

**A STUDY AND CRITICAL ANALYSIS OF VARIOUS
THEORETICAL APPROACHES TO JOB REDESIGN**

by

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CHAPTER 1

INTRODUCTION

Jobs are different. Moreover, individuals perceive certain jobs as more desirable than others. While jobs can be objectively differentiated, we cannot say that everyone would find the job of "fashion lingerie specialist" for JC Penney's interesting and challenging. Nor can we say that tightening nuts on the engine assembly line of General Motors would be universally considered a dull job. Individuals have different needs which guide their preference for jobs.

Research demonstrates that job characteristics mediate the relationship between organization structure and employee reactions. That is, structural properties affect the characteristics of employees' jobs. The way jobs are designed, therefore, influences employee performance and satisfaction. But how? Given that jobs are different, what are these differences? And how do these differences affect employee performance and satisfaction? These are some of the questions this report seeks to answer.

Many of the jobs currently found in organizations are poorly designed. From the individual worker's point of view, such jobs are unsatisfactory for various reasons:

they lack challenge, demand less skill than the individual offers, allow little opportunity for learning and growth, are excessively repetitious, and so on. From the organization's point of view, the costs of ill-designed jobs show up in poor quality, employee dissatisfaction, absenteeism, tardiness, high grievance rates, and even direct sabotage. Poorly designed jobs, then, are not just inhumane: they lead directly to low productivity and profitability.

JOB REDESIGN: DEFINITION AND MEANING

The term "job redesign" refers to activities that involve the alteration of specific jobs (or systems of jobs) with the intent of improving both productivity and the quality of employee work experiences. Although there are no generally accepted criteria for what is a well-designed job, there are some commonalities in job redesign projects. Typically, job specifications are changed to provide employees with additional responsibility for planning, setting up, and checking their own work; for making decisions about work methods and procedures; for establishing their own work pace; and for dealing directly with the clients who receive the results of the work. In

many cases, jobs that have previously been simplified in the interest of production efficiency are reassembled and made into larger and more meaningful wholes.

Sometimes work is redesigned to create motivating and satisfying jobs for individual employees who work more or less on their own. Such activities are usually known as "job enrichment" (Herzberg, 1974; Strauss, 1974). Alternatively, work may be redesigned as a group task, in which case a team of workers is given autonomous responsibility for a large and meaningful module of work. Such teams typically have the authority to manage their own social and performance processes as they see fit, they receive feedback and often rewards as a group, and they may even be charged with the selection, training, and termination of their members. These teams are variously known as "autonomous work groups" (Gulowsen, 1972), "self-regulating work groups" (Cummings, 1978), or "self-managing work groups" (Hackman, 1978).

Two broad categories of job design have evolved that are aimed at engaging the motivational forces of workers' egoistic needs through the establishment of job characteristics that generate intrinsic rewards. The first type of program involves job enlargement, job extension, and job rotation. A job enlargement design concentrates

upon increasing employee motivation by expanding a job from a central task to cover other related tasks (another term for such a system is "horizontal loading" [Herzberg, 1971]). Variety in tasks is emphasized here, as the mere addition of the same type of duties to a central task, termed "job extension" is held to be a program aggravating boredom and fatigue in employment (Schoderbek and Reif, 1969).

Closely related to the enlargement approach is job rotation. This design involves the rotation of an employee through a series of departments or positions centered about a core job, to give him a broad perspective of his position in the organization. The intended effect of such a system is similar to that of job enlargement: to augment worker motivation by eliciting intrinsic incentives derived from a job made varied and more interesting.

The second type of job design aims at fostering intrinsic motivation granting increased responsibility in the work situation. A job-enrichment (also termed "vertical" job loading) plan is intended to have the employee assume some of the prior planning and evaluation/measurement aspects of his job. Usually, this approach also implies that the level of difficulty or complexity of the job is raised. Furthermore, as the

variety of tasks involved is often increased under this design, job-enlargement benefits are thus included. The primary incentive gain, however, is considered to be that the worker is provided with an opportunity to help plan his work objectives and to control and evaluate his performance.

IMPORTANCE OF JOB REDESIGN

In the past few years, job redesign has received much attention by psychologists, the managements of certain corporations, and even governments of many industrially developed countries. What has caused this concern? What are corporations doing in the way of work design? Why is so much attention being given to foster new practices in job design?

a) Effects of Programmed Jobs on Human Beings

Research and common sense supports the fact that large organizations in today's industrial world do indeed involve people in specialized tasks and that, if the world wants advanced technology, one of the prices it pays is less satisfaction for people at work, especially at lower

levels of the organization.

The work of Douglas McGregor (1960) points to the futility of the "carrot and stick" form of compensation, under which salary and pay are used, in effect, to say "here is a specialized and meaningless job for which we will offer you money rewards. If you will spend eight hours a day doing something that does not offer intrinsic satisfaction, you may earn pensions for your old age and money to spend on holidays and weekends".

Argyris (1957) argued that people in such jobs have a way of reacting to such frustrations. They may become aggressive toward the organization, or simply apathetic and uninterested. This sets in motion a chain reaction -- an escalation of conflict between workers and managers. The managers look at such workers and think "people just do not seem to want to work. What is needed are more job studies, higher pay, and more rules." According to Argyris, this not only misses the cause of the problem, but actually compounds it. It offers more rules and technical planning handed down from above. Sooner or later, as workers and managers make successive counter-moves, nobody really wins. The organization becomes a conflict arena in which labor battles management, or it becomes an apathetic place where people care little for satisfying work or for

accomplishment of organizational goals.

In addition to the fact that traditional production-line work sometimes seems futile in stimulating productivity, and the fact that it breeds conflict between managers and workers, there is evidence that such work patterns affect the physical health of human beings. Work satisfaction has been found to influence how long a person lives and whether one is prone to heart disease and peptic ulcers (Work in America, 1972).

In terms of mental health, a study of workers on assembly lines (Kornhauser, 1964) showed that about 40 percent had symptoms of mental health problems, the single most important cause being low job satisfaction. Two characteristics of such jobs stood out in this study as important contributors to dissatisfaction: dull repetitive work, with little variety; and work which is programmed in detail by someone else. The latter is reflected in the feeling by the person that he or she has little control over his or her work life. These two characteristics, in turn breed a third feeling in the worker -- that "I am not responsible for what goes on" and are the basis of most job design theories.

b) Effects of Programmed Jobs on Productivity

A second reason why social scientists and practicing

managers have devoted attention to work design is that a traditional assembly-line organization, with its paced, repetitive jobs, can cause lower productivity.

For a number of years, some psychologists, influenced by early research of the Survey Research Center at the University of Michigan, believed that satisfied workers produced more output, or output with less cost in hours of labor.

A more valid view is expressed by a leading psychologist (Lawler, 1974):

If this were true (i.e., that satisfaction causes employees to produce more), there would be no problem finding new work designs that would increase job satisfaction without harming organizational effectiveness. Unfortunately, my own research and that of many other psychologists shows that satisfaction does not cause employees to work harder. In fact, it has a very low relationship to performance and is probably best thought of as a consequence of performance (rather than a cause). Despite this, there is evidence that increasing the job satisfaction of employees can increase the effectiveness. Why is this so? Satisfied employees are absent less, late less, and less likely to quit. Absenteeism, turnover, and tardiness are very expensive -- more costly than most realize. Thus organization changes that increase job satisfaction can increase the economic effectiveness of organizations even though they do not increase motivation.

Some indication of the costs referred to here can be seen in the problem faced by the Scania Division of Saab,

the Swedish automobile company which has engaged in extensive work redesign. Employee turnover in the division was about 45 percent each year, meaning that one of every two workers quit during the year. In the auto assembly plant of Scania, the turnover rate was about 70 percent a year. Time lost from absences was about 20 percent of all work in the plant during the year (Organizational Dynamics, 1973). The job redesign program undertaken by Saab is discussed later in the report.

c) Effects of Changing Cultural Attitudes Toward Work

At the same time that technology of production is becoming more and more specialized and repetitive, thus rendering jobs less demanding in education and skills, young people entering the work force have more education and a greater variety of skills. The Saab automobile company's demand for talent (based on production-line technology) was not being met due to a shortage in the supply of workers. A survey taken in 1969 showed that only 4 percent of the students graduating from high school in Sweden indicated willingness to take a rank-and-file factory job. The Saab/Scania Division became heavily dependent on imported foreign workers, with 58 percent of the factory workers coming from less affluent nations

(Organizational Dynamics, 1973).

The same phenomenon has been observed in Norway, Switzerland, and the United States. The message for management here is , "To protect your supply of workers, something must be changed."

d) Automation and Work Design

This reason for increased attention to work design may sound contradictory at first. It is that the automated assembly line itself may well force managers to design jobs with more "autonomy" or participation in them (Taylor, 1971). The reasoning is as follows. Automated production processes, such as large continuous-flow oil refineries and chemical plants, literally operate by themselves, as long as everything proceeds according to the program designed into the system by experts. The "worker" does not work on the product in the sense that, say, a cabinetmaker works on the wood. Rather, the worker stands near the machinery recording information and perhaps even reading books or engaging in other activities until something goes wrong with the process. At this point the worker gets a signal. He or she must then take some initiative. However, the worker must consider not only the machine at the workplace, but also what is happening in other parts of the process which are related to the

particular machine. This requires feedback or information about what is going on in the system. It also requires some creativity and thought. It may well require the operator to deal with another person who is supplying his or her machine with input materials or with still another person whose machine is getting its input charge from our worker's machine.

This is "vertical integration," to use an economist's term. It means that the operator's job must deliberately be designed to provide information about what is going on "out there", what place his or her job occupies in the total system, and to allow the independent thought (autonomy) necessary to correct unusual events when something goes wrong with the programmed and supposedly repetitive process. Feedback, autonomy, and self-control are, hence, the three hallmarks of job enrichment, and autonomous work groups.

OBJECTIVE OF THE REPORT

The objective of this report is summarized as follows:

- * to study in some detail various theoretical approaches to job redesign, and critically analyze them;
- * to analyze the differing human motivations connected with each of these approaches;
- * to point out problems with these theoretical approaches, and compare and contrast them with each other; and finally
- * to arrive at a comprehensive model of job redesign, integrating various approaches.

ORGANIZATION OF THE REPORT

The remainder of this report is organized according to the following format:

Chapter II, The Activation Theory of Job Redesign

This chapter discusses the application of the activation theory to job redesign, including job rotation and job enlargement. It also critically evaluates this approach and underlines various limitations to it.

Chapter III, The Motivation-Hygiene Theory of Job-Redesign

This chapter discusses the Herzberg two factor theory of satisfaction and motivation, by far the most influential theory of work redesign. It also describes the vast amount of research that this theory has prompted, and a number of change projects involving the redesign of work. It concludes with a critical analysis of this approach.

Chapter IV, The Job Characteristics Theory of Job Redesign

This chapter discusses the job characteristics model developed by Hackman & Lawler (1971), and the two measurement schemes for job characteristics: the Job Diagnostic Survey (Hackman and Oldham, 1975) and the Job Characteristics Inventory (Sims, Szilagyi, and Keller, 1976). It also covers the research methodology underlying the job characteristics theory, and critically evaluates its application to job redesign.

Chapter V, The Sociotechnical Systems Theory of Job Redesign

This chapter discusses the sociotechnical systems approach to job redesign. This approach emphasizes the importance of designing entire work systems, in which the social and technical aspects of the work place are integrated. The idea of "autonomous work groups" is also

presented, along with a discussion of various work redesign projects and research carried out in this area. It is followed by a critique of the theory.

Chapter VII, Summary and Conclusion

The final chapter summarizes and compares various theoretical approaches to job redesign. It also outlines problems with job redesign theories. A comprehensive model of job redesign, integrating various approaches has been presented. Finally, unanswered questions and scope for further research have been discussed.

CHAPTER 2

ACTIVATION THEORY OF JOB REDESIGN

Numerous human problems have been shown to be associated with work on routine, repetitive tasks. Included are diminished alertness, decreased responsiveness to new stimulus inputs, and even impairment of muscular coordination. Employees who work on highly routine jobs are often observed to daydream, to chat with others rather than work on their tasks, to make frequent re-adjustments of posture and position, and so on.

Activation theory offers an explanation for the performance decrements and the dissatisfaction frequently observed in repetitive industrial tasks. Activation or "arousal" is a neuropsychological state, which results due to the release of stored energy of the organism through metabolic activity caused by internal or external stimulation. Activation results in outward manifestations ranging from somnolence through varying degrees of alertness to agitated states such as hypertension, hyperactivity, and loss of coordination.

Basically, activation theory specifies that a person's level of activation decreases when sensory input is unchanging or repetitive, leading to the kinds of

behavior outlined above. Varying or unexpected patterns of stimuli, on the other hand, keep an individual activated and more alert, although over time the individual may adapt to even varied pattern of stimulation. This theory proposes that there is an inverted U-shaped relationship between the activation level of the individual and performance, with activation level being defined as:

The total sum of stimulation affecting the person; such stimulation may be a function of stimulus complexity, the total amount of stimulation, changes in stimulation, the novelty of stimuli, the meaningfulness of stimuli, etc. (Scott, 1966)

The relationship between activation level and performance, as described by Figure 2.1, indicates that at low activation levels, performance is handicapped by lack of alertness, a decrease in sensory sensitivity, and lack of muscular coordination. At intermediate levels of activation, performance is optimal. At high levels performance is again handicapped by hypertensiveness, loss of muscular control, "impulsion to action," and in the extreme condition, total disorganization of responses (Scott, 1966).

