

Quality of Working Life: Progress Problems & Prospects

IAN MEADOWS, Ph.D.

Faculty of Business
McMaster University

Hamilton, Ontario, Canada
January, 1980



INNIS LIBRARY
NON-CIRCULATING

Innis
Ref.
HB
74.5
.R47
no.163

Research and Working Paper
Series No. 163

ABSTRACT

It is both feasible and desirable to improve the quality of working life (QWL). Yet, the prospect is bleak, unless management and unions co-operate or goad each other into action; and unless research closes the gap between social science theory and engineering practice. Obstacles to progress could be better dealt with by greater emphasis on action-research, closer collaboration between organizational and engineering researchers, and closer involvement of managers, union officials, employees and researchers. In expounding this argument, the article notes recent innovative thrusts, and makes suggestions for research at the micro- and macro-levels.

The Quality of Working Life (QWL) refers, in this article, to those aspects of the design of jobs and the organization of work that affect the social and psychological well-being of people who work. Improving QWL, which is the "action" issue, implies changes in jobs and in organization, aimed at increasing that well-being.

It is important, first of all, to consider whether QWL is truly a matter of broad social significance, or just a fad created to temporarily serve the ends of a particular group. Evidence that QWL is a worthwhile matter lies mainly in the manifest commitment of various parties, and in its apparent relevance to social trends. The commitment by some business organizations in radically re-designing their manufacturing operations (e.g. Volvo); commitment by some governments in legislation and sponsored research (e.g. West Germany); and commitment by some trade union bodies in the practical education and involvement of their members (e.g. Austrian Trade Union Federation); testifies that QWL is a serious issue, not confined to a narrow interest group.

There is a general trend in society towards a wider democratic participation in its direction and operation. Even such traditional institutions as the church, the military and the civil service are showing tendencies to relax the rigidities of protocol and prerogative in favour of more general participation of organizational members in conducting their affairs. Rising levels of education, literacy and information in the whole of the population offer a tentative explanation. More people are more aware of what is going on in the world than, say, a generation ago; they are better able to understand the workings of society; they have greater expectations as to the benefits they can obtain; and they have more time in which to feel and utter their concerns. In short, a richer quality of psychological life is not just a seductive idea promulgated

by a few self-interested persons -- it is in the Spirit of the Times.

Yet, the progress of QWL has not been as impressive as this assessment suggests it ought to be. As Lisl Klein observes, in a 1975 review of the state-of-the-art for the West German Commission for Economic and Social Change: "While there are indeed a large number of experiments now taking place, nowhere has critical mass been achieved" (Klein, 1975: 70). Since that observation, momentum may have been lost rather than gained.

By examining the political system in which QWL improvement has to take place, and by examining the research that has been done, this article attempts to find out what is getting in the way of progress -- what are the resistances and obstacles? It attempts to identify the needs of the situation and, in conclusion, to point out promising avenues for future action and research.

2.0

THE POLITICS OF QWL

QWL is about the organization of work. Improving QWL involves changing the way work is organized. Therefore, any enquiry regarding QWL action requires some prior examination of the factors which determine the characteristics of typical work organizations -- such characteristics as division of labour; role differentiation; hierarchy of authority; communications in restricted channels. The main actors in a work situation in this system with their special interests and relationships constitute a political system through which QWL action must be realized.

In the economic view, following Adam Smith, the division of labour and the differentiation of roles in work organizations occur in the expectation of better efficiency. The division of an overall task into simple tasks of small compass facilitates the standardization of jobs, facilitates supervision and control, reduces training costs, minimizes skill requirements and increases an employer's

bargaining power in the labour market (Rueschmayer, 1977). While the true social function of the division of labour may well lie deeper in the nature of society (Durkheim, 1902), the expected economic advantage of differentiation is a direct incentive to its use in designing work organizations. Once differentiated, these many different roles and tasks must then be co-ordinated in the service of the organization's main tasks and goals; this need calls into being a hierarchy of authority and communication for centralized control. Thus, in the classical work system, the objective is economic efficiency and the administrative device is bureaucracy.

The economic advantages of better efficiency through differentiation accrue mainly to the owners, employers and managers of the organization. This relatively small group of people also have the power to determine the structure of the work organization -- power legitimately held (in the Weberian sense) within a bureaucratic hierarchy. Acting by the logic of their power and self-interest, employers and their managers have progressively simplified and fragmented the roles (jobs) of their employees. Employees, by exercising a countervailing power (e.g. Trade Unions), have identified their own self-interest mainly with claiming a share in the economic advantages of efficiency. The more fundamental questions of the organization of work have not been an important issue in collective bargaining between employees and employers.

Let us now consider, within this briefly sketched system of work relations, how a QWL-inspired change will affect the main actors. In the first place, management feels it has the right and obligation to take the lead in designing and implementing changes; yet, confronted with the unfamiliar terms of reference of QWL, a manager might well feel very uncertain as to how to go about it. The conventional rules and principles of "scientific management" are of little help.

Secondly, innovative changes in work systems, such as the re-design of jobs and work group autonomy, alter the distribution of knowledge, communication, control,

authority -- and therefore of power -- within an organization. i.e. They alter the bureaucratic structure. This is seen by managers as a threat, although of uncertain proportions. The power structure in the management elite depends to a large extent upon the way that skills, knowledge and authority are deployed throughout the organization. Employees, on the other hand, are not threatened by the change and can even benefit somewhat in terms of increased power. However, conditioned by more than half a century of Taylorism, many employees will see the change as more of a threat than an opportunity, and many will regard it with suspicion or indifference. Union attitudes to QWL changes therefore range from suspicious opposition, through cautious approval to active participation, depending on the degree of confidence the officials and members feel about the outcomes of re-distributing these correlates of power.

Thirdly, the economic advantages of these innovative changes are usually modest and difficult to predict; they are, accordingly, only a modest incentive to both management and employees. Economic risks, however, are also involved; the violation of Taylorist principles threatens inefficiency and confusion -- particularly in the short run. The risks bear most heavily upon the middle manager, who is directly accountable for operating performance. (This threat is largely unfounded, as QWL principles proclaim. Therefore, the perceived risk will be lower in proportion to the manager's knowledge and understanding of the implementation and outcomes of QWL ideas).

This analysis predicts that a proposal for QWL-inspired change will be met by management with a reluctance, born of

- a) uncertainty about the ways and means ("How do I actually do it?")
- b) fear of loss of power, authority, control status, etc. ("What will become of us managers?")
- c) fear of economic risks ("I'll be accountable!").

Set against these disincentives is the prospect of improved efficiency through better use of human resources (motivation, reduced turnover and absenteeism, etc.). The manager's personal values may also favour QWL.

The same proposal will be met by employees with a skepticism born of their lack of confidence in management, and in their own ability to play any influential part. ("What are they up to, now?"). This skepticism will be tempered with approval to the extent that the employees and their representatives understand the ways, means and outcomes of QWL ideas. Such understanding is pre-requisite to appreciating the incentives of a more socially- and psychologically-rewarding work experience.

Some management reluctance can be averted by providing sound information regarding the ways, means and outcomes (a task for researchers) and by underwriting economic risks (company policy and if necessary, government support). However, this deals with only part of the problem; the fact remains that the organizational status quo is the creature of management, entrenched in the beliefs of managerial ideology and identified by managers with their status and power -- social as well as organizational. Within the political system outlined above, it is among the employees themselves, knowledgeable and organized, that the necessary countervailing power has to be mustered.

Thus, for resolute initiatives on QWL to be taken, concerted action is needed. It is up to employers to initiate policies in support of QWL. It is up to managers to get the program going. And, because managers can be expected to have some reluctance, it is up to the unions (and other employee associations) to push for change.

