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THE UNIVERSITY OF ALBERTA

THE RELATIONSHIP AMONGST STRUCTURAL, CONTEXTUAL  
AND JOB SATISFACTION CHARACTERISTICS

by



R. E. ARMIT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH  
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## ABSTRACT

The present project accords attention to relationship amongst structural, contextual and job satisfaction characteristics in industrial organizations. Structural characteristics include role definition, job change and group cohesion. Contextual characteristics include job routine and job uncertainty. Central to the paper is the proposition that jobs may be viewed not simply in terms of routine or of uncertainty, but that jobs hold some routine and some uncertainty as part of their technological composition. The tie between job routine and job satisfaction is pursued in some detail. In particular, the general negative association between these characteristics is found to be most distinct in the context of high job routine, and no systematic relationship prevails at low job routine. Further, the general positive association between job uncertainty and job satisfaction emerges in the context of medium job routine. Based on these findings and on a discriminant analysis of low, medium and high job satisfaction groups, it appears from this study that some routine is necessary for job satisfaction to be achieved in the work place, although relatively high levels of routine are associated with low levels of satisfaction. Further, the combination of routine, uncertainty and satisfaction emerges in discriminating amongst different types of organizations. In total, the analysis suggests a general reduction in levels of routinization in the work place is not necessarily associated with increased job satisfaction. Perhaps what is required is a proper balance of routine and uncertainty in the organization within the essential technology of jobs as a setting which fosters job satisfaction.

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## SUMMARY FINDINGS: A COMMENT ON ROUTINIZATION AND JOB SATISFACTION

The purpose of this report is to explore relationships amongst structural, contextual and job satisfaction characteristics in industrial organizations. Conceptually, structural characteristics represent patterned relationships which exist in organizations through time and include organizational qualities as role definition, job change and group cohesion. Contextual characteristics represent the setting within which structure develops, and include qualities of the jobs as routine and uncertainty. Job satisfaction represents a performance outcome of activity within the work place, and is the sole performance characteristic included in the present study. The six organizational characteristics are empirically derived dimensions of organizational activity which fall out of the application of factor analysis to 26 role perception variables included in the Canadian Attitude Survey conducted in 1969-70. The sample in the original survey was 621 upper-mobile middle managers working in numerous organizations in Edmonton, Alberta, and participating in the Management Development Program, University of Alberta. While factor analysis using orthogonal techniques results in mutually exclusive factors, many of the characteristics derived from the principal variable groupings in the factors in the present study lack orthogonality, and a major portion of the project is directed to explaining the systematic underlying relationships which prevail in the data. Analysis is then extended through correlation techniques and discriminant analysis to a more in depth study of relationships amongst the characteristics including a comparative analysis of different types of work organizations based on

the characteristics in focus.

The major area of attention in the project rests in the notion of job routine in the work place, and the tie between job routine and job satisfaction. Many organizations seek to avail themselves of the efficiencies of specialization of labour and requisite role behavior (Kahn et al., 1964; Perrow, 1970; Blau, 1974). Often this results in a certain routinization of work in the organization, and it may be argued that an orientation of management is the routinization of activity in the work place (Perrow, 1970). At the same time, there is a prevalent opinion that job routine is associated with low job satisfaction amongst job holders as a central tendency. (Sayles and Strauss, 1966; Katz and Kahn, 1967; Davis, 1971 (a); Hackman and Lawler, 1971). Further, it appears that job satisfaction bears directly on the general level of physical and mental health of the population as a whole (cf. Work in America), and declining or reduced levels of job satisfaction are associated with lower levels of health. It is therefore important to expand the grasp of the essence of routinization of work in organizations and to more fully examine relationships between job routine and job satisfaction, particularly with the ostensible incompatibility of routine and satisfaction and the deleterious effects of declining job satisfaction.

Job routine essentially represents a standardization of job technology. Many studies appear to contrast job routine to job uncertainty (cf. Hickson et al., 1971), and most often job routine is measured on one scale (Inkson et al., 1970; Aiken and Hage, 1968). Central to the present project is the proposition that jobs may be viewed not simply in terms of routine or in terms of uncertainty, but that jobs hold some routine and some uncertainty as part of their technological composition.

It is true that the characteristics are a contrast to one another, and are in negative association across the respondent group, but it is also true that they are separate empirically derived characteristics of jobs. Job uncertainty in the present study represents the prevalence of new problems or unforeseen matters arising in the job and a constant switching between things which together or periodically require fresh knowledge or new skills. Together job routine and job uncertainty provide a view of the technology of jobs, a key dimension of the context within which structure is developed.

The division of job technology into two characteristics is not unexpected. A number of writers have developed frameworks of organizational activity which demonstrate how complicated job technology is in practice (March and Simon, 1958; Perrow, 1970; Cooper, 1972; Scott, 1975). It is thus not surprising that certain aspects of the technology may fall out as separate factors in a factor analysis of technological variables. This perhaps compares in a broad sense to the division of the work environment into hygiene and motivating factors as they relate to job satisfaction and dissatisfaction (Herzberg, 1966), and to the division of bureaucratic traits into sets of mutually exclusive rather than interrelated characteristics (Udy, 1959; Stinchcombe, 1959; Pugh et al., 1968). The present study indicates that job routine is simply too complex to reduce to one dimension, and the elements of routine and uncertainty both emerge as separate contextual characteristics.