A number of investigations have introduced variables assumed to affect the level of activation while noting changes in the quality of task performance. Although these studies were not designed to systematically

vary activation from low to high levels but rather started at some presumably high or low level, nearly all suggest that task performance is at first enhanced and then diminishes in the quality as the activation level varies from low to high (Broadbent, 1958; Mackworth, 1950; Scott, 1957).

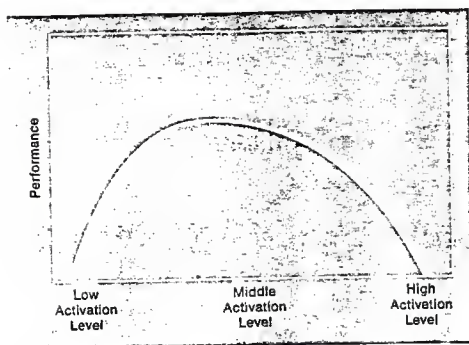


Figure 2.1

Activation theory and task behavior

Activation theory anticipates a number of behavioral outcomes in tasks which require the constant repetition of a limited number of responses to stimulation which is simple and unvarying. As the individual becomes familiar with the surroundings and learns the responses required in the repetitive task, a decline in activation level is expected. With continued exposure to the task site, the "habituation" process may lead to a decrement in performance. If the activation level falls below the characteristic norm, the individual will experience negative effect and will attempt to increase impact. If he is prevented from engaging in impact-increasing behavior, the result is continuous decline in performance. When confronted with these circumstances, the individual may temporarily or permanently leave the task situation if these alternatives are readily available. If the individual is successful in increasing stimulus impact, the result would be an increase in the activation level and positive effect, which is postulated to occur with shifts in activation toward the characteristic level. The quality or quantity of performance, or both, may then be sustained or restored to its original level depending on the nature of the impact-modifying behavior (Scott, 1966).

A wide range of behaviors may be utilized to increase activation level. The individual may increase stimulation and thus sustain activation level by stretching, alternating positions, or otherwise varying his position at the task site. Social activity including conversation with fellow employees, the development of complex group relationships, gambling, and horseplay also introduces variation which may serve to increase activation level. Environmental factors like working conditions, noise level, brightness etc., also affect activation level.

The individual may also introduce variation into the task itself. In a wide variety of work activities, individuals, when confronted with a repetitive task of long duration, may be observed dividing the total task into discrete units and then responding until each unit is completed. The experience seems to be pleasant and associated with a feeling of reduced effort (Baldamus, 1951).

Management may introduce variation extrinsic to the task. The anticipation of monetary rewards may effect some changes in activation level as may rest periods and music. From activation theory it may be anticipated that as more variation is introduced into a repetitive task, the result would be a reduction in habituation and a sustained

activation closer to that required for optimum behavioral efficiency. If the increase in variation results in an activation level near the individual's characteristic norm, increases in performance and positive effect could be expected. Thus "job rotation" or "job enlargement" requiring the individual to attend to stimulation of greater variety or complexity or both should certainly have potential for effecting long-run productivity.

REVIEW OF RESEARCH ON ACTIVATION THEORY OF JOB REDESIGN

Several studies of behavior in repetitive tasks have shown that forced repetition of a limited number of responses to unchanging stimuli results in a decrement of responsiveness, discomfort reactions, and a tendency to alternate responses. Wyatt and Ogden (1924) observed female operators who selected and packed tablets in paper envelopes, a task which took about 12 seconds to complete and was repeated about 2,500 times a day. They found that the average time to complete the operation consistently increased. Furthermore, the workers often showed signs of discomfort and became increasingly restless as the task was continued.

In a series of studies of worker efficiency, Bills (1931) found that individuals engaged in repetitive work show lapses of attention often after short periods of time at the task. These lapses, which Bills referred to as blocking, resulted in performance decrements, increases in errors, greater variability in performance, and an increase in the likelihood of accidents. In a review of the research on the effects of monotonous and restricted stimulation, Fiske and Maddi (1961) report that performance decrements on continuous, repetitive tasks have consistently been observed often within minutes after performance was initiated. In addition to decreased output, many studies reported boredom, irritability, day-dreaming, and restlessness. Performance decrements in repetitive vigilance tasks have been reported by Broadbent (1958), Frankman and Adams (1962), Mackworth (1950), and Scott (1957).

Several studies have shown that when extrinsic factors such as rest pauses, music, and knowledge of results are introduced into the repetitive task situation, performance improves at least temporarily. Vernon and Bedford (1924) found that the introduction of a 10-minute rest period increased hourly production by 20 percent in a repetitive labeling task. Similarly, McGhee and Owen

(1940) found a significant increase in productivity with the introduction of two rest pauses in a routine clerical task.

Studies involving modifications in task design also lend support to the prediction that when the repetitive task is enlarged, habituation effects may be reduced leading to gains in productivity and increases in positive effect.

Uhrbrock (1961) reviewed the research on the effects of music and found that where significant increases in productivity were observed with the introduction of music, the tasks were usually of a simple, repetitive nature. Smith and Curnow (1966) reported a field experiment on music variations in supermarkets which is supportive of the theory.

JOB REDESIGN TECHNIQUES BASED ON ACTIVATION THEORY

Job Rotation

One approach to job redesign that is based on activation theory is that of job rotation, that is rotating an individual through a number of different jobs in a given time period, with the expectation that these varied job

experiences will keep the person from suffering the negative consequences of excessively low activation.

The premise of job rotation is that the various tasks performed by workers are interchangeable, and workers can be "rotated" from task to task without any major disruption in the work flow. Figure 2.2 depicts the basic process of job rotation.

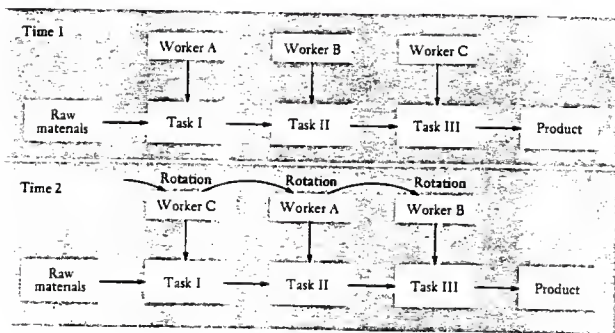


Figure 2.2

Consider an automobile assembly line where task I is installing the carpets, task II is installing the seats, and task III is installing the dashboard. During time 1, worker A performs task I, worker B task II, and worker C task III. During time 2, worker A now performs task II, worker B task III, and worker C performs task I.

With this approach, there is really no major change in the actual jobs of the workers. However, the management assumes that by rotating employees between different jobs, the boredom and routineness can be minimized by providing workers the opportunity to develop other skills and also a larger perspective of the total production process.

Job Enlargement

Job enlargement represented the first attempt by managers to redesign jobs. The basic feature of this technique is the horizontal expansion of jobs to include a greater variety of jobs. Research indicates that the boredom and dissatisfaction with many jobs can be traced to the short work cycle built into different tasks. For example, in an automobile assembly line, it only takes a few minutes for workers to install headlights, the steering wheel, or the radio.

Horizontal expansion involves increasing the number

and variety of skills and activities by the individual worker. In most cases, the enlarged job includes certain activities originally held by other workers. Figure 2.3 depicts the process of job enlargement. Suppose that tasks I through IV, respectively, involve installing the carpets, seats, dashboard, and radio in an automobile. After enlargement, worker A may be responsible for installing the carpets plus the seats, worker B installs both the seats and the dashboard, and worker C installs the dashboard and the radio.

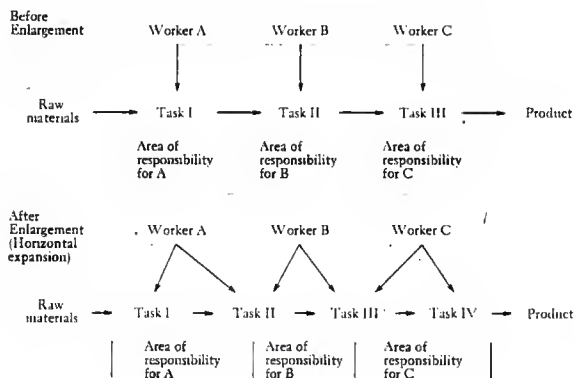


Figure 2.3

Four potential motivational aspects of job enlargement stand out: a lack of boredom (because of an increase in the variety and novelty of work); a feeling that work is more meaningful (more valuable to the company, more important to society); a feeling of personal competence (because one is using more of one's abilities); and a feeling of responsibility for the task (because one can see the whole task, or a greater part of it, rather than just a small operation) (Donaldson, 1975).

A successful attempt at job enlargement was undertaken at Maytag (Kilbridge, 1980). Before the redesign, the assembly of a washing machine water pump, which involved twenty-seven different parts and a variety of tools and operations was performed by six different workers. The company reported decreased labor costs per pump when they did away with the six-person line and each worker assembled an entire pump. No results on quality were reported.

CRITICAL ANALYSIS OF THE ACTIVATION THEORY OF JOB REDESIGN

1) Activation theory implies that individuals should be placed in organizational roles as a function of the arousing capability of the job as well as the optimal activation level of the individual. The relationship of the individual's optimal activation level to the arousing potential of the particular job might be thought of as intervening between the effort and performance components of the job. The logic behind this is that an individual's performance on a job becomes a function of his activation level (a neuropsychological state) and the arousing potential of the job, irrespective of the efforts being put in.

2) The direct measurement of activation level is difficult since students and employees alike are not eager to have electrodes implanted in their brain stems. Other measures of psychological arousal like changes in pupillary size, pulse rate etc., are only approximate and do not necessarily reflect cause and effect relationships.

3) The assumption underlying job rotation is that varied job experiences will keep the person from suffering the negative consequences of excessively low activation.

The problem, it seems, is that people adapt fairly quickly even to new stimulation. If the new tasks are just as boring as the old one, then no long term gains are likely from job rotation. Other drawbacks to job rotation center around costs, disruptions, and its rather limited impact on enhancing job meaningfulness. Shifting people around has costs. Even though the same skill levels are assumed, productivity is typically adversely affected in the long run. Job rotations also cause disruptions. Members of the work group have to adjust to the new employee. The supervisor may also have to spend more time answering questions and monitoring the work of the recently rotated employee. Finally, rotation is a weak solution to jobs that score low in their ability to motivate. Since job rotation does not really change the job, merely the job-employee mix, employees are unlikely to have experienced greater meaningfulness from their work by having done four boring jobs during a given year instead of one.

4) Job enlargement has been subject to criticism on the following accounts:

- a) Does repetitive work necessarily cause boredom?
- b) Does boredom necessarily have adverse

effects on attitudes to work and output?

c) If the answer to both the preceding questions is "yes", then does job enlargement provide an adequate solution?

The first question has been examined by Smith (1955). He suggests that a number of personality characteristics along with task characteristics could determine individual susceptibility to boredom. Due to the spread of individual differences, some workers could be expected to find repetitive work tolerable.

With regard to the relationship between employee attitudes and productivity, Brayfield and Crockett (1955), from an extensive review of relevant literature, concluded that there was little evidence for any such relationship at all. Kennedy and O'Neill (1958) found no difference in attitudes toward work and supervision between assembly operators on repetitive tasks and utility men doing similar but more varied work.

Herzberg (1968) criticizes job enlargement by pointing out that it may simply enlarge the meaninglessness of a job. Is a worker more motivated if he or she solders wire in an engine in addition to tightening a bolt? Herzberg likens this to adding zero to zero.

The adequacy of job enlargement as a solution to

problems of repetitive work has been questioned by Argyris (1958) who argues that personality growth could be affected by some aspects of formal organizational structure. He points out that job enlargement makes more use of manual abilities, but that these make a less important contribution to personality growth than the use of intellectual abilities. In order to engage and develop the whole human personality in work, he suggests combining job enlargement with joint consultation and profit sharing schemes, and terms this combination "enlarged job enlargement" (Argyris, 1957).

SUMMARY

Activation theory is based on neuropsychological research and provides a conceptual framework for analyzing and designing jobs. Its basic assumptions have been ratified by a number of experimental studies. At present, activation theory seems most useful for understanding the consequences of jobs that are grossly understimulating or overstimulating. Job rotation and job enlargement, the two job redesign techniques based on the activation theory, have been widely applied to solve problems of repetitive

work. Though subject to criticism on certain accounts, these techniques have been found to gain motivational power when applied jointly with job enrichment.

CHAPTER 3

THE MOTIVATION-HYGIENE THEORY OF JOB REDESIGN

The Motivation-Hygiene theory is often referred to as the two-factor theory, a designation that has its rationale in the dual nature of its approach to the sources of job satisfaction and, ultimately, job motivation.

Motivation-hygiene theory has prompted a great deal of research and inspired a number of change projects involving the redesign of work. Especially noteworthy is the series of job enrichment studies done at AT&T (Ford, 1969). These studies document that job enrichment can lead to beneficial results both for individuals and organizations for a variety of different jobs. Moreover a set of step by step procedures for implementing job enrichment were generated as part of the AT&T program. These procedures continue to guide many job redesign activities throughout the country.