Government, in the above analysis, has remained on the periphery of the "political system" for QWL. The main initiatives are required of employers and employees. However, these initiatives are most likely to be taken in a supportive social ambience, and government can do much to give form and expression to public

sentiment and opinion on QWL. It is up to government, therefore, to establish a climate of positive and co-operative interest in improving QWL; this includes disseminating ideas and information, and providing financial incentives where needed.

Underlying the whole of this diagnosis of the QWL situation is a pressing need for information. Management action is inhibited by the operating manager's not knowing enough about the how, when and why of QWL. Union action is inhibited by similar uncertainties, and by their members apparently distrusting management proposals to improve the quality of their working lives. The important role of research is to fill this need for information; to provide the main actors, particularly management and unions, with facts and theories that enable them to make practical judgments and plans, to devise programs for change, to consult and bargain with one another, and to relate to outside experts.

In the remainder of this article, the role of research is analyzed in more detail, and the nature and direction of existing research is reviewed and discussed. Conclusions about QWL progress and suggestions for future action are developed from an evaluation of the research in the context of the forces at work in the political system just discussed.

3.0

THE ROLE OF RESEARCH IN QWL

There are three different levels at which QWL research can fulfil the "applied" research role outlined above.

First, there is the level of observing and assimilating facts in work settings; this involves analyzing and generalizing the observations into theories and principles which administrators and engineers can use in re-designing work systems, and which can help employees and unions in identifying factors that are important to them. Second, there is the level of concept and theory which builds on the above facts and ideas. This involves experimenting with new approaches and

generating a range of new concepts and theories which could help managers and employees to set new targets and plan truly innovative programs in work system design. Both of these levels involve units ranging from the individual employee and job, through groups and departments, up to the enterprise itself -- i.e. micro-analysis.

The third level at which research is needed is that of predicting and explaining outcomes of QWL which affect society at large -- i.e. macro-analysis. "Work plays such an important part in the life of individuals and of society that changing the nature of work implies nothing less than a culture change." (Klein, 1975: 70). Not only is it useful to know the probable social effects of QWL action, but also, as Klein points out, progress of the QWL "movement" depends on a favorable social climate. Progress can be profoundly affected by, for instance, an economic slowdown.

Most of the QWL-relevant research that has been published in recent years falls into the micro-analysis category. An overview of the main streams of this research is the subject of the next section. The question of the much-neglected macro-level is taken up in section 6.2.

4.0

AN OVERVIEW OF RECENT RESEARCH

The QWL banner has brought together a number of disciplines (industrial psychology and sociology, organizational behaviour, ergonomics, etc.) and a number of already existing streams of research. The nature and direction of this research is reviewed and discussed below under the headings of job enrichment, job characteristics, socio-technical systems, work structuring and action research. These several strands of research have proceeded more or less independently and are all active at the present time. Comparison of their methods and results, and consideration of their contributions within the political system of QWL action are important themes of this discussion.

4.1 Job Enrichment

The confrontation between the psychological needs of workers and the demands and constraints of the Taylorist work place has provided the focus for a substantial body of research, mainly by industrial psychologists, in the past fifty years. Taylor's position on "scientific management" was that economic efficiency in work systems requires a division of labour and authority based on purely technical rationality; management's role is to decide, plan and prepare the work; the workman's role is to carry out instructions to the letter without question (Taylor, 1911). The Human Relations movement reacted against this cavalier treatment of the psychosocial aspects of the workplace. The investigations at Western Electric's Hawthorne Works, for instance, demonstrated the existence of social processes within the work force that could and did affect productivity (Roethlisberger & Dickson, 1939). Modifications to Taylor's doctrine were proposed, based mainly on the notion that human needs to "belong" to a social group, and to experience a sense of "self-worth" are pre-requisite to motivation and task performance.

During the 1940's and 1950's, developments in need theory occurred as an explanation of purposive human behaviour (Maslow, 1954). The concept of need satisfaction was applied to the motivation to work. Herzberg and his co-workers produced the concepts of "hygiene factors" and "motivators". The innovation in this approach is that the work itself is considered a primary source of need-satisfaction and therefore of motivation.

Job enrichment means increasing the opportunities in the job for the employee to experience achievement, recognition, advancement, responsibility, psychological growth and enjoyment of the work itself. Herzberg offers the job enrichment approach in answer to the very urgent plea of employers: "How do I motivate my employees?" (Herzberg, 1968). He offers it in a period of post-war industrial expansion, when technological proliferation and labour scarcity are severely straining the scientific management assumptions that a small management cadre can

handle all the know-how, decision and planning, and that a large, undifferentiated pool of cheap labour is always available. Job enrichment prescribes that low-level decisions and short-range planning be turned over to operatives; it requires the development of human resources through employee training, promotion, job rotation and other motivating devices. Thus, job enrichment can be said - as Ortsman (1978) puts it - not to have challenged Taylorism, but to have "completed" it. As conceived by Herzberg, job enrichment is management-directed, job-centred and performance-oriented. Far from upsetting the Taylorist paradigm, job enrichment enhances it.

The unit of analysis in job enrichment is the individual job, and the interesting research variables are those attributes of the job that provoke employee responses. The responses may be attitudinal (as in job satisfaction, morale, alienation) or behavioural (as in turnover, absenteeism, performance). A very fruitful line of research has grown around the job attribute variables, associated with the term "job characteristics" (Turner & Lawrence, 1965; Hackman & Lawler, 1971).

4.2 Job Characteristics

Hackman and Oldham (1975) have developed a set of questionnaire instruments for measuring job characteristics and employee responses, based on the theory that employee motivation is created by certain specific job dimensions. The Job Diagnostic Survey (JDS), as the set is called, is intended for measuring, in a working organization, (a) the current state of jobs, motivation and readiness for job enrichment, as an indicator of specific areas for job re-design; and subsequently, (b) the same set of variables after job re-design or other developmental intervention, for evaluative purposes.

The job dimensions around which the JDS is constructed are derived from the "Requisite Task Attributes" of Turner and Lawrence (1965). These authors arrived at a set of six attributes of industrial work which they considered, based on published data and a priori argument, to represent the key characteristics of

interest to industrial workers. In a field study of 470 workers in 47 jobs, they discovered a high degree of convergence among the attributes, and significant correlation with positive work behaviour. Hackman and Lawler (1971) subsequently developed these variables as "job characteristics" in a model which incorporates individual differences as moderating variables. This model is the basis on which the JDS has been constructed.

The measurement of job characteristics in the JDS is performed through the perceptions of employees and supervisors, and the observations of outsiders; a respectable degree of convergence among the three was obtained in experimental studies. Thus, the JDS offers a valuable means of assessing a working system, in terms of a valid and acceptable theory of job design and motivation. It is capable of showing, for instance, that many of the employees feel that their jobs lack "autonomy" and "variety":

"... the job gives me (very little) personal 'say' about how and when the work is done."

"... the job requires me to do the same routine things over and over again."
(Agree).

It can show, furthermore, that these perceptions are accompanied in most cases by sentiments of dissatisfaction and even alienation:

e.g., "... Generally speaking, I am very satisfied with this job." (Disagree)

"... I feel a very high degree of personal responsibility..." (Disagree)

"... Most of the things I have to do in this job seem useless and trivial."
(Agree).

Alternative ways of generating the same kind of information exist, which use different items and scales, but stem from the same theoretical bases; e.g., Sims, Szilagyí and Keller (1976).