Three structural characteristics in the study are role definition, job change and group cohesion. These characteristics prove to be relatively independent dimensions of structure, with only a slight negative tie emerging between role definition and job change. This

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independence amongst structural characteristics suggests they are free-floating of one another, and management may be in a position to deal with them as separate dimensions. At the same time, however, context and structure have close ties. Over the respondent population, job routine and role definition are in general association with one another, and similarly, job uncertainty and job change are linked together. It appears likely that job routine facilitates role definition and job uncertainty perhaps necessitates job change, although other considerations must be weighed.

Job routine is negatively associated with job satisfaction and the two characteristics are not orthogonal. This is not unexpected, and falls in line with the general theory. The present study shows, however, that the negative correlation does not prevail throughout the span of job routine. When job routine is split into high, medium and low levels of routine, the negative association between job routine and job satisfaction is particularly distinct at high job routine, and no systematic association between job routine and job satisfaction emerges at low job routine. This suggests that a reduction in the general salience of routine eliminates the negative tie between routine and satisfaction. It does not, however, create a positive tie between routine and satisfaction. Attention turns, then, to a monitor of the associations between job uncertainty and job satisfaction. The general correlation between job uncertainty and job satisfaction is positive. Through the span of high, medium and low job routine, however, this positive association is uncovered only at moderate levels of job routine. It therefore appears that job uncertainty and job satisfaction are positively associated in the context of moderate job routine. Overall, the findings suggest that job routine does not preclude job uncertainty as part of the job; that

job routine and job satisfaction are generally negatively or not at all associated; and that job uncertainty is generally positively associated with job satisfaction, but a measure of routine is necessary in the job before this positive association emerges.

The ties between structure and job satisfaction also vary through the span of job routine. In the context of high job routine, role definition and job change are positively associated with job satisfaction. In the context of low job routine, group cohesion and to an extent, role definition are positively associated with job satisfaction. This suggests that persons respond favourably to job change when routine is high in jobs, and respond favourably to working with others, where possible in defined roles, when routine is low.

The relationships amongst context, structure and job satisfaction are pursued in terms of a discriminant analysis of low, medium and high job satisfaction groups employing the five contextual and structural characteristics. One significant discriminant function emerges as a contrast between high job routine on one hand and high levels of role definition, group cohesion, job change, and, to an extent, job uncertainty on the other hand. The low level of job satisfaction rests with high values of job routine relative to other characteristics, moderate job satisfaction is somewhere in the middle and high levels of job satisfaction are found in the function representing a combination of relatively high values of the other four characteristics. Certain points are important to observe. Although job routine and role definition are positively associated in the study as a whole, in discriminating amongst job satisfaction groups, they split. It appears that persons respond negatively to routine in general, but positively to role definition. Perhaps persons favour a clear understanding of their role in the

organization. Further, previous information suggests that job uncertainty and job satisfaction are positively associated in the context of moderate job routine, and job routine expedites role definition. In this sense, it appears likely that although high job routine is associated with low job satisfaction, some routine and perhaps moderate routine is required for higher levels of job satisfaction to be achieved in a situation characterized by role definition and job uncertainty in association with group cohesion and job change.

Using the organizational characteristics to discriminate amongst different types of work organizations based on charter-ownership-control leads to a new level of abstraction in terms of organizational dimensions, and a perspective on the comparative analysis of organizations. Of the six characteristics, group cohesion proves not to discriminate well amongst groups of organizations. The remaining five characteristics combined into two discriminant functions. Role structure represents a contrast between role definition and job change on one hand and all of job satisfaction, job uncertainty and job routine on the other hand. The peculiar combination of the two contextual characteristics with job satisfaction as one part of the function is in line with the general argument in the project that some routine and some uncertainty are party to job satisfaction. Routine task variety represents a weighted average of all five characteristics. In this combination job routine and role definition provide an element of routine and structure to the setting, while job change and job uncertainty provide variety. Organizations scoring high on routine task variety tend to have routinized technologies in tandem with uncertainty and change, a combination which includes job satisfaction. Seven types of organizations are compared in terms of the

two discriminant functions. Branch plants and local firms with hired management measure high on role structure and high on routine task variety. The municipal and federal governments measure high on role structure and low on routine task variety. Owner-managed firms and the provincial government measure low on role structure and low on routine task variety. Entrepreneurs measure low on role structure and high on routine task variety. Differences may be explained in terms of managerial preferences, existing charters and the relative magnitudes of uncertainty and routine in evidence.

From the present study it appears that job technology is a complex phenomenon which may be difficult to reduce to one dimension. Two technological constructs emerged in this project: job routine and job uncertainty. The nature of these characteristics likely varies across different respondent populations, but it should not be unexpected to find similar partitions in other groups, and particularly managerial, professional and technical groups involved in complex matters. It appears in these settings that persons like some routine and some uncertainty as part of the job they are performing. Decreasing routine does not necessarily increase satisfaction. What appears to be workable is the introduction of uncertainty to match with moderate routine as a measure to generate job satisfaction. Further, the introduction of moderate routine into highly uncertain situations appears to be effective in this same way, although routine is not associated with job satisfaction at any level of uncertainty. Routinization and job satisfaction are not mutually exclusive to one another. Uncertainty and job satisfaction are generally positively interrelated, but it appears that some routine is necessary for this relationship to emerge. The construct of routine task variety as formulated in the present paper is based on this notion, and

proves to be a valuable means of discriminating amongst organizations. Job change in highly routinized settings also is associated with job satisfaction.