The initial source of the theory appears to be a comprehensive review of the literature on job attitudes and satisfaction undertaken by Herzberg and his associates at Psychological Service of Pittsburgh (Herzberg, Mausner, Peterson, and Capwell, 1957). This review revealed often conflicting results, although with some slight overall

tendency for job satisfaction to be positively correlated with job performance levels. To this finding, Herzberg added an insight derived from his background in the field of mental health -- the idea that mental health is not just the obverse of mental illness, but rather a totally separate process. He developed the hypothesis that a similar discontinuity exists in the field of job satisfaction (Herzberg, 1976). Subsequent research produced a list of factors that contribute to satisfaction at work (motivation factors) and another separate list of factors that contribute to dissatisfaction (hygiene factors). Thus, the theory is an amalgam of deductive and inductive components so closely intertwined with the early research that the two cannot be separated effectively (Herzberg, Mausner, and Snyderman, 1959). Accordingly, an independent test of the theory had to await later investigation.

EVOLUTION OF THE THEORY

Motivation-hygiene theory is presented in three volumes (Herzberg, Mausner, and Snyderman, 1959; Herzberg, 1966, 1976). The most recent of these is primarily a

compendium of articles previously published, the majority of them in the early 1970's. Although the basics of the theory established in 1959 have remained firm, Herzberg has elaborated considerably on them since then.

The Motivation to Work (1959)

The first volume promulgating the theory also contains a detailed report of the initial research. This research sought to explore two hypotheses:

- 1) The factors causing positive job attitudes and those causing negative attitudes are different.
- 2) The factors and the performance or personal effects associated with sequences of job events extending over long time periods differ from those associated with sequences of events of short duration.

Based on certain outcomes of this research, the factors leading to job satisfaction and to job dissatisfaction were specified and thus became part of the theory. Job satisfaction is viewed as an outgrowth of achievement, recognition (verbal), the work itself (challenging), responsibility, and advancement (promotion). These five factors are considered to be closely related both conceptually and empirically. When they are present

in a job, the individual's basic needs will be satisfied, and positive feelings as well as improved performance will result.

The basic needs specified are those related to personal growth and self-actualization, and these are said to be satisfied by the five intrinsic aspects of the work itself.

In contrast, job dissatisfaction results from a different set of factors, all of which characterize the context in which the work is performed. These are company policy and administrative practices, supervision (technical quality), interpersonal relations (especially with supervision), physical working conditions, job security, benefits, and salary. These dissatisfiers, or hygiene factors, when appropriately provided can serve to remove dissatisfaction and improve performance up to a point, but they cannot be relied upon to generate really positive job feelings or the high levels of performance that are potentially possible. To accomplish these outcomes, management must shift gears and move into motivation.

This means that good hygiene should be provided, but that it will yield benefits only up to a certain point. Beyond that, the focus needs to be on the intrinsic aspects of the work itself, not on its context. "Jobs must be

restructured to increase to the maximum the ability of workers to achieve goals meaningfully related to the doing of the job. The individual should have some measure of control over the way in which the job is done in order to realize a sense of achievement and of personal growth" (Herzberg, Mausner, and Snyderman, 1959).

Work and the Nature of Man (1966)

With this volume, Herzberg began to add philosophical embellishments to what had been an eminently scientific and testable theory.

Most people are best characterized in terms of two sets of needs: animal needs relating to the environmental survival, and human needs relating to "tasks with which he is uniquely involved" -- as defined by Herzberg. Herzberg also described individuals who are dominated by one set or the other. Thus there are high growth-oriented people who actually experience what they interpret as unhappiness when deprived of motivators, and there are people who are fixated on hygiene seeking, such as the "mentally ill" (according to Herzberg) or people with a very low desire for growth beyond the satisfaction of environmental needs. Herzberg tends to use the terms "job satisfaction" and "motivation" synonymously, implying that the job performance of the motivator who has found what he or she

is looking for will be better either than that of one who has not, or of a mere hygiene seeker.

Hygiene seekers are generally considered to be poor risk for a company, because they tend to be motivated over short time periods and require constant doses of external rewards. They cannot be relied upon in crises since even their normal level of performance is susceptible to a marginal decrease in hygiene factors. Furthermore, a lack of motivators in a job tends to sensitize people to any lack of hygiene factors, with the result that more and more hygiene must be provided to obtain the same level of performance. Herzberg strongly emphasizes the need for companies to build motivators into their jobs.

To facilitate this, he recommends that industrial relations departments be organized into two formal divisions, one to deal with hygiene matters and the other to deal with motivators. Assuming that most current departments are focused largely on hygiene, he devotes primary attention to what would be added with the division concerned with motivator needs. Among the tasks recommended are re-education of organization members to a motivator orientation (from the current welfare orientation), job enlargement, and remedial work in areas of technological obsolescence, poor employee performance,

and administrative failure.

The Managerial Choice (1976)

The most recent presentation of Motivation-Hygiene theory places much greater emphasis on job enrichment applications. However, it also extends the theory in several respects.

One such extension utilizes the two factor concept to develop typologies of workers. The normal types are described as follows:

- 1) The person who has both hygiene and motivator fulfillment, who is not unhappy and is also very happy.
- 2) The person who is on both need systems but has little fulfillment in the hygiene area even though his motivator satisfaction is good. Such a "starving artist" is both unhappy and happy.
- 3) The person who is on both need systems but whose satisfactions are reversed -- hygienes are good, but motivators are poor; he is not unhappy but neither is he happy.
- 4) The down and out person who is lacking in fulfillment generally and is both unhappy and lacking in happiness.

A distinction is also made within the motivator factors. Achievement and recognition are described as preparatory in nature and as having, in common with hygiene factors, relatively short term effects. The work itself, responsibility, and growth and advancement are generators that truly motivate people. In job redesign, these latter factors should be emphasized.

HERZBERG'S OVERALL RESEARCH METHODOLOGY

The research methodology involved interviewing 203 accountants and engineers employed by nine primarily manufacturing companies in the Pittsburgh area. The subjects were asked for incidents describing "a time when you felt exceptionally good or a time when you felt exceptionally bad about your job, either a long-range sequence of events, or a short-range incident." The responses were examined for indications of:

- 1) The situations which led to the feelings.
- 2) The needs or drives which were activated by these situations.
- 3) The amount of time these situations lasted.

The results indicated that the following factors

were related to good feelings about a job: achievement and recognition, the nature of the work itself, responsibility, advancement, and salary. Bad feelings about a job seemed to be related to the following factors: company policy and administration, technical supervision, salary, interpersonal relations with supervisors, and working conditions. In addition, good feelings seemed to persist long after the events or situations which caused them had disappeared. This seemed to suggest that negative attitudes had a weaker effect on performance, if for no other reason than the fact that they did not last long.

Content analyses of the interviews revealed that events leading to satisfaction were different from events leading to dissatisfaction. The kinds of events leading to job satisfaction are variously referred to as "satisfiers", "motivators" or "content factors". Events leading to job dissatisfaction are termed "dissatisfiers", "maintenance factors", "hygiene factors", or "context factors".

The Motivation-Hygiene theory is diagrammatically summarized in Figure 3.1. This figure correlates Herzberg's ideas about job enrichment, job satisfaction and motivation, and subsequent psychological growth. The influence of job satisfaction and motivation on job performance is also indicated.

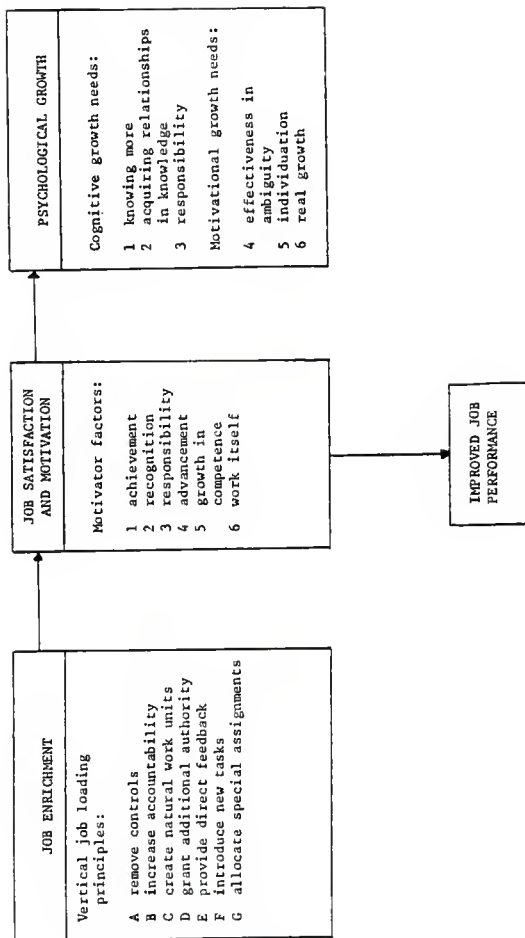


Figure 3.1

**JOB ENRICHMENT: A JOB REDESIGN TECHNIQUE BASED ON
MOTIVATION-HYGIENE THEORY**

It is Herzberg's view that if work is not in accord with human nature, it does not lead to job satisfaction and disrupts mental health, then the nature of the work must be changed. This is to be achieved by restructuring the individual job.

In his well known paper, "One More Time: How Do You Motivate Employees?" (Harvard Business Review, January 1968), Herzberg lists seven "principles of vertical job loading" and presents a ten point check list, or job enrichment program, to implement them. The vertical job loading principles, which are related to motivating factors are:

- 1) Removing some controls while retaining accountability.
- 2) Increasing the accountability of individuals for their own work.
- 3) Giving a person a complete natural unit of work.
- 4) Granting additional authority or freedom to employees.
- 5) Making periodic reports directly available

to the worker, rather than to the supervisor.

6) Introducing new and more difficult tasks.

7) Assigning individuals to specialized tasks, enabling them to become experts.

Herzberg's ten point check list for implementation of the vertical job loading principles is, briefly, as follows:

- 1) Select for enrichment jobs in which
 - a) technical changes can be made with a minimum of expense;
 - b) job satisfaction is low;
 - c) hygiene is expensive; and
 - d) improved motivation will affect performance.
- 2) Examine these jobs with the conviction that job content can be changed.
- 3) "Brainstorm" a list of possible job enrichment changes.
- 4) Screen the list for hygiene suggestions, retaining only those concerned with motivators.
- 5) Screen the list for generalities retaining only those concerned with motivators.
- 6) Screen the list for horizontal loading factors.

- 7) Avoid employee participation in determining the changes to be made.
- 8) Set up a controlled experiment to examine the job enrichment effects.
- 9) Expect initial results to be poor, until employees become accustomed to their new jobs.
- 10) Expect anxiety and hostility from supervisors, at least initially.

In 1974, Herzberg provided more advice on what he believes constitutes the "ingredients of a good job" listing eight of these with short definitions. The ingredients are:

- 1) direct feedback
- 2) client relationship
- 3) new learning
- 4) scheduling
- 5) unique expertise
- 6) control over resources
- 7) direct communications
- 8) personal accountability.

These ingredients speak for themselves, and are almost identical to the vertical loading principles.

MOTIVATIONAL PROPERTIES OF JOB ENRICHMENT

Job enrichment allows workers to perform managerial functions previously restricted to managerial and supervisory personnel. If founded on enlarged jobs, it allows workers to perform more task components and also to have more control over the tasks they perform. Motivating characteristics of job enrichment -- including participation, autonomy, and responsibility -- appeal to employees who strive for the satisfaction of higher-order needs such as self-control, self-respect, and self actualization (Chung & Ross, 1979)

Vroom (1964) and Maier (1963) indicated that participation in decision making leads to greater success of decisions by workers and thus increases employee motivation. But other studies indicate that participation does not necessarily lead to high motivation and productivity unless it results in high performance goals set by the participants themselves. Constraints like worker's technical and psychological readiness to perform demanding jobs, pay, job security, and organizational climate may effect the achievement of these goals.

Furthermore, employees will not set high performance goals unless their jobs have been horizontally enlarged to

make their tasks psychologically meaningful (Chung and Ross, 1979). Thus it is doubtful whether job enrichment alone can have a strong motivational impact on employee behavior. When these two types of work systems are jointly applied under favorable conditions, job enrichment can exert more influence on employee motivation than can job enlargement because it gives workers more opportunities to utilize their work environment.

Task Attributes of Job Enrichment

1) **Employee Participation** (Vroom, 1964). Employee participation in managerial decisions can influence employee job performance, as well as satisfaction. Employees who participate in the decision-making process tend to internalize organizational decisions and feel personally responsible for carrying them out.

2) **Goal Internalization** (Likert, 1967; Odiorne, 1970) Motivation is a goal-oriented behavior. If a job enrichment program is to be successful, workers should be involved in the goal-setting process for the work-group.

3) **Autonomy** (Chung and Ross, 1979). Employees should be given autonomy and control over the means of achieving organizational goals. They should be allowed to

evaluate their own performance, take risks, and learn from their mistakes.

4) **Group Management (Walton, 1972).** Autonomy can be granted to employees collectively or individually. Most proponents of the job enrichment programs prefer group action over the individualized approach. Assignments of individual tasks are subject to team consensus, and tasks can be reassigned by the team to accomodate individual differences in skills, capacities, and interests.

EXAMPLES OF THE JOB ENRICHMENT APPROACH TO INDUSTRIAL PROBLEMS

AT&T (Miner, 1980). AT&T reported that after it had introduced the job enrichment system into a service representatives' office at Southwestern Bell, the absenteeism rate in the experimental unit was 0.6 percent, compared to 2.5 percent in other groups. The errors per 100 orders were 2.9 as compared to 4.6 in the control group.

