY

There are many questions that must be answered concerning work, especially in a nation that grew to power in the belief that work was the engine of life. The General Foods plant is not alone in accepting change and breaking tradition. Throughout the industrial world, questions such as: "What is the meaning of work? What am I doing that we need? What can be done to make work gratifying?" are being asked. Industrial and trade magazines are now constantly publishing the successes and failures of humanistic techniques throughout the world of industry. Innovators such as General Foods, Proctor and Gamble, Carling O'Keefe, Saab-Scandia and Volvo are willing to experiment because the realization is that continued success is dependent on the satisfied employee.

Alienation, rampant throughout the work world, must be eliminated in face of increased social, political and environmental pressures. Industry today has the responsibility of not only providing products and services but must consider the social implications of man and his environment. The "Herd of Cattle" concept can no longer apply to the worker. There is more to survival than money: creativity, competence, performance, pride and etc., must be engrained into the industrial environment. The ill of alienation is curable; a technology that has developed the means to annihilate itself can extend its knowledge to saving itself.
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