The societal dynamics amongst broad sectors suggests that outcomes of the work place affect a person's roles elsewhere in life (Kahn et al., 1964). In particular, job satisfaction is linked to the state of physical and mental health of persons, and appears incompatible with job routinization, a basic orientation of management. The present project suggests that this proposition is not entirely true. It appears that some routine is indeed necessary for job satisfaction to be achieved. Perhaps what is required is a proper balance of routine and uncertainty in the work place within the essential technology of jobs as a setting, which fosters job satisfaction. In highly routinized jobs, structural job change is associated with increasing job satisfaction and possibly warrants consideration as a means of raising levels of worker satisfaction in this context.



CHAPTER I  
PROJECT INTRODUCTION AND A DISCUSSION OF  
ORGANIZATIONAL THEORY AND ORGANIZATIONAL RESEARCH INVOLVING  
STRUCTURAL, CONTEXTUAL AND PERFORMANCE CHARACTERISTICS WITH  
SPECIAL ATTENTION TO JOB SATISFACTION AS A  
PERFORMANCE CHARACTERISTIC

A. PROJECT INTRODUCTION

The present study represents a form of organizational research in which structural, contextual and performance characteristics of work organizations are examined within the research design. The first chapter of the report essentially provides an overview of structure, context and performance in terms of organizational theory. Since job satisfaction is singled out as the sole performance characteristic given accord in the empirical body of the study, particular attention is given to job satisfaction in the first chapter as it relates to background information and detail. Research methodology and a discussion of the specific organization characteristics included in the present project are the focus of Chapter II. Fundamental relationships between organizational characteristics as reflected in zero order correlation coefficients are examined in Chapter III, and higher order relationships are studied in Chapter IV. A more in-depth analysis of job satisfaction is provided in Chapter V. The final chapter involves a comparable analysis of organizational characteristics amongst different types of work organizations.

B. ORGANIZATIONAL THEORY, WORK ORGANIZATIONS AND PERSONS IN WORK ORGANIZATIONS

Organizations may be defined in different ways. Barnard (1938) argues that a formal organization represents "a system of consciously coordinated activities or forces of two or more persons" (p. 81). Introducing the idea of objectives more directly, it may be said that "organizations are social units (or human groupings) deliberately constructed and reconstructed to seek specific goals" (Etzioni, 1964, p. 3) or alternately and similarly, an organization may be denoted as a "collective effort ... explicitly organized for specific ends" (Blau and Scott, 1962, p. 223). The importance of explicit ends is fundamental to the definition of organizations. "Primacy of orientation to the attainment of a specific goal is used as a defining characteristic of an organization which distinguishes it from other types of social systems." (Parsons, 1956, p. 33; emphasis removed).

Pugh's (1966) definition of organizational theory represents a logical extension of the basis of organizations. "'Organizational theory' is the study of the structure and functioning of organizations and the behavior of groups and individuals within them." (p. 235). Thus, as a field of inquiry and analysis, organizational theory embraces the examination of formal arrangements developed by persons in order to seek and (preferably) attain certain ends. Further, it embraces all activity within the formal arrangements, including formal and informal activity undertaken by persons, both individually and with others as parts of groups. Although the orientation of the study of organizations is referenced as theoretical in nature, the current state-of-the-art is perhaps more exploratory and descriptive in its research direction. Hall (1972)

argues, for example, that "the field of organizations does not have a theory, or even a set of theories, in the sense of empirically verified propositions that are logically linked. We do have a number of perspectives or conceptualizations that are becoming increasingly crystallized and increasingly based upon previous research." (p. 14). A step towards a theory of organizations is offered by Blau (1974) in his examination of differentiation in organizations, a demonstration of how a theory can emerge from the findings of cumulative exploratory and descriptive research.

Industrial or work organizations represent a central focus for organizational theory. This is appropriate since industry is a vital component of western society as the nub of its economy, participation in industry is a major activity of many of the persons in society, and industry affects society at large and its individual members directly or indirectly. One way of viewing industrial organizations is to consider them as the fourth factor of production, supplementing the economists' basic schema of land, labour and capital, and serving as a vehicle to combine these latter factors together towards productive ends (cf. Parsons, 1956). They include manufacturers, construction firms, utility plants, commercial establishments, financial operations and government bureaux by way of example. A major goal of industrial organizations is the development of a product of value or the provision of a service within the scope of its activity (Kahn et al., 1964) typically within a market economy.

Persons are involved in industrial organizations as part of their format of action. "A work organization is simply an explicit system for organizing the work of many persons in a common enterprise." (Blau, 1974,

p. 338). Persons typically occupy positions and perform roles within the organization (cf. Kahn et al., 1964). This is the nature of the world of work. The positions that persons occupy may well vary within and amongst organizations in a number of ways. Some of these areas are apparent in the research of Hall et al. (1967) as reported in Hall (1972) with respect to organizational size, complexity and formalization.

Positions may vary in terms of how concrete the description of the job is and whether or not the position has a written job description; how formalized authority lines are and whether or not authority lines are connoted in writing; how much emphasis is placed on written communications and established lines of communication; the extent of written rules, and the existence and nature of penalties for deviation from rules; and the availability of positional orientation sessions and training programs (pp. 117-118). The variation in these and other positional characteristics, the correlates of positional sets, and the qualities of positions in industrial organizations provides an important field of organizational study.