The program was subsequently expanded into a variety of departments -- commercial, comptroller, plant traffic, and engineering. The overall results were very favorable,

although there were instances when job enrichment did not have much effect. Some supervisors clearly resisted it, and 10 to 15 per cent of the employees did not want the added responsibility. Blue collar jobs proved most resistant to enrichment.

More recent reports from AT&T indicate continuing positive effects (Ford, 1973). In particular, success has been obtained by combining and reorganizing existing jobs to produce more meaningful work units, and by linking enriched jobs to produce internal customer or client relationships.

Buick Product Engineering The Buick Product Engineering group decided in the early 1970s to analyze the job of assembler for enriching. The assembler's content of daily tasks was restructured and redefined, but the job description itself was not changed. Job modifications included such things as allowing the assembler to:

- * Correct any deficiencies discovered and to record the action on a work sheet.
- * Choose his own work assignment.
- * Contact the design engineers directly.
- * Inspect his own work.
- * Establish his own completion dates and job hour content.

Since implementation of the job enrichment program, the following changes have been observed by Product Engineering supervision:

- * Productivity has increased 13 percent (as measured by increased work tickets per assembler per month).

- * Petty grievances have been virtually eliminated.

- * Departmental morale has improved considerably, along with increased pride and interest in the work.

- * Communication and personal relationships between and among assemblers, foreman, and design engineers have increased and improved.

Philips. The editor of Organizational Dynamics (1973, vol 3) reported that at Philips (Netherlands), job enrichment improved employee morale, reduced production costs by 10 percent, and increased product quality.

The above examples clearly indicate the utility of the job enrichment approach in improving organizational effectiveness, if applied in the right context and manner, taking into account workers' resistance to change.

CRITICAL ANALYSIS OF THE MOTIVATION-HYGIENE THEORY

Method Bound Nature of the Theory

One of the major criticisms of this theory has been the fact that since the data were gathered in face-to-face interviews, possibly the respondents were acting defensively when they responded. People might be unwilling to admit to an interviewer that a bad experience was their fault. Consequently, when relating a dissatisfying time, they would attribute the cause of the dissatisfaction to someone or something other than themselves (e.g., a supervisor, co-worker, or company policy). On the other hand, they would be more likely to take personal responsibility for good events (e.g., accomplishing a difficult task, receiving recognition for meeting a goal etc.). Because of this potential confounding factor, numerous researchers have tried to replicate Herzberg's findings using methods other than interviews. In most of the cases, they did not find the same results as Herzberg (Ewen, 1964; Blood and Hulin, 1967).

Lack of Clarity and Practical Relevance

Herzberg's theory is probably a reasonable one at the descriptive level. It does a good job of describing

what a manager might expect to find -- on an average. The factors which are listed as motivators are probably important to a majority of the work force in a particular organization (e.g., the stimulation provided by the job duties). But description is not explanation. Being able to describe the characteristics of a majority of the work force is a long way from understanding the relationship among satisfaction, motivation, and performance. Moreover, the distinction between motivators and hygiene factors is ambiguous (Landy and Trumbo, 1976).

The suggestion that industrial relations departments should be divided into motivator and hygiene units is interesting, but its validity rests on that of the underlying theory. Such an approach has not been widely adopted since many industrial relations functions such as selection, training, compensation, and appraisal are so concerned with all the aspects of motivation that an artificial separation does not seem feasible.

Weaker Hygiene Factors

Job satisfaction is now regarded as a uni-dimensional phenomenon, the motivator factors having a more powerful determining force on both satisfaction and dissatisfaction, the hygiene factors having a generally

weaker impact. (Locke,1973; Spillane, 1973)

Individual and Situational Differences

Lupton (1971, 1976) describes Herzberg as belonging to that group which he calls "psychological universalists", whose approach relies on the assumption that the theories that they have evolved apply equally to all individuals, regardless of the circumstances in which the theories are applied. The apparent division of job characteristics into motivator and hygiene factors is closely related to the higher and lower order needs dichotomy in Maslow's (1943) need hierarchy theory of motivation. A number of researchers have taken issue with this point.

Canter and Bugental (1966) found job level to be a crucial variable in explaining differential orientations toward work in a sample of 692 employed adults in the greater Los Angeles area. Professionals and managers tended to value intrinsic job components, but unskilled employees placed more value on extrinsic job components. The general validity of the two factor theory is similarly limited, argue Blood and Hulin (1967), by the mediating effects of individual differences and subcultural influences on a worker's response to a job.

Limitations of Job Enrichment

Reif and Luthans (1972), and Little and Warr (1974) question the application of job enrichment to blue collar workers and argue that administrative, technical, clerical, and supervisory jobs are more amenable to job enrichment. In addition, Reif and Luthans (1972) claim that at least four typical worker reactions to job enrichment must be surmounted:

- 1) anxiety, when presented with new skills to learn
- 2) fear, of failure and inadequacy
- 3) increased reliance on supervision, at least initially
- 4) dislike of change.

Little and Warr (1971) suggest that job enrichment is constrained to jobs at higher skill levels because some jobs are so repetitive and routine that increasing responsibility is impossible, and because piece-workers may regard the technique as an attempt to cut their rates. They argue that the technique is constrained further by:

- 1) the instrumental attitudes of many workers
- 2) rejection of additional responsibility by those who feel stretched already.

- 3) the claim of some workers that their jobs are not as boring as outside observers think.
- 4) the expressed preference of some workers for simple, repetitive work.
- 5) managerial, supervisory, and trade union resistance to its implementation.

SUMMARY

Motivation-Hygiene theory has probably created more controversy than any other theory of job redesign. The theory has been losing components in subsequent tests and reformulations. It seems it lacks the support needed to confirm it, in spite of an extended period of testing and a great deal of research. The problem now is that researchers are losing interest in the theory, apparently assuming that it is unlikely to yield valid predictions. The major applied outgrowth of motivation-hygiene theory has been the rejuvenation, if not the creation, of job enrichment.

This is an important accomplishment, and it justifies the emergence of the theory, no matter what its

deficiencies are. Job enrichment as a motivational technique can work - with some people, under certain circumstances, for some period of time.

CHAPTER 4

THE JOB CHARACTERISTICS THEORY OF JOB REDESIGN

The job characteristics approach attempts to specify the objective characteristics of jobs that create conditions for high levels of internal work motivation on the part of employees. Current statements of the theory suggest that individuals will be internally motivated to perform well when

- a) they experience the work as meaningful
- b) they feel they have personal responsibility for the work outcomes, and
- c) they obtain regular and trustworthy knowledge of the results of their work.

Five objective job characteristics are specified as key in creating these conditions: skill variety, task identity, task significance, autonomy, and feedback from the job itself (Turner and Lawrence, 1965; Hackman and Lawler, 1971).

DEVELOPMENT OF THE THEORY

Like many theories, job characteristics theory has undergone considerable expansion since its first statement,

although actual revision has been minimal. In general this expansion has been devoted to achieving increased precision of predictions and to extending the boundaries within which the theory can operate.

The Original Hackman-Lawler Formulations

According to Miner (1980), the basic theory rests on five propositions that are stated as follows:

1) The likelihood that an individual will actually engage in a behavior is enhanced to the extent that he believes he can obtain an outcome he values by engaging in that particular behavior or class of behaviors.

2) Outcomes are valued by individuals to the extent that they satisfy the physiological needs of the individual, or to the extent that they lead to other outcomes which satisfy such needs or are expected by the individual to do so.

3) Thus, to the that extent conditions at work can be arranged so that employees can satisfy their own needs best by working

effectively toward organizational goals, employees will in fact tend to work hard toward the achievement of these goals.

4) Most lower level needs (e.g., physical well being, security) can be reasonably well satisfied for individuals in contemporary society on a continuing basis, and therefore, will not serve as motivational incentives except under unusual circumstances. This is not the case, however, for certain higher order needs (e.g., needs for personal growth and development or feelings of worthwhile accomplishment).

5) Individuals who are capable of higher order need satisfaction will in fact experience such satisfaction when they learn that they have, as a result of their own efforts, accomplished something that they personally believe is worthwhile or meaningful. Specifically, individuals who desire higher order need satisfaction should be most likely to obtain them when they work effectively on meaningful jobs which provide

feedback on the adequacy of their personal work activities (Hackman and Lawler, 1971)

Characteristics of Motivating Jobs

In the Hackman-Lawler version of the theory, four characteristics were proposed as essential to jobs constructed to engage higher order needs. Essentially what was hypothesized is that these four elements must be introduced into a job to enrich and thus make it motivating for individuals with strong higher order needs. These four characteristics or task attributes are taken from earlier work by Turner and Lawrence (1965). The four characteristics are autonomy, task identity, variety, and feedback (defined later in the Hackman-Oldham model)

Task Characteristics and Outcomes

It is hypothesized that satisfaction, performance, and attendance should be higher when the four core characteristics are present in a job. The theory specifies that all four must be present for these consequences to accrue. Furthermore, these relationships are moderated by the level of higher order need strength in the individual. When higher order need strength is pronounced, the four core job dimensions should yield particularly high

satisfaction, performance, and attendance levels. The implication is that many jobs lack the core dimensions and that they should be redesigned (enriched) to provide them.

The Hackman-Oldham Extensions

Job characteristics theory was explicated by Hackman and Oldham (1976). The number of core job characteristics was extended to five with the inclusion of task significance as a third contributor to the meaningfulness of work. The overall model is illustrated in Figure 4.1.

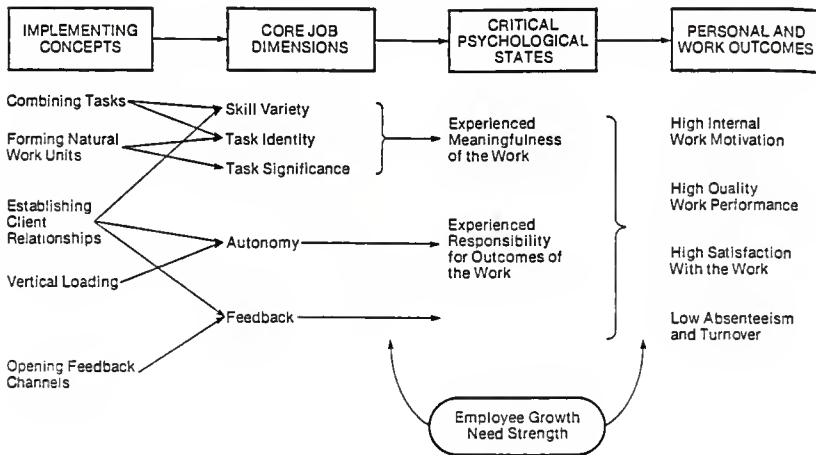


Figure 4.1

The three psychological states

The psychological states, as illustrated in the figure, are defined in the following terms:

- 1) Feeling of meaningfulness -- the degree to which the individual experiences the job as one which is generally meaningful, valuable, and worthwhile.
- 2) Feeling of responsibility -- the degree to which the individual feels personally accountable and responsible for the results of the work he or she does.
- 3) Knowledge of results -- the degree to which the individual knows and understands, on a continuous basis, how effectively he or she is performing the job.

Core job dimensions

The five core job dimensions that elicit the psychological states described above are as follows

Toward meaningful work

Three of the five core dimensions contribute to a job's meaningfulness for the worker:

- 1) Skill Variety -- the degree to

which a job requires the worker to perform activities that challenge his skills and abilities.

2) Task Identity - the degree to which the job requires completion of a "whole" and identical piece of work - doing a job from beginning to end with a visible outcome. For example, it is clearly more meaningful to an employee to build complete table lamps than to attach electrical cord after electrical cord, especially if he never sees a completed table lamp. (Note that the whole job, in this example probably would involve greater skill variety as well as task identity.)

3) Task Significance - the degree to which the job has a substantial and perceivable impact on the lives of other people, whether in the immediate organization or the world at large. The worker who fixes window shields on cars is more likely to perceive his work as significant than the worker who fills boxes with potato chips - even though the skill levels involved may be comparable.

Toward personal responsibility

A fourth core job dimension leads a worker to experience the increased responsibility in his job. This is Autonomy, the degree to which the job gives the worker freedom, independence, and discretion in scheduling work and determining how he will carry it out.

Toward knowledge of results

The fifth and last core dimension is feedback. This is the degree to which a worker, in carrying out the work activities required by the job, gets information about the effectiveness of his work. Feedback is most powerful when it comes directly from the work itself - for example, when a worker has the responsibility of checking a component he has just finished machining, and learns in the process that he has lowered his reject rate by meeting specifications more consistently.

The overall motivating potential of a job

This model is explicitly employed to develop a formula to compute the motivating potential (MPS) for a given job. The MPS provides a single summary index of the degree to which the objective job characteristics of the job will prompt high internal work motivation (Hackman and Oldham, 1976). A job high in motivating potential must be

high in at least one of the three dimensions that lead to experienced meaningfulness and high in both autonomy and feedback as well. The MPS provides a quantitative index of the degree to which this is in fact the case. MPS is very useful in diagnosing jobs and in assessing the effectiveness of job enrichment activities. The empirical formula for MPS is given later in the discussion of the Job Diagnostic Index.

The moderating effect of employee growth-need strength

Figure 4.2 shows diagrammatically how individual growth needs have the power to moderate the relationship between the characteristics of jobs and work outcomes.