The psychometric and theoretical bases of this work are carefully worked out and tested; the findings have a better claim to scientific validity than the Human Relations and job enrichment work referred to above, and are withstanding critical scrutiny within the organizational behaviour field. (e.g. Pierce & Dunham, 1978). They can be applied to large numbers of employees in different jobs; the data can be summarized easily and can give a good indication of where need for improvement lies. Nevertheless, the primary intention of these instruments is for diagnosing trouble spots; they are not intended as a guide for work system design. The means are convenient and the results concise, but they do not offer much practical guidance to the designer who would correct the weaknesses in his system.

There is little evidence so far that "job characteristics" have claimed the attention of practicing industrial engineers and ergonomists. The strength of the model is in its theoretical consistency and its generality. The bridge between the general model and the diverse realities of work system design has yet to be built.

If it is a shortcoming, from the standpoint of practical design action, that the above psychometric approach to job re-design separates theory from action, then perhaps a better approach lies in "action research". If it is another shortcoming that the above approach is essentially "technocratic" (Ortsman, 1978) -- a derivative of Taylorism, enlightened by Human Relations theory -- then perhaps a more employee-centred, "participative" approach would be preferred. If it is yet another shortcoming that it implies a mechanistic set of relations among tasks and people, neglecting the interactive, adaptive processes in the system, then perhaps more use should be made of open systems theory in work design. Each of these criticisms has been levelled at the task-attribute theories at one time or another (e.g., Ortsman, 1978). An alternative approach to the job design problem which aligns itself with this critique is the Socio-Technical Systems approach.

4.3 Socio-technical Systems and Work System Design

Three essential views underlie the socio-technical systems way of looking at the problems of work organizations: (1) a psycho-analytical view of the psycho-social forces acting on and among individuals in the work relationship (M. Klein, 1959; Bion, 1961); analytically, this group-dynamic viewpoint leads to an emphasis on the small work group rather than the individual and his job. (2) a conviction that the technical aspect of the work situation is equally important to and co-dependent with the interpersonal or social aspect; rather than subordinating one to the other as in the scientific management or human relations ways of thinking, the social and technical aspects should be jointly optimized. (3) a view of the work unit or enterprise as an "open system", i.e., having a throughput process, in adaptive transaction with its environment.

The above features determine the unique nature of the socio-technical systems approach to organizational analysis and design. As the concepts were being developed, in the empirical context of the well-known coal-mining studies (Trist & Bamforth, 1951), the partly autonomous work group emerged as the significant unit with regard to both task relations and interpersonal relations. The degree of autonomy (i.e., self-control), for instance, is not maximized, but optimized with regard to the technological requirements (Susman, 1976: 288). The interpersonal dynamics of the group, also, are largely determined by the work role relations, of task performance and task interdependence. Thus, it is important to recognize that this approach is not simply an adding together of scientific management and human relations ideas. The social and technical aspects are interactive and inter-penetrating components of the same whole system. The development goal is a joint optimization -- not a trade-off.

This holistic conception presents difficulties for analysis. The system concept does not admit relational types of analysis; no two elements of a system can be considered in terms of their "immanent attributes", but only in their "system connexions" (Angyal, 1941).

From a practical research standpoint the total array of variables and interactions, actual and potential, in even a simple work organization unit is more than a quantitative researcher can manage analytically in the present state of the art. Quantitative approaches arbitrarily restrict the number of variables considered at any one time. By sacrificing some rigor of measurement the socio-technical systems approach is able to take fuller account of the whole system relying more on rules of thumb and expert judgment. The considerable contribution of the socio-technical systems approach has been through the detailed observation of actual work systems and the interpretation of these in terms of a conceptual framework -- leading to the diagnosis of problems and prescription of remedial changes. It is well suited to action research as discussed below.

The socio-technical system approach to job design makes use of a set of six "psychological criteria" which are compatible with the basic principles just mentioned and which also reflect rather closely the task attributes of the middle range models of Herzberg, Hackman and others. The criteria have been elaborated as experience has accumulated, increasing their number, specificity and practicality (L. Klein, 1975; Emery and Thorsrud, 1969; Rühl, 1973). For example the requirement that a job "provide a minimum of variety" has been extended as follows:

"Optimum variety of tasks within the job. Too much variety can be inefficient for training and production as well as frustrating for the worker. However, too little can be conducive to boredom or fatigue. The optimum level would be that which allows the operator to take a rest from a high level of attention or effort in a demanding activity while working at another and, conversely, which allows him to stretch himself and his capacities after a period of routine activity." (L. Klein, 1975: 37)

Thus, while the socio-technical systems approach differs from the job-centered approaches in being more action-oriented and employee-centered and less technocratic and quantitative, it does not appear to lead toward radically different ends. Its

stress on the work group and on participation in design are distinguishing features; but the main difference lies in the method. Its strength is in its practical interventionist thrust. Its weakness, at the present stage of development, is a rather abstract conceptual framework which requires expert handling and makes it difficult to generalize experience at the practical level. That is, each organizational problem tends to become a special case requiring expert attention.

Of course, experts in socio-technical systems analysis are not very widely available and practical attempts to improve work systems and re-design jobs proceed in many cases without much expert help. As we shall see in the next section, many such projects are undertaken using principles drawn from job enrichment and from socio-technical systems theory without careful attention to the underlying theory or to systematic methods.

4.4 Work Structuring

The emphasis above has been on research based in the social sciences -- particularly in industrial psychology, sociology and organizational behaviour. While the main initiatives have come from that quarter, the industrial engineering profession and its related disciplines have also become increasingly responsive to the need to take account of psychological and social variables. The response is particularly visible in West Germany where the term "Arbeitsstrukturierung" is central to concern for the "humanization of the work world". Gaugler, Kolb & Ling, (1976) in a review of the literature are able to cite an impressive number and variety of theoretical views and empirical observations on the application of motivational and behavioural principles through job enlargement, job enrichment, job rotation, autonomous work groups, etc. Incorporation of these principles into the engineering design of work systems is in itself an important contribution to QWL. However, there appears to have been little conceptual development and Ruhl (1973) notes a tendency to over-generalize and simplify. (Gaugler, et al. 1976).

Philips' Gloeilampenfabrieken (reference, no date) have experimented with work structuring since the early 1960's. In 1963 a systematic program was undertaken at Eindhoven to re-think the structure of work conditions, job content and departmental structure. While the results are reported to be favourable, Philips' own assessment wonders whether it would not have been better to have had a better documented, co-ordinated program than to have permitted so much local initiative. The split begins to show between two schools of thought. On one hand, a systematic centrally controlled program with thorough records and scientific evaluation. On the other hand, a participative approach using local initiatives guided by "facilitators" with a minimum of measurement and objective evaluation.

Wilkinson (1970) reporting on a survey of European "experiments in motivation" laments the dearth of hard-evidence; he observes a "curious lack of interest in monitoring these experiments". Subsequently, several reviews have been published of work-structuring and job design projects in the U. S., Great Britain and elsewhere. (U. S. Department of Health Education and Welfare, 1972; Birchall & Wild, 1973; Cummings & Molloy, 1977). Invariably the studies conclude that while the results are generally favourable, they should be interpreted with caution and show little evidence of thorough experimental investigation.

Despite the apparent lack of scientific rigor in this work, its importance in the overall development of the quality of work life should not be underestimated. We have already seen that the theoretical models of individual growth needs, job characteristics, organic work groups, etc. need a bridge to link them to work system realities. The practitioners of work structuring, primed as they are with job enrichment and work group ideas, could be the bridge-head.

4.5 Notes of Action Research

At the international symposium on QWL sponsored by the Ergonomics Society, Björk (1977) pointed out that while new design principles are emerging from a diversity of experience "the difficulty is that these new principles almost always describe

certain good states or solutions but very seldom how to reach these end states". The results are interesting but they lack the objective quality of scientific data. On the other hand, much of the research in organizational behaviour can be criticized for over-emphasizing method and data. The one explains everything but too vaguely; the other explains too little although very well. Action Research aims to reconcile these problems -- to achieve realism with rigor.