Positions and parts of organizations are formulated largely with organizational production or performance in mind. The industrial organization is portrayed as more productive or efficient and effective when it avails itself of the notion of specialization of labour and employs the concept optimally in its operation. Specialization or division of labour amounts to certain persons doing certain things in the organization, while other persons attend to other duties, and to certain parts of the organization handling specific matters while other parts devote attention to other matters. To the organization concerned with taking full advantage of specialization of labour "there is a problem of

specialization among individual employees, and a problem of specialization among organizational units" (March and Simon, 1958, p. 158). A complicated pattern of differentiation and integration of work activity thus develops in terms of individual positions and organizational parts. Positions (or offices) denote one aspect of the pattern of differentiation. These include job titles as vice-president of marketing, clerk-typist, junior economist, welder, printer, shop foreman and their like. Parts of the organization include functional areas as marketing, production, research, industrial relations and accounting. In terms of developing a successful form of organizational design and coming to grips with the problems of specialization of labour in both areas of differentiation, it would appear "there is no reason to suppose that both sets of problems have the same answers or that the same principles apply to both" (ibid.). It is incumbent on the organization to arrange its positions in such a manner that the job is accomplished efficiently and effectively, and it is equally important to arrange the functional areas in such a manner that the job is accomplished efficiently and effectively. Organization theory deals extensively with both aspects of differentiation and the attendant issue of proper integration of positions and parts into an operating whole.

A position in the organization may be viewed as having a series of preferred "activities" or "potential behaviors" (Kahn et al., 1964, p. 13). The incumbent to a position is expected to adhere to these guidelines. In one sense, "these activities constitute the role to be performed, at least approximately, by any person who occupies the office [position]" (ibid., emphasis removed). Thus, "by role, we mean the behavior expected from a person in a particular position" (Etzioni, 1964, p. 87f, emphasis

removed), although the concept of role has been interpreted in alternative fashions (cf. Levinson, 1959) as discussed later in this section. Work is generally divided more or less amongst specific positions in line with specialization of labour. A positional network develops with marked interdependence of the positions established as a key note to success. Activity may collapse or be tempered with any weak link in the chain. In this sense, "one of the great inherent needs of any organization is dependability of role performance" (Kahn et al., 1964, p. 5) by all members. Every person in the work organization occupying a position must handle certain responsibilities as an integral component in the pattern toward goal attainment for the firm. Clerk-typists are expected to type correspondence reaching their desk from administrative personnel. Production managers are expected to handle problems in the production line. Salesmen are expected to keep accounts open and so on. Any weak link in the operation affects overall performance. Thus "planned cooperative action is possible only if one can rely on a great deal of regularity of behavior on the part of all participants" (Crozier, 1965, p. 250).

Organizational parts must also be properly related in successful operations. Lawrence and Lorsch (1969) pursue this concept from the viewpoint of environmental relationships in great detail. Their research is concerned with the ties amongst individual positions in the organization intimate to functional areas and with the state of relationships amongst functional areas including the management of differentiated functional areas within organizations. "[The] division of labour among departments and the need for unified effort lead to a state of differentiation and integration within any organization." (p. 8). Chandler

(1962) examines differences between functional and divisional type operations in terms of the manner in which they divide their parts, and points out how large operations often move beyond functional alignments into compound functional systems characterized by new forms of integrating devices and resource networks. In both of these instances, it is apparent that differentiation and integration involve relationships amongst positions in the organization and that these relationships are affected by the manner in which the parts of the organization are constructed. The issues are separate but related to one another. Following March and Simon (1958) it appears wise to consider them separately and together. Conceptually the basis of differentiation and integration in organizations and the nature of organizational positions and roles acquire more meaning within and following a consideration of organizational structure and context.

### C. ORGANIZATIONAL STRUCTURE

The differentiation of organizations into positions and units and the integration of these positions and units into a functional whole connotes organizational structure which may be defined as "the positions and parts of organizations and their systematic and relatively enduring relationships to each other" (Porter and Lawler, 1965, p. 303). Weber (1946, 1947) has offered a model of bureaucratic structure which has become a principal reference in the study of organizational structure, both theoretically (for example, Perrow, 1972) and empirically (Udy, 1959; Stinchcombe, 1959; Hall, 1963; amongst others). Following Weber's (1946) characteristics of bureaucracy, there appear to be certain over-

riding qualities in the essential bureaucratic structure. The organization is initially divided into jurisdictions (cf. parts and positions) which have designated to them specific activities, official duties, appropriate rules and regulations and the requisite authority and wherewithal to perform. The general structure follows a hierarchy of offices governed by a principle of authority of official ranking within a system of "super- and subordination" (p. 18). Each office in turn is managed in accordance with the written record of the office which represents the substance of the position or part. Activity by an incumbent to an office is based on the nature of the office and its documentation, as apart from the private life of the incumbent in his other societal roles. Further, the incumbent to an office must have the formal skill and training to conduct the affairs of the offices in line with its mandate and duties, and the incumbent must commit his time to fulfilling his responsibilities within the organization. The office itself that the incumbent fills has a series of rules to cover most situations encountered within its jurisdiction, and these rules must be learned and followed. Elsewhere within a discussion of rational legal authority, Weber (1947) points to additional traits of the model. The organization is viewed as a continuous entity. Individual persons working within the bureaucracy as officials do not own its assets, and are fully accountable for the deployment of organizational assets. This facilitates rational action, and according to Etzioni (1964) "keeps the officials' bureaucratic status from being infringed by the demands of his nonorganizational statuses" (p. 54). The positions or offices, furthermore, fall within the discretion of the organization and not the incumbent. In this sense, "there is a complete absence of appropriation of his official position



by the incumbent" (Weber, 1947, p. 332). Both points perhaps underscore the importance of partition between management and worker, and position and worker. They do not, however, preclude ownership by workers or the idea of a cooperative (p. 247).