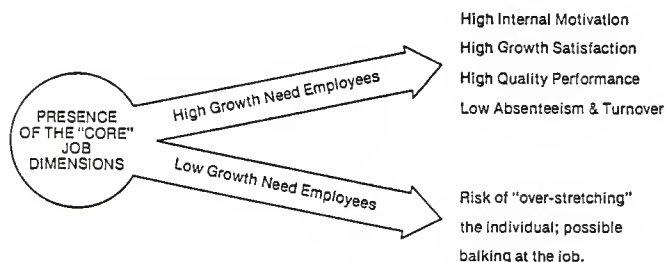


Figure 4.2

Workers with high growth needs will respond more eagerly to jobs that are high in the core dimensions than workers whose growth needs are not so strong. Psychologists who emphasize human potential argue that everyone has within him at least a spark of the need to grow and develop personally. Research, however, has shown that unless that spark is sufficiently strong, its chances of getting smothered are quite high. Hence, a person who has worked for twenty years in monotonous and demotivating jobs may find it difficult or even impossible to become motivated overnight when given the opportunity.

In a subsequent publication, the moderating process was extended beyond growth need strength alone to include satisfaction with such job context factors as pay, job security, coworkers, and supervisors (Oldham, Hackman, and Pearce, 1976). The assumption here is that the broader work system must be healthy for the theory to operate effectively. The specific hypothesis are as follows:

- 1) When both work context satisfaction and growth need satisfaction are high, MPS-outcome relationship should be strong.
- 2) When both work context satisfaction and growth need satisfaction are low, MPS-outcome relationships should be near zero, or even

negative.

3) When work context satisfaction is high, but growth need satisfaction is low (or the reverse), MPS-outcome relationships should be moderately weak.

The Moderating Effects of Organizational Climate

An additional moderating factor on performance outcomes that has been discussed by both Lawler (1973) and Hackman (1977) is the degree to which the organizational context of the job is of a "mechanistic" or "organic" type. Mechanistic systems espouse the traditional concept of bureaucracy. The managerial hierarchy is tall, authority is centralized, and rules and procedures are well defined and consistently enforced. Organic systems, in contrast, are more flexible or variable, with operating approaches adapted to people and tasks. The managerial hierarchy is flat, and units are operated in whatever way serves overall organizational goals (Burns and Stalker, 1961; Hackman, 1961).

Figure 4.3 outlines hypothesized performance relationships when such organizational climate differences are taken into account (Porter, Lawler, and Hackman, 1975). The figure has the added value of specifically indicating the expected consequences when low growth need employees

are placed in enriched jobs. It does not, however, incorporate satisfaction with job context factors as a moderator variable. Only the moderating effects of motivational patterns and organizational climates are considered.

Existing Combination

1. High growth need – enriched job – organic climate
2. High growth need – enriched job – mechanistic climate
3. High growth need – routine job – organic climate
4. High growth need – routine job – mechanistic climate
5. Low growth need – enriched job – organic climate
6. Low growth need – enriched job – mechanistic climate
7. Low growth need – routine job – organic climate
8. Low growth need – routine job – mechanistic climate

Predicted Consequence

- Very high quality performance; high satisfaction; good attendance; low turnover.
- Individual responds well to the job, but chafes at organizational overcontrol.
- Individual will try to have the job changed; if unsuccessful, will resign.
- High frustration; low satisfaction; high turnover; high absenteeism.
- Psychological withdrawal from the job; overt hostility; low job performance.
- Individual responds to the organizational cues and does not handle job effectively.
- Reasonably adequate performance; constant anxiety over perceived uncertainties.
- Effective performance; adequate satisfaction; adequate attendance.

Figure 4.3

Action Principles for Redesigning Jobs

A set of guidelines for enriching jobs, derived from the five core job characteristics of the theory, has been developed (Hackman, 1977; Oldham, Janson, and Purdy, 1975). These so-called action principles represent a specific hypothesis regarding how enriched jobs may be achieved. If enriched jobs and increased motivating potential are to be achieved, then:

- 1) Natural work units should be formed, in order to increase task identity and task significance.
- 2) Tasks should be combined, in order to increase skill variety and task identity.
- 3) Client relationships with the ultimate user should be established, in order to increase skill variety, autonomy, and feedback.
- 4) The job should be vertically loaded with responsibilities and controls formerly reserved for management, in order to increase autonomy.
- 5) Feedback channels should be opened, especially channels flowing directly from the job itself, in order to increase feedback.

Designing Group Tasks

Recent extensions to job characteristics theory have focused on the design of groups, as opposed to individual, tasks (Hackman, 1977, 1978; Hackman and Morris, 1975).

Work group effectiveness is viewed as a consequence of the level of effort group members bring to the task, the amount of knowledge and skill relevant to task work the members have, and the appropriateness of the task performance strategies of the group. Thus group outcomes are considered to be a function of task factors.

In essence, what is proposed is that the five core characteristics be applied at the work group rather than the individual level. This means that there must be two additional job characteristics: 1) task-required interdependence, in that the task itself requires members to work together and rely on each other, and 2) opportunities for social interaction, in that members are in social proximity and conditions foster communication about the work.

The impacts of the group's effort, knowledge, and strategies are potentially constrained by the technology, a paced assembly line, for instance. They are also potentially constrained by the imperfections in the interpersonal processes within the group, such as might be

created by intense personal animosities, for instance. Thus, these two factors, technology and interpersonal processes, moderate the final impact of efforts, knowledge, and strategies emanating from the group on outcomes, including the overall quality of task performance (Miner, 1980). Designing tasks on a group basis is recommended under the following conditions:

- 1) When the group can assume responsibility for a total product or service, but the nature of the work is such that individuals cannot. Thus, when the meaningful work potential of even the best possible individual job is low.
- 2) When the work is of such a nature that high interdependence among individual workers is essential.
- 3) When the workers involved have high social need strength, with the result that enrichment of individual jobs risks breaking up satisfying group relationships.
- 4) When the motivating potential of the job would be expected to be much higher if arranged as a group task rather than as a set of individual tasks.

In contrast, individual (as opposed to group) task design is recommended:

- 1) When the individuals have high needs for personal growth but weak needs for social relationships at work.
- 2) When the prospect of dysfunctional conflict within a group is high.
- 3) When there is no inherent interdependence in the work of the individuals.
- 4) When the expertise needed to design group tasks, an inherently difficult process, is lacking.

MEASUREMENT OF JOB CHARACTERISTICS

One of the major strengths of the job characteristics theory is that its variables are amenable to relatively easy operationalization i.e., the variables can be relatively easily quantified. As a consequence, the measurement problem was tackled at an early date and considerable progress was made.

Many instruments have been proposed for the measurement of job characteristics. The most popular among

them are the Job Diagnostic Survey (JDS) of Hackman and Oldham (1975), the Yale Job Inventory (YJI) of Hackman and Lawler (1971), the Job Characteristics Inventory (JCI) of Sims, Szilagyi, and Keller (1976), and the Requisite Task Attribute (RTA) and Perceived Task Index (PTI) of Turner and Lawrence (1965). A few of them are outlined below:

Job Diagnostic Survey (JDS) (Hackman and Oldham, 1975).

The Job Diagnostic Survey was constructed by Hackman and Oldham to measure the job characteristics included in their model and the outcomes that may result from job redesign.

Two forms of the JDS are available. The longer form includes questions that tap the critical psychological states noted in the model. Because these psychological states are, by definition, internal to persons and not directly changeable, most researchers and practitioners use the shorter form. The shorter form focuses relatively more attention on the more objective core job dimensions. Some examples of these questionnaire items, taken directly from the JDS, are included in Figure 4.4.

The five questions in Figure 4.4 represent only a subset of the questions on the JDS used to measure skill variety, task identity, task significance, autonomy, and feedback from the job. Other questions, used to measure

the same dimensions but stated slightly differently, are also included. The scores on items used to measure the same dimension are averaged together to improve the reliability of the responses. Because the ratings on all questionnaire items are always subject to individual biases, the best way of assessing the core job dimensions is to obtain ratings of the same job from several different sources. For example, the person performing the job, the immediate supervisor of that person, and a disinterested observer frequently each will make independent ratings of that person's job. These three independent ratings are combined to provide a more accurate assessment of the job dimensions.

Please describe your job as objectively as you can.

1. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1 ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7		
My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.	My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.	My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

2. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1 ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7		
Very little; the job requires me to do the same routine things over and over again.	Moderate variety.	Very much; the job requires me to do many different things, using a number of different skills and talents.

3. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1 ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7		
Not very significant; the outcomes of my work are not likely to have important effects on other people.	Moderately significant.	Highly significant; the outcomes of my work can affect other people in very important ways.

4. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1 ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7		
Very little; the job gives me almost no personal say about how and when the work is done.	Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	Very much; the job gives me almost complete responsibility for deciding how and when the work is done.

5. To what extent does doing the job itself provide you with information about your performance? That is, does the actual work itself provide clues about how well you are doing—aside from any feedback co-workers or supervisors may provide?

1 ——— 2 ——— 3 ——— 4 ——— 5 ——— 6 ——— 7		
Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides feedback to me; sometimes it does not.	Very much; the job is set up so that I get almost constant feedback as I work about how well I am doing.

Figure 4.4

Using the scores for each job dimension (on a scale of 1 to 7), an overall measure of job enrichment, the motivating potential score (MPS), can be calculated according to the formula:

$$MPS = [(skill + task + task)/3] * auto- * task \\ \text{variety identity signi- nomy feedback} \\ \text{fificance}$$

The above formula reflects the model. Skill variety, task identity, and task significance are added together to form the meaningful construct. A high score on one of the three can compensate for a low score on one of the other two dimensions. However, if autonomy or task feedback is missing (or if the three dimensions composing meaningfulness are all missing), the MPS score would be zero, regardless of the other scores, because the formula is multiplicative. In 1979, Hackman, Oldham, and Stepina published national averages based on a sample of jobs (6,930 employees in fifty-six different organizations). Figure 5.5 shows a profile for the core job dimensions both for the national average and for a subset of professionals, which includes scientists and engineers.

Using the scales from the JDS (from a low of 1 to a

high of 7), the lowest possible MPS would be 1 and the highest possible score would be 343 (7 cubed). The lowest MPS for an actual job observed and reported by Hackman and Oldham was 7 for the job of a typist in an overflow typing pool. The typists in this particular pool simply waited until one of the regular typing pools became overloaded. Hackman and Oldham also report observing an autonomous organizational development consultant with an MPS of over 300. As figure 4.5 indicates, the national average MPS is around 118, while the average for professional jobs is 145.

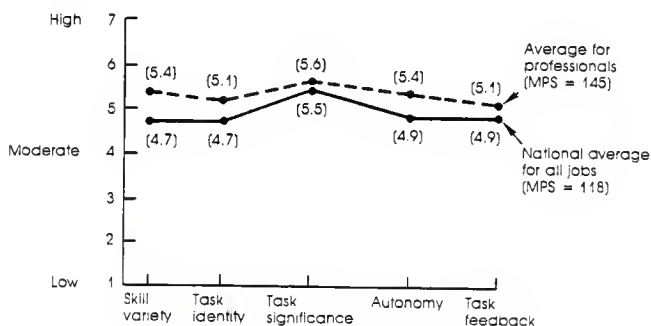


figure 4.5

Job Characteristics Inventory (JCI) (Sims, Szilagyi, Keller, 1976)

This research investigated two different populations: a predominantly female sample in a hospital setting, and a male sample in a manufacturing firm.

Job characteristics

Many of the questions in the JCI were taken from the Hackman-Lawler research. In order to improve reliability, other questions which appeared to have face validity were added to each scale. Responses to each question were made on a five-point scale. For the first 17 questions, the answers ranged from "very little" (1), "a moderate amount" (3), to "very much" (5). The answers to items 18 to 35 were a "minimum amount" (1), "a moderate amount" (3), and "a maximum amount" (5). The original questionnaire administered to the the medical center consisted of 23 items. Based on the results of the validity and reliability analysis of this sample, certain items were deleted from the original scale and new items were developed and administered to the manufacturing firm.

The JCI is presented in Figure 4.6.

Job Characteristics Inventory

Scale Items

1. To what extent do you start work that is finished by another employee?
2. How much variety is there in your job?
3. How much are you left on your own to do your own work?
4. How often do you see projects or jobs through to completion?
5. To what extent do you find out how well you are doing on the job as you are working?
6. How much opportunity is there to meet individuals whom you would like to develop friendship with?
7. How much of your job depends upon your ability to work with others?
8. How repetitious are your duties?
9. To what extent are you able to act independently of your supervisor in performing your job function?
10. To what extent do you complete work that has been started by another employee?
11. To what extent do you receive information from your superior on your job performance?
12. To what extent do you have the opportunity to talk informally with other employees while at work?
13. To what extent is dealing with other people a part of your job?
14. How similar are the tasks you perform in a typical work day?
15. To what extent are you able to do your job independently of others?
16. To what extent is your job equivalent to being one small cog in a big machine?
17. To what extent are the results of your work clearly evident?
18. The feedback from my supervisor on how well I'm doing
19. Friendship from my co-workers
20. The opportunity to talk to others on my job
21. The opportunity to do a number of different things
22. The freedom to do pretty much what I want on my job
23. The degree to which the work I'm involved with is handled from beginning to end by myself.
24. The opportunity to find out how well I am doing on my job.
25. The opportunity in my job to get to know other people.
26. Working pretty much by myself
27. The amount of variety in my job
28. The opportunity for independent thought and action
29. The opportunity to complete work I start
30. The feeling that I know whether I am performing my job well or poorly
31. The opportunity to develop close friendships in my job
32. Meeting with others in my work
33. The control I have over the pace of my work
34. The opportunity to do a job from the beginning to end (i.e., the chance to do a whole job)
35. The extent of feedback you receive from individuals other than your supervisor
36. To what extent do you do a "whole" piece of work (as opposed to doing part of a job which is finished by some other employee?)
37. The opportunity, in my job, to give help to other people

Figure 4.6

**EXAMPLES OF APPLICATION OF THE JOB CHARACTERISTICS
APPROACH**

Bankers Trust Company

This case relates to the Bankers Trust Company which has various clerical operations involving the handling of deposits to customer checking accounts (Kraft and Williams, 1975). The description of changes in the regular and special accounts section provides a particularly good example of the application of the job characteristics approach.