The "research" part of action-research emphasizes the systematic collection and analysis of facts in the course of an experiment. Thus, scientific method can be applied, all stages of the change are documented and general rules and guidelines can be extracted. The "action" part emphasizes practical involvement in changing a "real" situation as distinct from a hypothetical simulated or "laboratory" situation. In action-research the full range of systems variables is under consideration. Furthermore, the action and research aspects enhance one another. As Ortsman (1978) puts it:

"Action-research refuses the distinction between theory and application. The researcher has to get involved in action to resolve a practical problem, because only in this way can he add to the theory. Theory and action reflect on one another; for, while action leads to theory, reflection on the action leads to refinement of the change approach."¹

Of course, it can be argued that the pursuit of data in an action context will interfere with the change process without producing sufficient rigor to be worthwhile. This is problematic; action-research is not an easy solution. Nevertheless, it does offer a combination of rigor and realism that is particularly appropriate to the problems of work system design.

Action-research proposals, by adopting improvement of the system under study as a key objective, can be more acceptable to client-organizations than "purer" kinds of research proposals. This has important implications for the "politics of research". Action-research projects can more easily attract the support -- moral, collaborative and financial -- of the enterprises they wish to study. On the

other hand, they can be regarded in academic circles as confused and lacking in rigor -- therefore undeserving of funds and the attention of serious scholars. According to Seashore (1976), these latter disincentives have unfairly hampered the development of action-research. Researchers who may feel tempted to use action-research as a way to attract funds while excusing themselves from rigorous design, should note the prodigious amount of effort and skill that has been put into the successful classic cases. The researcher may be faced with a bewildering array of variables and interactions. Close involvement with the client organization leads to frequent crises and compromises requiring understanding, patience and tact (Thorsrud, 1976; Ortsman, 1978).

In short, action-research in the hands of competent practitioners who know its demands and its limitations is a powerful vehicle for social-scientific development. It complements, rather than supplants, those more conventional methodologies which aim at higher levels of abstraction and generality. It requires different skills and has different political connotations.



4.6 Summary

The several streams of research and experience in which the QWL "movement" has its roots include the following: a technocratic, job-centred stream; a holistic, group-centred stream; and a practical, industrial-engineering stream. There is reason to expect that the action-research approach will help bring these streams together. In the next part of this article, problems which stand in the way of QWL progress, and new trends in theory and practice, will be discussed as a prelude to suggesting future research directions.

5.0

PROBLEMS AND TRENDS IN RESEARCH

5.1 Progress and Problems

As the foregoing overview indicates, the QWL "movement" has roots in two streams of social science research: The "job characteristics" approach contributes increasing analytic and predictive power, particularly at the level of perception and response of the individual employee and of the individual job. There is much continuing research activity in this field, largely in the U.S. and Canada, aimed at applied theory construction and methods of measurement.

The second contributory stream, the socio-technical systems approach, is heavily imbued with elements of holism, participation and adaptation. Its great contribution lies in its deep engagement in actual change projects, lending a guiding theme and method to the change process. Successful projects in all parts of the world, aptly described by the researcher-change agents, are a source of inspiration and information.

5.1.1 Problems of Methodology

The latter approach, however, tends to veer away from analytical measurement as being contentious and unreliable. It is therefore hard to generalize from the lessons learned, each case being unique. The client has to rely heavily on (and believe in) the informed and inspired expert change agent. The former approach, aiming at this very generality and reliability in its analytical measurement, stops at a level of abstraction short of the kind of operational terms that practitioners can readily use.

Small wonder that practical design efforts, such as were briefly discussed above under "work structuring", tend to make only desultory use of the social science theory available. In neither case is the form of assistance offered attractive to the main protagonists, identified earlier: middle managers, engineers and trade union officials. For the quite different reasons indicated, each approach is difficult to relate to.

Action-research appears to accept the need for analytic measurement at the same time as the need for engagement of the researcher in the total change process. It is to be hoped that, as this mode of research gains momentum, the two streams will be brought together. Meanwhile, to advance this convergence, specific research should be aimed at linking the terms of job characteristics more closely with the terms of real work system design. In other words, the social science models ought to be expressed in terms with which engineers, managers and trade unionists can work.

It is fair to say that, while progress is being made in improving the quality of working life, or in developing work systems that have better psycho-social outcomes, the progress is slow and hesitant. The discrepancies in the applied research noted above are partly to blame, but there are two other important factors: managerial ideology, and technological determinism.

5.1.2 Managerial ideology is a term used by Bendix (1956: 2n) to include "all ideas which are espoused by or for those who exercise authority in economic enterprises, and which seek to explain and justify that authority". Under this ideology, managers see their role as deploying and controlling the resources of the enterprise to obtain an economic advantage; they do not see themselves as responsible for the employees as persons (as under the feudal concept of "noblesse oblige"). Taylorism, Human Relations and job enrichment can be regarded as a linear development within this managerial ideology. The aims, methods and rationale are congruent with management's perception of its role in industrial society. The employees themselves are the "substrate" whose favorable response is an expected pay-off. This essential conservatism can have two serious disadvantages in the context of humanizing the work world:

- 1) it elicits a suspicious response from the non-managerial stratum of employees (those of whose work life the quality is to be improved!); trade union

leaders tend to react with cautious skepticism at best.

2) it constrains the scientific development of the movement within traditional paradigms of management practice; e.g., industrial engineering design, as described and criticised by Saric (1978; see below). Managers define the problems and implement the solutions; social scientists working within this framework may be hampered in the free application of their science; Blackler and Brown (1975) see this as leading to the eventual discredit and abandonment of job enrichment and "job design".

The problems of the managerial ideology and QWL present a challenge and, perhaps, a very serious obstacle to action and research; ideological conflicts may have to be dealt with for a successful outcome in QWL terms. Saric's approach to the problem is a radical and interesting one, which offers to confront the ideology directly and alter it. This is discussed in more detail below (5.2.3).

5.1.3 The "technological imperative" -- that the technical nature of the work is given, and that human activity must adapt to it -- is also a widely accepted belief. Clearly, once a heavy investment in fixed mechanical equipment has been made it is difficult to justify changing it to suit the people who have to operate it. Thus, for instance, the technical realities of long-wall coal mining were taken as given, and the idea of "organizational choice" was conceived to show that the technical task could be done by organizing in different ways. (Trist, et al. 1963). The technology itself was not seriously challenged.

Even within highly mechanized manufacturing systems, however, the technical factors must have some "give"; Philips' (q.v.) noted that, in their work structuring experiences, the technology proved to be not so immutable as people are inclined to think. A description of some electronic assembly operations (Meadows, 1976) shows how, for example, the assembly of printed circuit boards can indeed be taken off the moving belt although it must still be done by a linear series of operators.

In general, technology is certainly present as a constraint on the choice of organizational alternatives. A greater degree of technological choice may be possible if technical alternatives are actively sought and evaluated, using psycho-social criteria, before investing in equipment and systems. The more flexible technologies of, for example, data processing, clerical work, personal services, are worth exploring in this regard.

As technology advances, and mechanized work operations shift more and more into the automatic, cybernetic and continuous process sector (Touraine, 1962), this question of technical determinism changes -- probably in the direction of increased technological choice.

5.2 New Trends in Theory and Application

Three innovative ideas are briefly discussed below, each exemplifying an attempt to break through the constraints and obstacles discussed above.