The persons who occupy positions in a bureaucracy are called officials within Weber's (1946) model, and the terms of the position of the official are also addressed in certain detail. Foremost perhaps is the notion that the position represents a "vocation" to the official, requiring technical training and a sense of duty and obligation to the office. Personal ties are foreign to the pattern. "Modern loyalty is devoted to impersonal and functional purposes." (p. 20). The position occupied by an official provides that person with a degree of "social esteem" by virtue of its responsibilities and place in the hierarchy. Appointments within the hierarchy are made by persons in positions higher in the hierarchy. Tenure within the organization is typically assured for life. This serves to reinforce impersonal action. Persons are paid a salary commensurate with the position occupied, and are assured a pension based on hierarchical status. Officials are also offered a career in the organization, with promotion to successively more responsible positions in the hierarchy following from experience, ability and training within the bureaucracy. Overall, a certain stress is placed on dedication to official purpose within a clearly defined division of labour, emphasizing impersonal service, equity in reward systems and vertical mobility within the hierarchy.

In studying the bureaucratic model, Udy (1959) pursues the qualities of bureaucracy as espoused by Weber in terms of a fundamental question: are bureaucratic characteristics attributes of organizational structure

or variables within the organization? Weber, Udy argues, saw the bureaucratic specifications as "concrete attributes" within the "ideal type" (p. 161) whereas they may more appropriately be viewed as independent variables or "categories in a classificatory scheme" (ibid.). Udy operationalized seven bureaucratic traits and gathered data on each from 150 organizations in 150 nonindustrial societies. One of his essential findings was that the seven traits divided into two groups of variables, which he termed "bureaucratic" and "rational" respectively. The bureaucratic group of characteristics included a hierarchy of authority, an administrative staff for management of the operation and rewards based on hierarchical status. The rational organizational variables included the notion of limited objectives, the emphasis on performance in the organization, a segmental participation in the operation, and compensatory rewards to members of the organization in return for participation. Variables were positively related within groups, while the groups were negatively correlated between one another. This research is important for at least two reasons. Firstly, it indicates that Weberian bureaucratic characteristics can be studied empirically. Secondly, it shows that bureaucratic characteristics may be viewed as variables, and that these characteristics as variables do not all correlate positively as Weber would suggest. Indeed "bureaucracy and rationality tend to be mutually inconsistent in the same formal organization" (p. 166) according to Udy.

Stinchcombe (1959) examined characteristics of the American construction and manufacturing industries using available administrative data (like Udy, 1959) to discern administrative characteristics. Stinchcombe argues that bureaucracy is not synonymous with rational administration, but that rational administration may take on one of two types:

bureaucracy, as reflected in the mass producing industry, and professionalization, as reflected in the construction industry. Common to both are the Weberian traits of stable jurisdictions, official duties and authority. Present in bureaucracy but notably absent in professionalized bodies are job continuity, hierarchy of authority and communication files within the organization. "The central point of this analysis is that the components of Weber's ideal type do not form an inherently connected set of variables." (p. 487).

Hall (1963), whose study was based in part on Udy (1959), opted to examine bureaucracy as a continuum. "The ideal type may be used as a yardstick enabling us to determine in which particular respect an organization is bureaucratized." (p. 33). Six dimensions of bureaucracy were operationalized: division of labour, hierarchy of authority, rules, procedures, impersonality of interpersonal relations and technical qualifications for promotion. These dimensions were studied amongst employees in ten organizations, with employees' perceptions of organizational qualities forming base input. Amongst the findings and conclusions of Hall are the following. Each dimension of the bureaucratic model was found to be a continuous rather than a dichotomous variable. Organizations varied on the degree to which each was bureaucratized. Certain evidence suggests, however, that organizations in the same industry may be bureaucratized to the same degree. Organizational size and age were found to be insignificant factors in predicting the degree of bureaucracy within the organization. These two points, namely the nature of the industry in which a firm is operating and the qualities of organizational size and age, broach the notion of the context within which structure is set, a field of attention examined in a comprehensive fashion by Pugh et al.

(1969) and brought forward into this paper in the ensuing section. Hall also found that the dimension of technical qualifications did not fit well with the other dimensions studied. He suggests that technical qualifications may be a rational group variable within the Udy framework, whereas the other five dimensions are bureaucratic. Overall, however, in the Hall study, the dimensions "existed independently in the form of continua [and] ... the magnitude of the dimensions varied independently in the organizations studied" (p. 39).