The job enrichment effort was undertaken because the section suffered from low productivity, high error rates, and considerable turnover, as well as a good deal of dissatisfaction over pay. The process began with a training program for supervisors during which a long list of possible job changes that might improve motivation was developed, and then pruned to a final set of practical plans. These plans called for the consolidation of three jobs concerned with comparing checks with signature cards, noticing dates and endorsements, and pulling mutilated checks. Thus, a previously divided natural unit of work was back together.

In addition, all clerks were given greater

responsibility for paying problem checks on their own initiative, including checks of considerable value. To do this, it now proved practical to put the clerks in direct contact with branches and other inquiry sources, an activity previously handled by supervisors. A management-by-objectives type appraisal system was implemented to provide direct feedback to the clerks on their performance. The reported results were as follows: (Miner, 1980)

- 1) Forgeries paid dropped 56 percent.
- 2) Misfiled items decreased 19 percent.
- 3) Complaints from branches declined approximately 25 percent.
- 4) Staffing level was reduced 16 percent for a somewhat increased volume of work.
- 5) A productivity level of 110 was attained in contrast to a 98 target figure.

Travelers Insurance Company

This example is provided by a job enrichment program introduced into the keypunching operations at Travelers Insurance Company (Hackman, 1975).

The objective here was to enrich the keypunching job, starting with a training program for supervisors out of which the basic plan emerged. At the time of initial

implementation, work output was deemed inadequate, the error rate excessive, and absenteeism too high. The keypunch job lacked skill variety, task identity, task significance, autonomy, or feedback as it was then designed. The changes introduced are described as follows:

1) **Natural units of work** The random batch assignment of work was replaced by assigning to each operator continuing responsibility for certain accounts -- either particular departments or particular recurring jobs.

2) **Task combination** Some planning and control functions were combined with the central task of keypunching.

3) **Client relationships** Each operator was given several channels of direct contact with clients. The operators, not their assignment clerks, now inspect their documents for correctness and legibility. When problems arise, the operator, not the supervisor, takes them up with the client.

4) **Feedback.** In addition to feedback from client contact, the computer department now

returns incorrect cards to the operator who punched them, and the operators correct their own errors. Each operator receives weekly a computer printout of her errors and productivity which is sent to her directly, rather than given to her by the supervisor.

5) Vertical loading. Operators now have the authority to correct obvious coding errors on their own. Operators may set their own schedules and plan their daily work. Some competent operators have been given the option of not verifying their work (Hackman, 1975).

The reported results of implementing these action principles include a substantial reduction in the number of keypunch operators needed, increased quantity of output, reduced error rates, reduced absenteeism, improved job attitudes, and less need for controls. Actual first year savings totaled over 64 thousand dollars, with a potential annual savings of approximately 92 thousand dollars given expanded application (Miner, 1980).

CRITICAL ANALYSIS OF THE JOB CHARACTERISTICS APPROACH

Criticism of principles underlying the job characteristics approach (Buchanan, 1979).

The expectancy theory of motivation, on which the job characteristics model is based, has been severely criticized. Most of these criticisms apply equally to the job characteristics model and to the job diagnostic survey.

Individual differences in time span

There are enormous differences between individuals in ability to consider outcomes and consequences at points in the future. Expectancy theory does not take account of these differences, making the implicit assumptions that all people are alike in this respect.

Individual differences in cognitive load capacity

There are also significant individual differences in mental (i.e., cognitive load) capacity and knowledge. Individuals thus vary widely in the number and types of actions which are considered when making decisions about behavior. This concerns what people see as important, and differences in persistence and self esteem. Expectancy

theory tends to ignore these problems, assuming that individuals behave alike.

Subconscious motivation (Buchanan, 1979)

Individuals are not always conscious of their motives, premises, values, expectancies and so on. It is not, therefore, valid to assume that individuals consciously calculate the expected pleasure or pain associated with various outcomes. Individuals again differ in the extent to which they are aware of the contents and processes of their minds.

Impulsive, expressive, neurotic and habitual behavior

A number of types of action can be described as non-instrumental, performed without calculation and with zero projected time span. Expectancy theory does not account for these.

Inconsistencies in types of relations (Roberts and Glick, 1981)

The job characteristics approach focuses on within-person relations. It does not adequately specify the determinants of individual needs or perceptions of tasks. Although tasks are assumed to exist independently of the job incumbent's perceptions, situational and social influences on perceptions are only suggested but not

specified in the model. With the exception of some minor random variation, task perceptions are assumed to be equivalent to objectively defined tasks. A clear specification of particular situational and social influences on task perceptions can contribute significantly to this approach.

Moreover based on the observation of within-person relations between task perceptions and job responses, researchers often jumped to the conclusion that a person-situation relation also held and suggested objective job changes to change job responses. Objective job changes should not be recommended unless person-situation or situational relations are observed. This confusion appears to be due to a lack of a clear distinction among within-person, person-situation, and situational relations in the job characteristics model.

Measurement and analysis of job characteristics (Roberts and Glick, 1981)

The job characteristics model is functionally useful only to individuals high on "growth need strength" (GNS). The theory makes no attempt to identify desirable task attributes for low-GNS individuals. Inclusion of additional job characteristics associated with positive

outcomes for low-GNS workers would make the model more useful and general.

The job characteristics theory makes no attempt to identify desirable task attributes for low "growth need strength" (GNS) individuals.

***Insufficiency of MPS (Miner, 1980)**

The MPS neglects important aspects of jobs such as pay, security, social status, safety, and so on, and fails to account for individual differences associated with each characteristic.

Use of job classifications from existing organizational documents having unknown validity (Buchanan, 1979)

Existing company documents defining jobs were accepted as valid and reliable (Hackman and Lawler, 1971; Hackman and Oldham, 1975, 1976). Individuals in the same job classification are assumed to perform the same objective tasks. More systematic assessments of each individual's job by researchers and superiors would have provided more objective evidence of homogeneity within job classifications.

Variation in perceptions between job classifications

Hackman and Lawler (1971) asserted that variation in the incumbent's perceptions was greater between than within

job classifications. Rather than being caused by objective differences among jobs, this observation may have been caused by assignment/selection, differential turnover, social construction of task perceptions, and so on.

SUMMARY

The discussion of job enrichment in connection with motivation-hygiene theory in chapter 3 brought out the fact that even under the best of circumstances, some employees do not respond to job enrichment. In blue collar jobs in particular, the results often tend to be below expectations. Job characteristics theory attempts to explain and predict these failures and successes. In this respect it contrasts sharply with motivation-hygiene theory and orthodox job enrichment based on the activation theory. Potentially, at least, the job characteristics approach is the more powerful of the two theories, simply because it expands the boundaries of application to include failures as well as successes.

Although the job characteristics theory has been subject to criticism on certain accounts, it is still one of the most popular approaches for job redesign. The major

strengths of job characteristics theory are its clear specification of what constitutes job enrichment and what does not, and its introduction of the moderator concept. In a nutshell, job characteristics theory relates to intrinsic motivation and job satisfaction very well, absenteeism less well, and performance, including the quality factor, not very well at all.

CHAPTER 5

SOCIO-TECHNICAL SYSTEMS THEORY OF JOB REDESIGN

Socio-technical systems is more a philosophy toward job design than a specific technique. Its central theme is that job design must address both the technical and social aspects of the organization if work systems are to produce greater employee productivity and higher fulfillment. Every job has technological aspects. But technical tasks are performed in an environment influenced by a culture, a set of values, and generally acceptable organizational practices. Redesign efforts that look only at the technical aspects of a job are likely to overlook critical factors that influence employee performance and satisfaction (Robbins, 1983).

This approach emphasizes the fact that organizations are embedded in, and affected by, an outside environment. Especially important are cultural values that specify how organizations should function, and generally accepted roles that individuals, groups, and organizations are supposed to play in society. Thus there is constant interchange between what goes on in any given work organization and what goes on in its environment. This interchange must be carefully attended to when work systems are designed or altered (Davis and Trist, 1974).

When redesigned in accord with the sociotechnical approach, work systems are never changed in piecemeal fashion. Although jobs, rewards, physical equipment, spatial arrangements, work scheduled and more may be altered in a sociotechnical intervention, none of these is taken as the primary focus of change activities. Instead, organization members, often including rank and file employees and representatives of organized labor as well as managers, examine all aspects of organizational operations that might affect how well the work is done or the quality of organization members' experiences. Changes that emerge from these explorations invariably involve numerous aspects of both the social and technical systems of the organization (Hackman, 1980). Typically, however, such changes do involve the formation of groups of employees who share responsibility for carrying out a significant piece of work -- the "autonomous work group" (Cummings, 1978).

Autonomous work groups determine their own job assignments, responsibilities, rest breaks etc., within the group. The members of the group are jointly responsible for the achievement of the goal. In contrast, "non autonomous groups" also have people working together, but they are personally responsible for their own share of

work. In other words, they do not share responsibility for the achievement of the overall task. Tasks themselves may be designed independent of each other in such cases. Moreover job assignments, accountability, rest breaks etc., are decided by an outside source that does not directly participate in the activities of the group.

REVIEW OF RESEARCH ON SOCIO-TECHNICAL SYSTEMS THEORY

Research on socio-technical systems has continued for over 30 years in many organizational, cultural, and technological settings. The major emphasis of almost all the research has been on the application and effects of autonomous work groups for improved organizational effectiveness.

The socio-technical systems theory of job redesign was developed initially through two major studies carried out by researchers from the Tavistock Institute in the coal mines of Durham (Trist and Bamforth, 1951; Herbst, 1962; Trist, Higgins, Murray, and Pollock, 1963) and in a textile mill in northwest India (Rice, 1953; 1958; 1963).

The Durham project was aimed at investigating the disruptions caused by the introduction of assembly line

technology in coal mines, which had been traditionally worked by teams of miners performing the entire coal-getting process and sharing a common pay packet. The new technology divided up coal-getting into a number of specialized jobs and destroyed traditional patterns of interaction among the workers. In spite of the new machinery, output fell and worker dissatisfaction rose, with incidents of outright hostility occurring among workers and between workers and managers.

The investigations of the socio-technical researchers uncovered a number of naturally occurring experiments, in which the miners had tried to adapt the new technology to their traditional patterns of working together. Payment schemes as well as the division of labor were involved in these attempts. Compared to the assembly line work organization, these team-oriented structures resulted in much higher output and worker satisfaction. Based on these and other studies in many different industries and in many different countries (India, Norway, and the United States), proponents of the socio-technical systems approach developed a methodology for redesigning existing workplaces. Subsequently, the approach was adapted to white-collar settings, especially clerical operations (Markus, 1979).

A few researchers have made a systematic investigation of the elements necessary for the proper formation and functioning of autonomous work groups. Two notable studies have been performed by Cummings and Griggs (1977) and Blumberg (1980). Cummings and Griggs established three conceptually distinct conditions for autonomous group formation: boundary control, task control, and whole task. Blumberg's research suggested the existence of several conditions which contribute to the success or failure of a group (e.g., job switching, formation of relevant task boundaries, and self-regulation over the group's tasks).

A recent empirical study of thirty autonomous work groups carried out by Rao, Thornberry, and Weintraub (1987) deals with systems at the group level, particularly their producer and decider subsystems. "Producer" here refers to the ordinary worker of a group, while "decider" represents the person who assumes the role of a leader in a group. Each work group operated within the same organization, making the same kind of product using the identical process. This study attempts to explain the differences between high productive and low productive autonomous work groups. The focus is on two key areas of worker perceptions: satisfaction with the job and

perceptions of work group leadership. Results show the importance of establishing and communicating a policy of promotional opportunities to reward high performance. Leadership dimensions (superior orientation and consideration) that discriminate between high and low production groups are identified. These findings have implications in the selection and training of team leaders and the management of autonomous work groups.

**AUTONOMOUS WORK GROUPS / WORK ORGANIZATION : A JOB
REDESIGN TECHNIQUE BASED ON SOCIO-TECHNICAL SYSTEMS THEORY**

Autonomous work groups represent job enrichment at the group level. The work that the group does is deepened through vertical integration. The team is given a goal to achieve, and then is free to determine work assignments, rest breaks, inspection procedures, and the like. Fully autonomous work teams even select their own members and have the members evaluate each other's performance. As a result, supervisory positions take on decreased importance and may even be eliminated.