5.2.1 Enid Mumford and co-workers have developed an action-research strategy, based on socio-technical principles and formulated as a practical method for work design. The method emphasizes:

- a) the consideration of human social factors as well as technical factors at the technical design stage.
- b) the participation of "shop-floor" operatives in the design of the system.
- c) a systematic series of steps for the guidance of the design team through diagnosis, design, monitoring and evaluation.

The method ("ETHICS") is aimed primarily at the introduction of computer systems in clerical operations; it proposes that the inherent flexibility of data processing systems technology allows a considerable degree of "technological choice" in the design phase (Mumford & Weir, 1979). However, its elements are psycho-social, and do not include any technical terms; the latter must be supplied by the technical experts.

5.2.2 The Norwegian Federation of Labour (LO) and the Norwegian Employers' Federation (NAF) have made a collective agreement (1975, 1978) by which computer-based systems "are evaluated, not only from technical and economic angles, but also from social angles, so that all the aspects are taken into account in the development, introduction and use of such systems."

It is up to management to keep employees informed, "clearly and in a language easily understandable to those without specialist knowledge in the area concerned", of all matters having to do with computer-based systems used for work or personal data. It is up to the local union to make sure that social aspects are being considered; if they are not, it is a breach of the agreement and grounds for a dispute.

This access to information makes it feasible for trade unions to appoint and train their own experts to study changes in technology and to monitor and take part in systems design projects. In fact, LO has appointed specialist staff responsible for computer systems, and has published training textbooks on the subject (Lucas, et al., 1980).

5.2.3 Ivan Saric (1978, 1979) has made a theoretical statement in the journal "Ergonomics" of a novel concept of adaptive production systems. Saric (1978) takes the position that the machine-centred paradigm for designing man-machine production systems, dominated by the industrial engineer, must give way to a people-centred paradigm in which the industrial engineer's role is very different. The traditional design approach is for an industrial engineer to pre-design a technical solution to the production problem, and then to implement the design, at which point the human operators are fitted to it. This static design produces the desired result, but if the goals change it has to be re-designed by the engineer. Saric's alternative is to start with a "nucleus" of human operators charged with the responsibility of applying the organization's resources to production needs. This

nucleus, being "active and intentional", utilizes the machine system and the organizational resources as "conditions for production". The production system becomes a temporary stage in the process of the nucleus adapting to its environment. That is, as production goals change, the nucleus will tend to modify its own production system to suit. Saric finds evidence of this paradigm at work in the Saab-Scania experience: the off-line assembly of engines by autonomous work groups adapts better to changes in production quotas, etc.; the so-called "improvement groups" fulfil a continuous adaptive function; the role of the industrial engineer shifts from sole-designer to resource-expert and co-ordinator of nuclei (Saric, 1979).

5.3 Summary

The research so far has done a lot to identify and specify important psychosocial factors in work, and valuable experience has been gained in techniques for intervention and change in organizations. Comparing these attainments to the role prescribed for applied research earlier in this article (3.0), however, we find that the information and models provided are not in terms practical enough for the main actors in the QWL political arena to relate to easily (i.e., managers, employees, unions). Also, there are inherent value systems and beliefs that seriously inhibit co-operative and constructive action by these parties (viz., "the managerial ideology"; "the technological imperative").

Meanwhile, innovative thrusts continue to appear. For instance, the three ideas cited (Mumford; Norwegian LO/NAF; Saric) typify new developments which tend to counteract both the managerial ideology -- with participation by employees in planning and decision making -- and the technological imperative -- with a counter-vailing psycho-social imperative.

This analysis gives some indications of where the more immediate needs and opportunities for applied research lie.

6.0

SUGGESTED FUTURE RESEARCH

A major objective of future research should be to bridge the gap, referred to above, between the social science based theories and the practical problems faced by managers, engineers, system designers, union officials and employees in general who wish to improve the QWL in the situations they are responsible for.

The obstacles presented by managerial ideology and technology may be reduced if managers and technicians are involved in the research (e.g., by "action research" strategies); and if the research findings are in terms that managers and technicians can work with.

The impact of changes at the job and work group levels on changes at the societal and cultural levels, should also be examined.

Some possibilities for useful research at these micro- and macro-levels are briefly outlined, below.

6.1 Micro-level

Field research studies at the micro-level should aim to identify task and administrative features of actual work systems which are familiar to managers and technicians, and which are also related to the perceived task characteristics and job satisfaction variables already current in the social science literature.

The basic model is expressed schematically in Figure 1. That part of the model bounded by a dotted line has already been operationalized to an extent in the research discussed above. More work is needed on the design variables on the left hand side ("task and administrative features"), relating them to the criterion variables of work system attitudes and behaviour on the right.

—————FIGURE 1—————

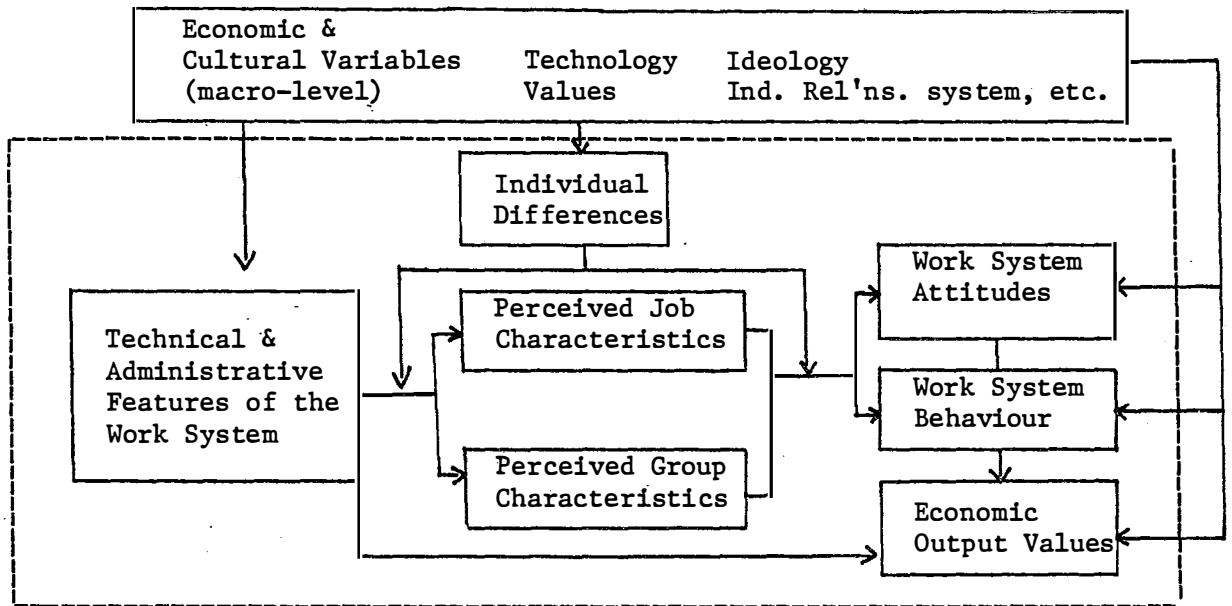


FIGURE 1
QWL Variables

The problem is to identify key characteristics of work systems that technically-oriented designers can relate to desired employee attitudes and behaviour. For instance, in designing a computerized clerical system there are usually several possible alternative configurations of the technical system. The systems design experts, and other design participants can make good decisions regarding behavioral outcomes, only if they have some reliable criteria to guide them.

The "task and administrative features" (TAF) refer to (1) the distribution of control, (over objectives, work flow, rewards, etc.)

(2) interpersonal patterns within groups, (of status, skill-differences, authority, supervision, etc.)