Subsequent research by Hall and Tittle (1966) was based on studying bureaucracy not as separate dimensions but as a total phenomenon. In producing a scale of bureaucracy, the technical qualifications dimension from Hall (1963) was dropped, and the other five dimensions were combined "to form a cumulative scale of bureaucracy" (p. 268). Data from twenty-five organizations were brought together, and studied against five areas of potential or hypothesized correlation. The findings are noteworthy within the scope of context and structure. It was found, for example, that size, a contextual variable, was generally positively related to the degree of bureaucratization "but exceptions are numerous enough to suggest that size alone is inadequate as a predictor of bureaucracy" (p. 270). This finding is somewhat at odds with Hall (1963) where size was found to be an insignificant factor in predicting bureaucratic dimensions. From this research, it appears that at least some relationship exists between size and structure. The number of departments in an organization, a structural variable, was found to be associated in a minor, positive fashion with bureaucratization. Three other contextual variables were tested against bureaucratization. Only a slight relationship between the ease of assessing goal attainment and bureaucratization

was found, although it might be projected that ease of determining goals should be associated with "routinization and bureaucratization" (p. 271). Evidently, this projection is not supported, or official goals and operant goals (cf. Perrow, 1961) are not synonymous and may lead to different results. Official goals were studied in the Hall and Tittle research. It was further found that the more an organization was involved with objects rather than ideas as part of its activity framework, the more it was bureaucratized. Lastly, the more an organization was people-oriented, the less it was bureaucratized. This research shows certain important ties between context and structure in addition to providing a different vantage point for a consideration of bureaucracy and its roots. It is perhaps appropriate to note that with respect to the contextual variable of size, research conducted by Hall et al. (1967) as reported in Hall (1972) indicated that the relationship between size and structure was not entirely clear, and that "neither complexity nor formalization can be implied from organizational size" (p. 114).

Pugh et al. (1968, 1969) took a different tack in their empirical examination of organizational structure. As a starting point (1968), they suggest that structure has six separate primary "dimensions": specialization, standardization, formalization, centralization, configuration and flexibility. Specialization connotes division of labour or differentiation within the activity of the organization, "the distribution of official duties among a number of positions" (p. 447). Standardization relates to the prevalence of procedures in the organization that govern its operation. In this sense, a procedure is "an event which has regularity of occurrence and is legitimized by the organization" (p. 448). Formalization represents the extent to which duties and procedures are

ascribed in the organization, "the extent to which rules, procedures, instructions and communications are written" (ibid.). Centralization relates the level of influence within the organizational hierarchy of positions, "the locus of authority to make decisions affecting the organization" (p. 449). Configuration represents the framework of organizational positions, "the 'shape' of the role structure" (p. 450). Flexibility indicates structural amendment within the organization over time, or more simply, "changes in structure" (p. 444).

The first five of these organizational dimensions, flexibility was excluded because of its inherent requirement for a longitudinal data frame, were operationalized, together with a measure of organizational traditionalism. Traditionalism represents the degree to which customs rather than rules govern organizational action, and was developed from a combination of items used in standardization and formalization. When standardization is high and formalization low, the organization was considered to be more traditional, as distinct from bureaucratic, and relies on custom rather than written "files" (cf. Weber, 1946) for organizational understanding. In operationalizing all dimensions, scales of an objective nature were developed. This approach, as the authors note, varies from that of Hall (1963) and Aiken and Hage (1966) in the sense that the latter studies used "forced-choice responses of employees to subjective statements about work practices" (Pugh et al., 1968, p. 444). The Pugh et al. approach "avoids, or at least attempts to minimize, the employees' perceptions of their organization" (ibid.) at the possible cost of not uncovering "what 'really' happens in the sense of behavior beyond that instituted in organizational forms" (ibid.). This important methodological difference is discussed more extensively in Appendix B of this project. For the study, data were collected from 52 work organizations in Birmingham, England.

Scales for the organizational dimensions were subjected to principal components analysis to derive "underlying" dimensions of structure from the "primary" dimensions. Four underlying dimensions or "factors" were found in this procedure, and all are by definition mutually independent.

1. Structuring of Activities. Structuring of activities measured high on standardization, specialization and formalization. It was thus interpreted to indicate "the degree to which the intended behavior of employees is overtly defined by task specialization, standard routines, and formal paper work" (Pugh et al., 1969, p. 63). The authors note that this factor hints at the notion of role specificity (Hickson, 1966), a subject which is dealt with in some detail later in this section.

2. Concentration of Authority. This factor was marked by a contrast between centralization of authority and organizational autonomy. It was thus interpreted to measure "the degree to which authority for decisions rests in controlling units outside the organization and is centralized at the higher hierarchical levels within it" (Pugh et al., 1969, p. 64).

3. Line Control of Workflow. This factor loaded on items of configuration in the organization, and measured "the degree to which control is exercised by line personnel instead of through impersonal procedures" (ibid.).

4. Relative Size of the Supportive Component. Configuration items were again the most significant in this factor which measured "the amount of activity auxiliary to the main workflow of the organization" (Pugh et al., 1968, p. 458) including "noncontrol supportive activities, such as clerical, transport, catering and others" (ibid.).

The authors concluded in part that since these factors were independent, and may thus vary independently within organizations, and since their

initial dimensions were drawn from bureaucratic literature, it was evident "that bureaucracy is not unitary, but that organizations may be bureaucratic in any of a number of ways" (ibid.). This conclusion is in line with the observations of Udy (1959), Stinchcombe (1959) and Hall (1963), as discussed earlier. The fact that these studies were based on data from different geographical areas of the world, that is England (Pugh et al.), 150 nonindustrialized countries (Udy), and the United States (Stinchcombe, Hall), provides an added depth to this consistency in research findings.