A central argument of the work organization approach to job redesign, therefore, is that work in groups is more likely to provide meaningful work, to develop

responsibility, and to satisfy human needs in general than is work which is allocated to separately supervised individuals. Emery (1959) summarizes this argument as follows:

If the individual's tasks are genuinely interdependent with the group task, then it is possible for the individual to be meaningfully related to his personal activity through his group task. A group task with its greater size and complexity is more likely to provide structural conditions conducive to goal setting and striving. If it has a measure of autonomy and a wide sharing of the skills needed for its task, a group is also able to provide a degree of continuity in performance that is unlikely to be achieved by individuals under the control of a supervisor.

MOTIVATIONAL EFFECTS OF AUTONOMOUS GROUP DESIGNS

Autonomous group design takes advantage of the "enlargement" effect found in job enlargement. It also produces the "enrichment" effect found in job enrichment. However, there is a subtle but important difference in the reactions of people operating under group design compared to individual job design. Part of this difference is caused by the fact that, in modern technology, an important technical limitation of job enrichment (lack of variety, boredom) can be overcome by creating groups rather than

dealing with individuals. The other part is caused by the fact that certain social limitations of job design can be overcome by using work group design (Hampton, Summer, and Webber, 1978). These social limitations arise due to a lack of social meaningfulness of work (apart from personal meaningfulness), association, and security.

Work group design makes use of those motivations associated with both the enlargement and the enrichment of any task. The effects of adding variety to the job by extending the time cycle in turn produces four somewhat different motivations for group members. There is a relief from boredom: the kind that results from repeating the same small task ad infinitum. This is not a positive reinforcement for the individual. It is only relief from a negative reinforcement. The positive reinforcement comes into play when the group senses meaningfulness, or involvement, in the task. By being able to see the larger and more holistic product actually produced, members are enabled to see that their efforts have more usefulness to society (Hampton, Summer, and Webber, 1978).

Variety also increases the group's feeling of competence. Instead of using a minute part of one's personal abilities, a larger number of abilities are called into play in the group. Finally variety increases group

feeling of responsibility for the task. All concerned can more likely "see" the contribution being made if there is a "whole task" to be performed rather than part of a task.

The effects of adding a control and planning function to the group assignment supplies quite another motivation -- the feeling of group freedom and autonomy. Receiving direct feedback from the relevant user of the group's efforts means not only that the group is more competent as a planning and controlling group but also that the group is more in control of its own destiny during the work day.

There are two distinctions between human reactions to autonomous work group design, and job enrichment. The first has to do with the fact that the same motivations can be achieved under group design to a greater degree. More significant parts or chunks of the task can be created by using a group of people than by using one individual. If the segment of work is not too large, all people in the group can become skilled in the delimited part of the whole. Or, a particular individual in the group may specialize in more complicated tasks. This is frequently done by including in the group a "resource" person, who can be called upon for expertise in a certain operation.

A second motivational difference between job enrichment and autonomous group design occurs because these two strategies produce different social need satisfactions for human beings. Researchers have noticed that in some experiments of individual job enrichment, the individual actually experiences a negative motivation. If the individual worker's task is made too independent, so that one performs a whole job at his or her workplace, not personally and directly dependent on others who supply the materials and not personally and directly in contact with those who use one's output, two things can happen. The social meaningfulness of the job disappears, even though the personal meaningfulness may still be present. This is undoubtedly one of the reasons why psychologists have found that the mere presence of others can profoundly influence the productivity and behavior of an individual, as compared to the situation in which the individual performs exactly the same behavior alone (Zajonc, 1966). Psychologists have called this "social facilitation." Second, negative feelings can prevail due to a lack of feedback and interaction.

EXAMPLES OF THE AUTONOMOUS WORK GROUP APPROACH TO INDUSTRIAL PROBLEMS

The Saab-Scania Company. Sweden

The Saab-Scania Group's better known experiment in work organization took place in their engine factory, in 1972. The company decided to design the work organization of the new factory from scratch, and to design the factory layout accordingly.

The final layout consisted of an oblong conveyer loop which transported the engine blocks to seven assembly groups, each with three people (refer to figure 5.1). An island of potted plants enclosing a cafe was placed alongside the assembly line, and workers could use the telephone installed there (Thomas, 1974). Each group had its own u-shaped guide track in the floor to the side of the main conveyer loop. Engine blocks were removed from the main track, completely assembled by the group, and then returned to the main track.

The engine blocks arrived with their cylinder heads already fitted and the groups were concerned with the final fitting of carburetors, distributors, spark plugs, camshafts and other components. The seven groups, one of which is a training group, were made up of 36 operators,

most of whom were female. Each group thus assembled a complete engine from start to finish, deciding among themselves how the work was to be allocated within the group. Each group had its own guide track.

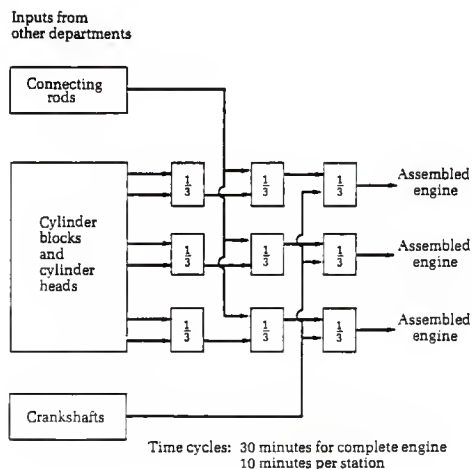


Figure 5.1

Writing a year later, Valery (1974) claimed that the biggest savings from this experiment had been due to reduced labor turnover; Saab-Scania were saving an estimated 65,000 Swedish Kroner per annum on recruitment and training costs. Reductions in absenteeism are saving the company an additional 5,000 Kroner per annum. Valery also reports that the factory achieved a lower reject rate, easier production balancing, lower cost of assembly tools and a reduction in the numbers of instructors and relief workers required.

General Foods at Topeka, Kansas.

The Topeka pet food plant accommodates the autonomous work group concept. Teams have from seven to fourteen members and hold collective responsibility for large segments of the production process. The team's responsibilities include the functions of the traditional departments in a plant - maintenance, quality control, industrial engineering, and personnel. For instance, the teams do their own screening of applicants to locate replacements who are qualified and who will fit into the teams. Workers make job assignments, schedule coffee breaks, and even decide team members' pay raises.

A unique feature of the Topeka plant is the absence of job classification grades. All operators have a single

classification and earn pay increases based on their ability to master an increasing number of jobs. Because no limits are placed on how many team members can qualify for the higher pay brackets, employees are encouraged to teach each other their jobs.

When the experiment began, team leaders were appointed to facilitate team development and decision making. However, after several years, the teams became so effective at managing themselves that the team leader positions were gradually eliminated.

Several years after its introduction, employees were generally praising the variety, dignity, and influence that they enjoyed. They liked the team spirit, open communication, and opportunities to expand their mastery of job skills. From the management side, the plant operated with 35 percent fewer employees than similar plants organized along traditional lines. Additionally, the experiment resulted in higher output, minimum waste, avoidance of shutdown, lower absenteeism, and lower turnover (Robbins, 1983).

Shaklee Corporation, Oklahoma

Shaklee adopted a similar job design format in 1979 at its Oklahoma plant that produces nutritional products,

vitamins, and other pills. About 190 of the plant's production employees were organized into teams with 3 to 15 members. As in the Topeka operation, the team members set their own production schedules, decide what hours to work, select new team members from a pool approved by the personnel department, and even initiate discharges if necessary. The results have been impressive. The company reports that units produced per hour of labor are up nearly 200 percent over other plants, two-thirds of which increase they attribute to the autonomous work team concept. Management states that the Oklahoma plant can produce the same volume as their more traditional facilities but at 40 percent of the labor costs (Robbins, 1983)

CRITICAL ANALYSIS OF THE SOCIO-TECHNICAL SYSTEMS THEORY

Silverman (1970) presents a definitive criticism of socio-technical systems theory as a means of examining behavior in organizations. Silverman argues that by concentrating on technology and on social factors, the socio-technical systems approach diverts attention away from the wider social influences on worker behavior. By concentrating upon upon "objective" organizational properties, individuals' subjective definitions of their

circumstances are ignored. The sociologist studying organizational behavior should, Silverman argues, take account of these subjective factors. An additional difficulty with socio-technical systems theory, that Silverman suggests, concerns "reification", that is ascribing organizations with the biological needs of survival, stability and growth. He argues that Organizations cannot have such needs, and cannot act independently of their members. He further says that:

The usefulness of socio-technical systems theory depends on how far one is prepared to concede that social institutions are similar to biological organisms and that their functioning is best understood in terms of a series of adaptations to an often hostile environment.

Silverman argues that socio-technical systems theory has a few "serious limitations" which are as follows:

The role of the consultant in organizational problem solving

Silverman raises the familiar criticism of "the dual role of many socio-technicists as academic analysts and as consultants to business organizations" (Silverman, 1970). His main concern is here is with the lack of socio-technical perspective in much of the socio-technical literature, and he speculates upon the influence which the

consultancy role may have on orientations to the questions of designing efficient organizations. The consultant, argues Silverman, "is likely to be immediately concerned with social rather than sociological problems" and "theories and empirical materials which do not have a direct bearing on the task at hand may not be taken up".

The nature of the organization's environment

Again Silverman argues that the socio-technical systems approach is restricted in that the organization's environment is analyzed in purely economic terms, as a series of market pressures affecting organization structure. Members' orientations to the organization, however, are determined by their perceptions of the organization which are in turn colored by their extra-organizational experiences. The environment of an organization, therefore, affects its internal functioning through more than economic pressures.

The confusion between "is" and "ought" propositions

Are technology, market forces and human needs to be regarded as variables which actually shape or determine organization structure, or are they important variables requiring study and which must be considered when attempting to undertake organizational change? It is one

thing to argue that these variables ought to be important in determining organizational structure, but it does not then follow that these variables are indeed determinants of organizational structure.

Banks (1974) points out that "group working" is frequently no more than job rotation, and that "autonomy" can vary widely in meaning. Banks criticizes the way group working projects can be used, as in Scandinavia, as publicity vehicles and become tourist attractions.

Banks discusses four serious disadvantages of group working:

- 1) That the delegation of responsibility down the hierarchy may increase stress and work load.
- 2) That the creation of groups with added responsibility may include friction between groups and individuals and "undermine workshop comradeship and unity".
- 3) That group working reduces the number of supervisory jobs (and thus reduces labor costs - a managerial advantage).
- 4) That promotion opportunities for shop floor workers are reduced.

Hackman and Oldham (1976) criticize the socio-technical systems theory approach because it lacks a means for diagnosing which aspects of a work system ought to be changed and how. They ask a more pointed question concerning how groups can be designed to provide experiences of personal autonomy and responsibility.

SUMMARY

Socio-technical systems theory is the most comprehensive theory of job design available, since it gives explicit answers to questions concerning motivation, job characteristics, identification of job design alternatives, and implementation of job design changes. As a job design technique, autonomous work groups appears to be more powerful than any of the job restructuring approaches; it offers more scope for introducing significant job characteristics. In a nutshell, the limitations of the socio-technical systems approach are not very severe in comparison to its strengths. It is appropriate in a wide range of settings involving manual operation and partial or total automation. This makes the

socio-technical systems approach a useful one for engineers and managers struggling to cope with technical and organizational change.

CHAPTER 6

SUMMARY AND CONCLUSION

As developed over the course of this report, two fundamental approaches underlying the various job redesign theories can be identified. The job restructuring approach takes the individual job as the basic unit of analysis, and includes the techniques of job enlargement, and the orthodox and expectancy theory approaches to job enrichment. The work organization approach takes the work group as the basic unit of analysis, and includes the techniques of job rotation and autonomous group working

The discussion in this report shows that job redesign theories must provide answers to four basic questions (Buchanan, 1979):

- 1) What motivates people to work?
- 2) What job characteristics are significant?
- 3) How are job design alternatives to be identified?
- 4) What job design changes are to be implemented?

Through answers to these questions, theories of job design try to show how specific types of job changes can simultaneously satisfy human needs and improve

organizational effectiveness. The autonomous work group approach, based upon socio-technical systems theory, is unique in incorporating an explicit concept of organization which is used to show how job design alternatives can be identified. It has been argued that the autonomous work group approach offers the most powerful job design technique available. Job restructuring theories concentrate upon deriving significant job characteristics from motivation theories and direct less attention to the task of defining these characteristics in operational terms. These theories do not formalize and incorporate an explicit concept of organization in their theories of job design.

----- PROBLEMS WITH VARIOUS JOB REDESIGN THEORIES -----

The key problems with job redesign can be summarized as follows:

Limited ability to predict the effects of job redesign on other parts of the organization (Buchanan, 1979)

Job redesign that goes beyond horizontal enlargement invariably means giving the lowest grade workers tasks that have previously been performed by supervisory and other

management positions. One of the major problems of job redesign is determining which supervisory or managerial functions are to be transferred in this way.

Difficulty in operationalizing various job characteristics

Jenkins, Nadler, Lawler, and Camman (1975) report difficulty in obtaining objective measures of job characteristics using trained observers. They conclude that this is due to poor conceptualization and end by simply asking "What is autonomy?", "What is variety?". The implication is that the terms used to express job characteristics have not been defined in clear and unambiguous terms.