(3) objective task characteristics (learning time, cycle time, mechanization, routineness, scope of duties, etc.).

The TAF operational terms need to be worked out in detail in collaboration with engineers, operators and administrators, to develop measures which are not only statistically and conceptually sound, but also interpretable into practical work terms.

The measurement of perceived job characteristics and group characteristics is described in the literature (e.g., Hackman & Oldham 1975; Meadows, 1980a).

The measurement of these variables will help to validate the TAF constructs and to mediate the relation between the latter, the individual differences and the outcome variables (behaviour, attitudes, satisfaction, performance).

The measurement of individual differences which mediate personal responses to work system characteristics is not a well-developed methodology. However, some potentially useful instruments and approaches can be suggested (Hackman & Oldham, 1975; Steers & Braunstein, 1976; Meadows, 1980b; Eysenck & Eysenck, 1969).

Similarly with the response variables, there is an extensive literature on the measurement of job attitudes and satisfaction (e.g. Bunz, Jansen & Schacht, 1973; Smith, Kendall & Hulin, 1969).

The essential research method is to obtain quantitative data in the field regarding individual jobs and employees, using questionnaires, interviews and direct observations, from several sources if possible (supervisors, researchers and employees themselves). Some data are obtainable from employer's records (attendance, performance). In the final analysis, correlational techniques can be used to test the hypotheses of association between, for instance, TAF terms and the outcome variables.

6.2 Macro-level

The interaction of macro-social phenomena with micro-level changes deserves more research attention than it has hitherto received. (Hernes, 1978; Moore, 1963: 71). The relationship between the two levels is illustrated in the following argument:

It has been an observed characteristic of macro-social process in recent times that income distribution has not followed changes in education distribution as closely as expected (e.g., Wright, 1978). This can be explained in the following way: Jobs differ widely in the responsibility, authority and skills they are perceived to involve. Pay rates differ in proportion to this perceived responsibility, etc. Individuals from certain groups, such as women, blacks and working class are selected into low responsibility jobs; this practice is supported by customs, traditions and widely-held societal values and beliefs.

That is, women, blacks and workers will tend to have lower incomes than men, whites and managers because they tend to be given jobs lower in the scale of responsibility, etc. Education cannot alter this tendency because education in itself cannot alter sex, race or class.

The wide range of clearly differentiated levels of responsibility, authority and skills involved in most jobs is the controlling factor. This differentiation has developed throughout the mechanical-industrial era, not only between management and labour jobs, but also within the labour sector (Dubois, 1978). However, current

innovations in "humanization" and, particularly, in autonomous work groups are reversing this trend (at the micro-level); this tends not only to narrow the range of differences in responsibility, etc., but also to blur the perceived differences themselves. This new structuring of the differences will affect the probability of a woman, black or "worker" entering a job appropriate to her or his education level.

Thus, it can be argued that micro-level changes such as inhere in job enrichment, autonomous work groups, humanization of work, etc., could have important effects at the macro-level on the distribution of income-levels, the demand for education, the correlation between education and income, and so on.

In the same way, it is conceivable that changes at the work group and organization levels could have an impact on other socio-economic issues -- equal pay for women, discrimination by race, class or sex in employment, trade union structure, and other issues in an employment relationship which has evolved under Taylorist management principles.

Beyond the above issues of reform within a liberal, capitalist tradition, there looms a more radical critique of work in relation to man and society. The perspective of a man's craft, with its connotations of "savoir faire", cultural expression and social solidarity, eroding away through the industrial age into "anomie", promotes a view of work system re-design as an instrument of social and political action. J. Grand'Maison puts this radical question as follows:

"What place is assigned to human work in the construction of today's and tomorrow's society? Quite a different question from that of the humanization of a work whose technical, administrative and political co-ordinates are determined by powers, possessions and wisdom which impose themselves on the activity of work and on the worker himself."² (Grand'Maison, 1975: 113).

Considerations of advanced social goals may well lead the innovation of work system designs, and may suggest new design paradigms (e.g., Saric, 1978). We do not want to design tomorrow's work systems to suit yesterday's society. Nor should we, however, delay the progress of humanization and QWL to wait for radical changes that may be a long time coming. There is still plenty of room within the liberal tradition for the humanization of work and the extending of democratic principles.

7.0

CONCLUSION

The main themes and conclusions of this article can be summarized in terms of the "politics" of QWL, the achievements and shortcomings of QWL-related research, and some indications for the future.

The "political" system surrounding QWL is such that the determined efforts of both middle management (for doing it) and the unions (for urging it) are needed.

The research has progressed in three principal streams. The psychometric approach has yielded quantitative measures and models. The socio-technical systems approach offers systematic intervention methods. Work-structuring is an engineering approach, practical but with little theory or system so far.

Despite the considerable progress made in QWL-related research, it falls short of the needs of the political system identified above in certain ways.

- the psychometric approach is too abstract for managements and unions to translate readily into action. Its technocratic basis is a political liability.
- the socio-technical approach tends to be too dependent on the "outside expert"; it is seen as elitist.
- the work-structuring approach lacks conceptual scope and system; it tends to be dominated by management.

These shortcomings call for new research activity that will provide:

- a) more specific guidance for management and unions on the specific characteristics of work systems that enhance the work experience; development of operational terms that managers and unionists can readily understand and use.
- b) more direct involvement of management and union in research programs. Development of participative, action-research methods.
- c) more systematic monitoring and reporting of research progress and outcomes.

In addition, there is a need to examine the relation of these micro-level models of work system change, in predictive or explanatory ways, to macro-level issues such as incomes and education policy, discrimination in employment and trade union structure.

7.1 Recommended Action

Researchers who have some competence in both social science- and engineering-related fields should develop models and measures that link the psycho-social variables already demonstrated with practical terms that managers and engineers can employ in designing work systems. Avoid the constraining ideological principles of Taylorism -- such as the "individual job" and "performance -- achievement". Consider group structure and process, and long-term system welfare. Ultimately, a practical theory of work system design is the goal.

Managers who see opportunities for work re-structuring, etc., should ensure that a systematic research approach is taken -- i.e., objective observation and reporting of events, decisions and results -- in order to help with overall theory construction.

Managers and trade union officials should jointly cultivate an atmosphere of participation around QWL programs, to obtain substantive input from all parties involved. This includes educating some parties to a point where they can contribute usefully.

Researchers should develop and publish general process techniques for facilitating the above systematic and participative methods. Consultants tend to conceal their proprietary knowledge and techniques; however, publication is needed to dispel the aura of mystery and elitism. An explicit methodology for change at the micro-level is necessary.

Government, corporate and academic agencies interested in QWL should ensure that "action research" and applied research receive the support and approbation they need to attract competent researchers, who might otherwise feel constrained to pursue "purer" kinds of research for reasons of career, scholarly prestige, etc. This includes funding, and also academic recognition, opportunity to publish, etc.

Government should see that the above thrusts are not hampered by lack of resources -- i.e., by finance, knowledge or, information. This applies specifically to

- a) management's willingness to take on the risks of a QWL program
- b) unions' ability to participate confidently in QWL analysis and decision-making.
- c) researchers' willingness to engage in applied and action research aspects.

Unless there is a determined effort by all parties concerned, progress with QWL will continue to be piece-meal and sporadic; the expectations of an increasingly aware population will continue to outstrip their opportunities, and alienation from work will grow apace.

Louis Schaw has defined work as the making of "shared histories" that bind men together in the web of existence. The ancient concept of work as central, philosophically and operationally, to human existence is regaining currency in this second half of the twentieth century. If we can believe that "man's truly relevant forms of work are yet to be invented" (Schaw, 1965:7), then we can be sure this effort is just a beginning.