Hage (1965), Aiken and Hage (1966, 1968) and Hage and Aiken (1967a, b, 1969) distinguish four structural variables within organizations: complexity, centralization, formalization and stratification. The former three tend to be predominant in their research. Complexity represents specialization or division of labour in the organization, and includes items such as the level of professional training and activity, and the number of occupations in the operation (Aiken and Hage, 1968). Centralization relates to the hierarchy of authority and member participation in decision-making (Aiken and Hage, 1966, 1968). Formalization refers to organizational standardization and includes items such as job codification, rule observation and job specificity (Aiken and Hage, 1966, 1968). The job specificity item was not included in the alienation study (1966). Stratification relates to the organizational status system, and refers to prestige differences between positions and mobility between positions in the organizational hierarchy (Hage, 1965). The similarity between these structural variables and the components of analysis summarized previously suggests a certain commonality between researchers in their approach to structural research in organizations.



#### D. STRUCTURE IN THE CONTEXT OF THE ORGANIZATION

Pugh et al. (1969) comprehensively examined the relationship between underlying dimensions of organizational structure, and the organizational context or "setting within which structure is developed" (p. 63). Three dimensions of structure were examined: structuring of activities, centralization of authority and line control of workflow. Contextual variables included the origin and history of the organization, its ownership and control, size, charter or goals, technology, geographic location(s), and dependence on other organizations including parent operations. A possible eighth contextual variable, resources, was not studied empirically. Nor was the fourth underlying dimension of structure, the relative size of the supportive component. The authors suggested that the structure of an organization has important ties to its context, a proposition which was substantiated in their research findings.

1. Structuring of Activities. This structural feature of organizations was positively correlated with the size of the organization, the size of the parent organization, and the degree of workflow integration formulated within the operation's technology. The fact that size proved a reasonable predictor of the structuring of activities, but not of concentration of authority nor of line control of workflow perhaps indicates that size has an impact on one dimension of structure but not structure in general nor all of its elements.

2. Concentration of Authority. The concentration of authority in the organization was positively correlated with dependence on other organizations, the number of operating sites and the size of the parent organization. It was negatively correlated with organizational age, operating diversity and workflow integration. It appears that "dependent

**MARKS ON ORIGINAL**

organizations have a more centralized authority structure and less autonomy in decision-making; independent organizations have more autonomy and decentralize decisions down the hierarchy" (p. 86). Firms with multiple outputs and selectivity in clients served, which amounts to operating diversity within charter, tended to be more decentralized. Similarly, operations high on workflow integration within their technology were more decentralized. It is remembered that high workflow integration led to high structuring of activities. This connotes a certain routineness to the operation, which was interpreted to permit decentralization of authority. "Because of the increasing control resulting directly from the workflow itself in an integrated technology, decisions tend to become more routine and can be decentralized." (p. 79).

3. Line Control of Workflow. A line or "personal" control of workflow was positively correlated with the number of operating sites and negatively correlated with operating variability and workflow integration. The negative correlations suggested that when operating variability within organizational charter and workflow integration within technology were high, line control of workflow was reduced and more impersonal controls were imposed. Variability in operations denotes the production of non-standard outputs, often consumer specified. It would seem that this variability took away line control of workflow. Similarly, the more integrated the technology, the less personal control was held at the line level.

The authors stated as part of their findings that "size, technology, dependence, and location (number of sites) are critical in the prediction of the two major dimensions (structuring of activities, concentration of authority) of the structures of work organizations" (p. 89, emphasis

removed). It is evident that the charter of the organization reflected in operating variability and diversity was also a significant variable. Causal ties are not to be inferred from the research, although the authors admit the temptation; "in particular, that size, dependence, and the charter-technology-location nexus largely determine structure." (p. 90). The study, however, did not permit this type of categorical statement, nor was the directional relationship necessarily one way. It was obvious, however, that there are important associations between structure and context which warrant attention.

It is perhaps not surprising that of all of the contextual variables included in the Pugh et al. paper, the lone variable to have a decided correlation with each aspect of structure was technology. As these authors use the term, technology refers to "the sequence of physical techniques used upon the workflow of the organization, even if the physical techniques involve only pen, ink and paper" (p. 77). The operational definition, termed workflow integration, included items such as workflow rigidity, automaticity mode, automaticity range, interdependence of workflow segments, and specificity of criteria of quality evaluation. That the importance of technology as a correlate of structure is not surprising follows from the prominent position that technology is accorded in discussions of organization structure, both in theory (Thompson, 1967; Perrow, 1967, 1970) and in empirical research (Woodward, 1965; Burns and Stalker, 1961).

Thompson (1967) argues that "complex organizations are built to operate technologies which are found to be impossible or impractical for individuals to operate" (p. 15), and thus "clearly, technology is an important variable in understanding the actions of complex organizations"

(ibid.). He distinguishes three specific types of technologies. The long-linked technology is characterized by activities in an organization which follow one another and are interdependent. A mass production assembly line is offered as an example. The mediating technology is characterized as a joining or "linking" of parties as accomplished by a telephone company, bank or insurance company. The intensive technology employs methods appropriate "in order to achieve a change in some specific object" (p. 17) which is largely affected by "feedback from the object itself" (ibid.). Hospitals are an example of intensive technology, with patients representing the objects of change. Thompson views the organization as an open system with input and output activities binding it to a task environment (cf. Dill, 1958), and with technological activity in the operation representing the intermediate stage between input and output activity. The organization's bond with its task environment and the formation of an organizational domain (cf. Levine and White, 1961) are responsibilities of management and its "boundary-spanning units" (Thompson, 1967, Chapter 6). The technical unit of the organization is "buffered" from environmental concerns as acquiring inputs and disposing of outputs (p. 20) and coping with environmental uncertainties. The structure of the organization in terms of human and capital resources is related chiefly to issues of interdependence and issues of coordination within the operation (Chapter 5). Interdependency of organizational parts and positions is "a function of both technology and task environment" (p. 57). The development of departments, hierarchy and special committees, task forces and project teams are largely determined by the technology and its task environment. Thompson views interdependency in terms of pooled, sequential or reciprocal ties between positions and parts; and coordination