Difficulty in generalizing from one organizational setting to another

Ginzberg (1975) points out that job redesign theories developed in the manufacturing industry, relying on the assembly line model, will become increasingly irrelevant with the shift to a post industrial society, with only a small minority employed in work of that kind. In other words, job redesign techniques cannot be transferred from one organizational type to another, since they are specific to the conditions and environment of that organizational setting. They can certainly be transferred

between similar organizations, for instance Ford and General Motors.

Difficulty in calculating the durability of change

It has been observed that people who respond positively to job design tend to become frustrated once the novelty has worn off and no enrichment is forthcoming (Penzer, 1973; Jenkins, 1974). The beneficial psychological effects of job design may thus be short lived.

Difficulty in evaluating the effects of job design on the quality of working life (Buchanan, 1979)

Job redesign theories have two basic objectives, namely, improving organizational effectiveness, and improving the quality of life. The former are comparatively easy to measure, but quantifying the quality of life, however, is not so simple. The impact of job design upon the quality of working life appears to be small in terms of (a) the number of people who have had these techniques applied to their work, and (b) the degree of change that job design generally implements.

----- COMPARISON OF THE THEORETICAL APPROACHES TO JOB REDESIGN -----

Activation theory, motivation-hygiene theory, job characteristics theory, and sociotechnical systems theory outline different approaches to job redesign. Activation theory addresses the dysfunctional aspects of repetitive work, whereas motivation-hygiene theory and job characteristics theory emphasize ways to create positive motivational features in the work. The Herzberg model differs from the job characteristics theory in proposing a more general process for increasing motivation (i.e., by identifying motivators and trying to increase them), whereas the job characteristics approach provides specific diagnostic procedures to optimize the fit between people and their work (Hackman, 1980).

Sociotechnical systems theory contrasts sharply with the other theories in that it emphasizes the design of work for groups rather than individuals. It stresses the importance of designing entire work systems, in which the social and technical aspects of the work place are integrated and mutually supportive of one another (Emery and Trist, 1969).

Another difference among the theories lies in their assumptions about how the redesign of work should be

planned and implemented. Activation and motivation-hygiene theories appear to put the burden on management to identify the problematic aspects of the work (Hackman, 1980). None of the approaches suggest extensive gathering of information and input from employees, although some of them involve a high degree of worker participation, for example, the socio-technical systems approach. Job characteristics theory emphasizes the importance of understanding workers' perception and attitudes toward their jobs, but does not explicitly require their participation in actual planning for job redesign.

A COMPREHENSIVE MODEL OF JOB REDESIGN

There is a wide variation in job redesign programs used in different organizations. There are two basic reasons behind variation. First, there is no universally accepted conceptual or theoretical framework for job redesign to guide managers. Most job redesign programs are a combination of different theoretical approaches discussed in the report. Second, job redesign programs cannot be developed and implemented in isolation from the total organization or the cultural environment. In other words,

the "situational" factors arising from the uniqueness of the organizational setting play an important role in the effectiveness of a job redesign program.

A comprehensive model that integrates various theoretical approaches, and identifies important situational factors and their impact on job redesign is shown in figure 6.1. The model includes four basic factors:

1) Environmental factors. This aspect considers the influence of the external environment on job redesign programs. It includes the following components:

a) Social environment. This identifies the effect of social and cultural background of individuals on their behavior and response to job redesign programs.

b) Economic environment. which takes into account the effects of seasonal or periodic fluctuations in the economic climate on worker behavior.

c) Political environment, which recognizes the impact of legislative acts such as discrimination, full employment, equal opportunity, attitudes toward unionism, etc., on job redesign programs.

d) **Geographical environment**, which takes care of the regional differences in culture and activities that may have a bearing on worker behavior in organizations.

2)Organizational factors. This identifies factors internal to an organization that may affect a job redesign program. These include the following broad categories:

a) **Incentive systems**, which may be affected by changes in the design of work, since increases in responsibility, autonomy, variety etc., are sometimes perceived as requiring increases in incentives. For example, traditional pay plans have not always included such job design changes in their evaluation framework. In some cases, then, job changes may also require significant alterations in the incentive systems of the organization.

b) **Hygiene factors**, which refer to the factors extrinsic to work, such as working conditions, supervisory practices, company policies, etc., as outlined by Herzberg's two-factor theory.

c) **Interdepartmental pressures**, arise as a result of job redesign techniques being applied to just a few departments in an organization. This results in pressures from other departments to fall back in line with previously established standards and levels of performance.

d) **Technology**, which has a direct bearing bearing on the degree of difficulty in implementing a job redesign program. For example, it may be much easier to implement changes in job design in a service organization (e.g., bank, hospital) than in an assembly-line oriented organization, due to heavy capital investment in capital equipment in the latter case. The objectives of job redesign may be accomplished in these organizations with the use of work teams, processing units, or modular functions only when the basic characteristics of the manufacturing processes remain the same.

e) **Unionism**, which refers to the resistance that may be offered by unions to major job redesign programs. Unions may pose

serious problems to job redesign efforts. The basic framework of job redesign is directed toward the elimination of frustrating work, boredom, and alienation; these same factors, however, are some of the elements upon which unionism is founded. If job redesign is to have a chance for success, it is apparent that both unions and management must be involved in the development, implementation, and evaluation of job redesign efforts.

3) Individual factors. These refer to individual differences among employees. These include:

- a) **Growth Need Strength (GNS)**, as defined earlier, is the internal urge in a person for personal development and growth.
- b) **Value systems**, which is an individual's predisposition toward intrinsic (e.g., responsibility, challenge, and autonomy), and extrinsic (e.g., pay, security, and stability) values.
- c) **Activation or arousal levels**, as discussed in the activation theory.
- d) **Personality and learning differences**

emphasize a worker's ability to learn and handle increased responsibility, challenge etc.

Core job design factors, which include:

a) Job characteristics, and interpersonal interaction Job characteristics include task variety, task autonomy, task identity, task significance, and feedback (Hackman and Oldham, 1975). Inter-personal interaction includes friendship opportunities and teamwork requirements.

b) Outcome factors, which include personal and work outcomes, such as internal work motivation, quality, satisfaction, and absenteeism and turnover.

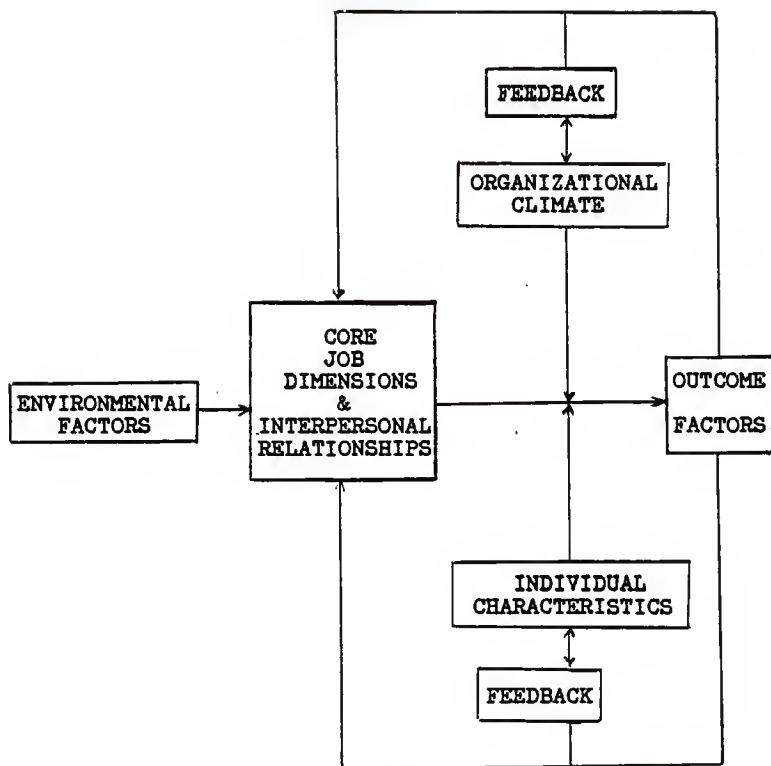


Figure 6.1

The model presented in figure 6.2 outlines the various cause and effect relationships between different factors. The environmental factors influence various core job design factors as proposed by the job characteristics theory, and interpersonal relationships. Social, economic,

political, and geographical environments have a significant effect on organizational behavior of workers, their attitudes toward their jobs, the organization's response to worker behavior etc.

The job characteristics and interpersonal relationships, together with the moderating effects of organizational climate and individual characteristics, influence the outcome factors which include personal and work outcomes, such as internal work motivation, quality, satisfaction, and absenteeism and turnover.

The individual characteristics and organizational climate, apart from their moderating effects on the outcomes, also influence the job characteristics and interpersonal relationships. This is due to the fact that organizations consider individual traits while designing jobs for task variety, task difficulty, autonomy, responsibility etc. Moreover, the internal organizational climate, which includes factors like technology, incentive systems, unionism, interdepartmental pressures etc., also has a direct bearing on job characteristics and interpersonal relationships.

This integrated model attempts to synthesize some of the most important components and knowledge concerning managerial approaches to job redesign. Perhaps the most

significant feature of the model focuses on the necessity of the practicing managers to identify, diagnose, and evaluate the potential impact of the many situational variables surrounding the development and implementation of a job redesign program. There must be an awareness and acknowledgement by managers that the redesign of work takes place within the total environment we call an organization, not in isolation. Influences from, and effects on, other organizational systems must be identified and weighed carefully before implementation efforts are begun.

This model includes the activation theory approach by including activation level as one of the individual characteristics. By doing so, it also highlights the moderating effects of individual differences. It further integrates the socio-technical systems approach and the job characteristics approach by including environmental and core job design factors. In fact, the socio-technical system approach of amalgamating cultural and technical factors is broadened here by including economic, political, and geographical factors in addition to social factors.

It further emphasizes the moderating effects of organizational climate, an issue which has not been touched by any other approach. Organizational climate can have great influence on the relationship between job

characteristics and worker performance. This model includes factors like technology, incentive systems, unionism, and interdepartmental pressures, which certainly have a bearing on the development and implementation of job redesign programs.

I strongly believe that these situational factors, due to their uniqueness from one organization to another, can and will, affect the effectiveness of any job redesign effort.

SCOPE FOR FURTHER RESEARCH

Job redesign still offers many unanswered questions, especially regarding its application in complex, ambiguous organizational situations. Some of these questions are briefly discussed below:

Job Diagnosis and Assessment

This problem refers to the assessment of readiness of work systems for work redesign. It also implies ascertaining precisely what changes are called for in those systems, and measuring the consequences of the changes that are made.

The Role of Individual Differences

Existing theories and research methods have so far failed to provide satisfactory ways of conceptualizing and measuring individual differences. What is it that accounts for the highly variegated reactions of people to their work? How is this discrepancy to be understood? Some new research is called for to resolve this question.

Individual versus Group Work

There is little in the way of research and theory to guide decision making about whether an individual or a team design is relatively more appropriate for given organizational circumstances. Whether an individual or a team design is installed in a given job redesign project seems at the moment more dependent on the theoretical orientation of the change agent, or occasionally on the prior preferences of managerial clients, than on any other specific attributes of the people, technology, or organizational setup (Hackman, 1980).

The job of the Supervisor

Not much research has been done on the design of lower-level jobs in management. These jobs deserve greater attention, for two reasons. First, supervisory jobs in many organizations are as poorly designed as are rank-and-

file jobs selected for enrichment. Second, the jobs of lower-level managers invariably are affected, often negatively, when their subordinates' jobs are improved. When this happens, supervisors may become justifiably angry at the effects of work redesign on the quality of their own life at work (Hackman, 1980).

Implementation Problems

Among the questions at issue are the following. How responsive should changes be to idiosyncrasies of the people, the setting, and the broader environment? How closely should changes be tied to one or another of the theories of job redesign, as opposed to a more ad hoc approach to change?

Worker Participation

How fully should the employees whose jobs are to be changed participate in the planning and execution of those changes? What is the appropriate model for union-management collaboration in carrying out job redesign? How can managerial practices governing compensation, training, supervisory style, and career mobility, be adjusted so that they support the motivational benefits of enriched work?

The evidence available to provide answers to above

questions is minimal, and immense scope exists for further research.

Research on the Proposed Model

The proposed comprehensive model incorporates certain situational factors like organizational climate, environmental factors, individual differences etc. Not much research has been done on the moderating effects of these factors, especially organizational climate. Moreover, the interrelationship between these factors and worker performance is not clear, and scope exists for some solid research.

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**A STUDY AND CRITICAL ANALYSIS OF VARIOUS
THEORETICAL APPROACHES TO JOB REDESIGN**

by

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ABSTRACT

Many of the jobs currently found in organizations are poorly designed. Such jobs are unsatisfactory from the worker's point of view since they lack challenge, demand less skill than the individual offers, and allow little opportunity for learning and growth. From the organization's point of view, the costs of ill designed jobs show up in poor quality, employee dissatisfaction, absenteeism, tardiness, and eventually poor productivity.

Many theoretical approaches to job redesign have been proposed. This report studies and critically evaluates four major approaches to job redesign: the activation theory approach; the motivation-hygiene theory approach; the job characteristics theory approach, and finally; the socio-technical systems theory approach.

These approaches have been applied in organizations in the form of various techniques, such as 'job rotation', 'job enlargement', 'job enrichment', and 'autonomous work groups'. This report also discusses the motivational effects, and industrial applications of these approaches.

Finally, these approaches have been compared and contrasted. An attempt has also been made to integrate these approaches, and develop a comprehensive model of job redesign.