FOOTNOTES

1. Author's translation; Ortsman (1978) p. 229.
"L'action-recherche refuse (la) distinction entre la théorie et son application. Le chercheur doit s'engager dans l'action pour résoudre une problème pratique, car c'est en cela seulement qu'il peut ajouter à la théorie. Théorie et action se renvoient l'un à l'autre, car si l'action permet la théorie, la réflexion sur l'action permettra d'affiner la démarche de changement."

2. Author's translation; Grand'Maison (1975) p. 113.
"...quelle place accorde-t-on au travail humain dans la construction de la société d'aujourd'hui et de demain? Une question bien différente de celle de l'humanisation d'un travail dont les coordonnées techniques, administratives et politiques sont déterminées par des pouvoirs, des avoirs et des savoirs qui s'imposent à l'exercice du travail et au travailleur lui-même."

REFERENCES

- ANGYAL, A. (1941) Foundations for a Science of Personality, Harvard University Press.
- BENDIX, R. (1956) Work and Authority in Industry, Wiley, New York.
- BION, W. R. (1961) Experiences in Groups and Other Papers, Tavistock, London.
- BIRCHALL, D. W. & R. WILD (1973) 'Job re-structuring amongst blue-collar workers,' Personnel Review, 2, 40-56.
- "
BJORK, L. E. (1977) 'The planning of new production systems.' Ergonomics, 20, 567-570.
- BLACKLER, F. H. M. & C. A. BROWN (1975), 'The impending crisis in job redesign.' Journal of Occupational Psychology, 48, 185-193
- "
BUNZ, A. R., R. JANSEN & K. SCHACHT (1973) Qualitat des Arbeitslebens. Soziale Kennziffern zu Arbeitszufriedenheit und Berufschancen. Forschungs auf trag des Bundesministers für Arbeit und Sozialordnung, Bonn.
- CUMMINGS, T. G. & E. S. MOLLOY (1977) Improving Productivity and the Quality of Work Life, Praeger, New York.
- DUBOIS, P. (1978) 'Techniques et division des travailleurs,' Sociologie du travail, 2, 174-191
- DURKHEIM, E. (1902) De la division du travail social, Alcan, Paris.
- EMERY, F. & THORSRUD, E. (1969) Form and Content in Industrial Democracy, Tavistock, London, Originally: Industrielt Demokrati, Oslo U.P. (1964)
- EYSENCK, H. J. & S. B. G. EYSENCK (1969) The Description and Measurement of Personality, Routledge & Kegan Paul, London.
- "
FÜRSTENBERG, F. (1976) 'Strategien für eine humane Arbeitsgestaltung,' Fortschrittliche Betriebsführung und Industrial Engineering, 25, nr. 1, 5-8.
- GAUGLER, E., M. KOLB & B. LING (1976) Humanisierung der Arbeitswelt und Produktivität, Univ. Mannheim.
- GRAND'MAISON, J. (1975) Des Milieux de Travail a Reinventer, Université de Montreal.
- HACKMAN, J. R. & LAWLER, E. E. (1971) 'Employee reactions to job characteristics,' Journal of Applied Psychology, 55, 259-286.
- HACKMAN, J. R. & OLDHAM, G. (1975) 'Development of the Job Diagnostic Survey,' Journal of Applied Psychology, 60, 159-170.
- HERNES, G. (1978), 'Structural change and social processes,' American Journal of Sociology, 82, 3, 513-547.
- HERZBERG, F. (1968) 'One more time - how do you motivate employees?' Harvard Business Review, vol. 46, January, pp. 53-62.

- KLEIN, L. (1976) New Forms of Work Organization, Cambridge University Press, Cambridge U. K.
- KLEIN, M. (1959) 'Our adult world and its roots in infancy' Human Relations, 12, 291-303.
- LUCAS, H., F. LAND, T. LINCOLN, E. MUMFORD & R. SUPPER, (eds.) The Information Systems Environment - Proceedings of the IFIP WG8.2 Bonn Conference, North-Holland, Amsterdam, 1980.
- MASLOW, A. H. (1954) Motivation and Personality, Harper, New York.
- MEADOWS, I. (1980a) 'Organic structure & innovation in small work groups,' Human Relations, (forthcoming)
- MEADOWS, I. (1980b) 'Organic structure, personality and satisfaction,' Human Relations (forthcoming)
- MEADOWS, I. (1976), 'Innovative Work Arrangements - Philips Electronics Ltd.' Employment Information Series No. 17, Ontario Ministry of Labour, Toronto, 16 pp.
- MOORE, W. E. (1963) Social Change, Prentice-Hall, Englewood Cliffs, N. J.
- MUMFORD, E. & M. WEIR (1979), Computer Systems in Work Design - the ETHICS method. Wiley, N. Y.
- ORTSMAN, O. (1978) Changer le travail, Dunod, Paris.
- PIERCE, J. L. & R. B. DUNHAM (1978) 'The measurement of perceived job characteristics,' Academy of Management Journal, 21, 123-128.
- PHILIPS' GLOEILAMPENFABRIEKEN (no date) Work-Structuring: A summary of experiments at Philips - 1963 to 1968. Philips, Eindhoven.
- ROETHLISBERGER, F. J. & W. J. DICKSON (1939), Management and the Worker, Harvard Univ. Press, Cambridge, U. S.
- "
RÜHL, G. (1973) 'Untersuchungen zur Arbeitsstrukturierung,' Industrial Engineering, 3, 3, 147-197.
- RUESCHMAYER, D. (1978) 'Structural differentiation, efficiency and power.' American Journal of Sociology, 83, 1, 1-25.
- SARIC, I. (1978) 'The development of production systems: Some theoretical and behavioural aspects of industrial engineering.' Ergonomics, 21, 931-938.
- SARIC, I. (1979) 'Development of the nucleus for adaptable production systems.' Ergonomics, 22, 269-277.
- SCHAW, L. C. (1968) The Bonds of Work, Jossey-Bass, San Francisco.
- SEASHORE, S. (1976) 'The Design of Action Research,' chap. 8 in Experimenting with Organizational Life, (A.W. Clark, ed.) Plenum, London.
- SIMS, H. P. S.S. SZILAGYI & R. T. KELLER (1976), 'The measurement of job characteristics,' Academy of Management Journal, 19, 195-212.

- SMITH, P., L. KENDALL & C. HULIN (1969) The Measurement of Satisfaction in Work and Retirement: a strategy for the study of attitudes. Rand & McNally, Chicago.
- STEERS, R. M. & D. N. BRAUNSTEIN (1976), 'A Behaviorally based measure of manifest needs in work settings,' Journal of Vocational Behavior, 9, 251-260.
- SUSMAN, G. I. (1976) Autonomy at Work: a socio-technical analysis of participative management. Praeger, New York.
- THORSRUD, E. (1976) 'Complementary Roles in Action Research,' Chap. 6 in Experimenting with Organizational Life (A. W. Clark, ed.) Plenum, London.
- TOURAINÉ, A. (1962) 'An historical theory in the evolution of industrial skills' in C. R. Walker (ed.) Modern Technology and Civilization, McGraw-Hill.
- TURNER, A. N. & P. R. LAWRENCE, (1965), Industrial Jobs and the Worker, Harvard Business School.
- TRIST, E. L. & K. W. BAMFORTH (1951) 'Some social and psychological consequences of the long-wall method of coal-getting,' Human Relations, 4, 3-38.
- TRIST, E. L., G. W. HIGGIN, H. MURRAY & A. B. POLLOCK (1963) Organizational Choice, Tavistock, London.
- U. S. Department of Health, Education & Welfare, (1972), Work in America, Washington.
- WILKINSON, A. (1970) A Survey of Some Western European Experiments in Motivation, Institute of Work Study Practitioners, London.
- WRIGHT, E. O. (1978) 'Race, Class and Income Equality' American Journal of Sociology, 83, 6, May, 1368-1397.

Faculty of Business
McMaster University

WORKING PAPER SERIES

101. Torrance, George W., "A Generalized Cost-effectiveness Model for the Evaluation of Health Programs," November, 1970.
102. Isbester, A. Fraser and Sandra C. Castle, "Teachers and Collective Bargaining in Ontario: A Means to What End?" November, 1971.
103. Thomas, Arthur L., "Transfer Prices of the Multinational Firm: When Will They be Arbitrary?" (Reprinted from: Abacus, Vol. 7, No. 1, June, 1971).
104. Szendrovits, Andrew Z., "An Economic Production Quantity Model with Holding Time and Costs of Work-in-process Inventory," March, 1974.
111. Basu, S., "Investment Performance of Common Stocks in Relation to their Price-earnings Ratios: A Text of the Efficient Market Hypothesis," March, 1975.
112. Truscott, William G., "Some Dynamic Extensions of a Discrete Location-Allocation Problem," March, 1976.
113. Basu, S. and J.R. Hanna, "Accounting for Changes in the General Purchasing Power of Money: The Impact on Financial Statements of Canadian Corporations for the Period 1967-74," April, 1976. (Reprinted from Cost and Management, January-February, 1976).
114. Deal, K.R., "Verification of the Theoretical Consistency of a Differential Game in Advertising," March, 1976.
- 114a. Deal, K.R., "Optimizing Advertising Expenditures in a Dynamic Duopoly," March, 1976.
115. Adams, Roy J., "The Canada-United States Labour Link Under Stress," [1976].
116. Thomas, Arthur L., "The Extended Approach to Joint-Cost Allocation: Relaxation of Simplifying Assumptions," June, 1976.
117. Adams, Roy J. and C.H. Rummel, "Worker's Participation in Management in West Germany: Impact on the Work, the Enterprise and the Trade Unions," September, 1976.
118. Szendrovits, Andrew Z., "A Comment on 'Optimal and System Myopic Policies for Multi-echelon Production/Inventory Assembly Systems'," [1976].
119. Meadows, Ian S.G., "Organic Structure and Innovation in Small Work Groups," October, 1976.

120. Basu, S., "The Effect of Earnings Yield on Assessments of the Association Between Annual Accounting Income Numbers and Security Prices," October, 1976.
121. Agarwal, Naresh C., "Labour Supply Behaviour of Married Women - A Model with Permanent and Transitory Variables," October, 1976.
122. Meadows, Ian S.G., "Organic Structure, Satisfaction and Personality," October, 1976.
123. Banting, Peter M., "Customer Service in Industrial Marketing: A Comparative Study," October, 1976. (Reprinted from: European Journal of Marketing, Vol. 10, No. 3, Summer, 1976).
124. Aivazian, V., "On the Comparative-Statics of Asset Demand," August, 1976.
125. Aivazian, V., "Contamination by Risk Reconsidered," October, 1976.
126. Szendrovits, Andrew Z. and George O. Wesolowsky, "Variation in Optimizing Serial Multi-Stage Production/Inventory Systems, March 1977.
127. Agarwal, Naresh C., "Size-Structure Relationship: A Further Elaboration," March 1977.
128. Jain, Harish C., "Minority Workers, the Structure of Labour Markets and Anti-Discrimination Legislation," March, 1977.
129. Adams, Roy J., "Employer Solidarity," March, 1977.
130. Gould, Lawrence I. and Stanley N. Laiken, "The Effect of Income Taxation and Investment Priorities: The RRSP," March 1977.
131. Callen, Jeffrey L., "Financial Cost Allocations: A Game-Theoretic Approach," March 1977.
132. Jain, Harish C., "Race and Sex Discrimination Legislation in North America and Britain: Some Lessons for Canada," May, 1977.
133. Hayashi, Kichiro. "Corporate Planning Practices in Japanese Multinationals." Accepted for publication in the Academy of Management Journal in 1978.
134. Jain, Harish C., Neil Hood and Steve Young, "Cross-Cultural Aspects of Personnel Policies in Multi-Nationals: A Case Study of Chrysler UK", June, 1977.
135. Aivazian, V. and J. L. Callen, "Investment, Market Structure and the Cost of Capital", July, 1977.

136. Adams, R. J., "Canadian Industrial Relations and the German Example", October, 1977.
137. Callen, J. L., "Production, Efficiency and Welfare in the U.S. Natural Gas Transmission Industry", October, 1977.
138. Richardson, A. W. and Wesolowsky, G.O., "Cost-Volume-Profit Analysis and the Value of Information", November, 1977.
139. Jain, Harish C., "Labour Market Problems of Native People in Ontario", December, 1977.
140. Gordon, M.J. and L.I. Gould, "The Cost of Equity Capital: A Reconsideration", January, 1978.
141. Gordon, M.J. and L.I. Gould, "The Cost of Equity Capital with Personal Income Taxes and Flotation Costs", January 1978.
142. Adams, R. J., "Dunlop After Two Decades : Systems Theory as a Framework For Organizing the Field of Industrial Relations", January, 1978.
143. Agarwal, N.C. and Jain, H.C., "Pay Discrimination Against Women in Canada: Issues and Policies", February, 1978.
144. Jain, H. C. and Sloane, P.J., "Race, Sex and Minority Group Discrimination Legislation in North America and Britain", March, 1978.
145. Agarwal, N.C., "A Labor Market Analysis of Executive Earnings", June, 1978.
146. Jain, H. C. and Young, A., "Racial Discrimination in the U.K. Labour Market : Theory and Evidence", June, 1978.
147. Yagil, J., "On Alternative Methods of Treating Risk," September 1978.
148. Jain, H. C., "Attitudes toward Communication System: A Comparison of Anglophone and Francophone Hospital Employees," September, 1978
149. Ross, R., "Marketing Through the Japanese Distribution System", November, 1978.
150. Gould, Lawrence I. and Stanley N. Laiken, "Dividends vs. Capital Gains Under Share Redemptions," December, 1978.
151. Gould, Lawrence I. and Stanley N. Laiken, "The Impact of General Averaging on Income Realization Decisions: A Caveat on Tax Deferral," December, 1978.
152. Jain, Harish C., Jacques Normand and Rabindra N. Kanungo, "Job Motivation of Canadian Anglophone and Francophone Hospital Employees", April, 1979.
153. Stidsen, Bent, "Communications Relations", April, 1979.
154. Szendrovits, A. Z. and Drezner, Zvi, "Optimizing N-Stage Production/ Inventory Systems by Transporting Different Numbers of Equal-Sized Batches at Various Stages", April, 1979.

155. Truscott, W. G., "Allocation Analysis of a Dynamic Distribution Problem", June, 1979.
156. Hanna, J. R., "Measuring Capital and Income", November, 1979.
157. Deal, K. R., "Numerical Solution and Multiple Scenario Investigation of Linear Quadratic Differential Games", November, 1979.
158. Hanna, J. R., "Professional Accounting Education in Canada : Problems and Prospects", November, 1979.
159. Adams, R. J., "Towards a More Competent Labor Force : A Training Levy Scheme for Canada", December, 1979.
160. Jain, H. C., "Management of Human Resources and Productivity", February, 1980.
161. Wensley, A., "The Efficiency of Canadian Foreign Exchange Markets", February, 1980.
162. Tihanyi, E., "The Market Valuation of Deferred Taxes", March, 1980.

Jonis

REF

HB

74.5

.R47

no. 163