in terms of standardization, plans and systems of mutual adjustment (Chapter 5). These divisions have technological roots in part. In addition, changes in the activity of a firm within its environment may have a natural tie with the technology of the organization. Long-linked technological companies, for example, tend to expand by vertical integration (p. 40); mediating technological operations, by adding to the populations served (p. 42) and intensive technological organizations, by subsuming the object which is their focus (p. 43). Examples of each are integrated oil companies concerned with oil exploration, refining, distribution and sale; insurance companies, with sales persons writing additional policies to spread risk amongst more units; and hospitals increasing their in-patient programs.

Positions or jobs in the organization have a technological undertone. Persons entering an organization enter into a "contract" which "defines what is expected of individuals in terms of jobs needed to be done, and it defines the rewards which the organization pledges for the appropriate performance of such jobs" (p. 106). The requirements of a job may be amended periodically "to meet the changing dictates of technology and task environment" (ibid.). Jobs may vary in a number of ways as they relate to an individual's career development. These include offering the opportunity to learn and move vertically in the operation, offering visibility, and offering exposure to assessment by others (pp. 107-108). Perhaps less standardized, more nonroutine jobs are preferable for allowing these qualities to unfold. Even boundary-spanning jobs which are typically associated with less routine because of environmental uncertainties cannot be assumed to hold these characteristics. When an organization's task environment is relatively homogeneous and stable, the boundary-spanning

jobs can be routinized (p. 111). Thus much depends on the nature of the environment in which the firm operates. More generally, the fact that organizations seek certainty in member behavior suggests that where possible they standardize jobs as a means to this end. For a number of reasons "jobs in long-linked technologies and in the protected portions of mediating technologies are highly standardized and repetitive" (p. 108). Intensive technologies are tied more to specialized skills, peer standards and peer association as in the crafts and professions (pp. 112-113). Organizational imposition is perhaps mitigated by peer relationships. Managers in all technologies occupy a group unto themselves, and are typically nonstandardized (p. 115). Thus the basic argument of Thompson can be viewed in this framework: "that technologies and environments are basic sources of uncertainty for organizations" (p. 1) and "that organizations cope with uncertainty by creating certain parts specifically to deal with it, specializing other parts in operating under conditions of certainty or near certainty" (p. 13).

Perrow (1967, 1970) argues that technology is a key differentiating factor in the comparative analysis of organizations (1967). Technology is defined as "the actions that an individual performs upon an object, with or without the aid of tools or mechanical devices, in order to make some change in that object" (1967, p. 271). Perrow's concept of technology relates to all activities of the firm. "Some technology is required, not only in the actual production process, but also for procuring the input of materials, capital, and labour and disposing of the output to some other organization, or consumer, and/or coordinating the three 'functions' of 'phases' of input-transformation-output." (1970, p. 75).

For the individual in a job, Perrow suggests that there are two essential technological variables: the number of exceptions confronted as part of the work program, and the degree to which "search procedures" for the proper handling of job encounters are "analyzable". These variables represent essentially a stimulus-response type situation. The job has certain characteristic requirements or stimuli in it which may or may not have a large number of exceptional, unusual or irregular occurrences. When a requirement for action is presented in the job, the incumbent must "decide what kind of a response to make" (1970, p. 76). If there are procedures which are generally known on how the requirement for action should be handled, Perrow suggests that this indicates an "analyzable search" type technology. When the procedures are not well known and elements of judgment and innovation are called for, the situation represents unanalyzable search behavior. These two variables, specifically the number of exceptions in the job and the degree of analyzable search available, provide the essence of a technology matrix of jobs in general (1970, p.78). One way of looking at job stimuli is to consider them as the raw material of the job (1970, p. 76), and the incidence of exceptions in the raw material may be termed raw material variability. When search behavior is rather well known, be there few or many exceptions in the raw material, this behavior can be viewed as standardized. In this sense, standardized and Perrow's term "analyzable" are synonymous.

Routine technologies are defined as having few exceptions in raw material and a standardized search behavior. Nonroutine technologies are defined as having many exceptions in raw material and nonstandardized search behavior. Perrow offers these two sets as the "bureaucratic and nonbureaucratic structures" respectively (1970, p. 78). Within the matrix,

however, two other prototypes are possible. A job may have few exceptions in raw material and an unanalyzable or nonstandardized search behavior, exemplified in the crafts. Alternatively, a job may have many exceptions in raw material but standardized search behavior, as in engineering work. Thus, four types of technological settings are envisaged. Bureaucracy viewed as a continuum (Hall, 1963) cuts one swath across the matrix. It does not readily encompass the entire map. Nor do the terms "routine" and "nonroutine". A job may be routine with respect to raw material input, but nonroutine with respect to search processes as in the crafts; or a job may be nonroutine in terms of raw material, but relatively routine in search processes as in engineering.

Perrow then argues that organizations "wittingly or unwittingly attempt to maximize the congruence between their technology and their structure" (1970, p. 80). Operations with different technological settings may vary in terms of items like discretion, power, coordination within groups, interdependence of groups, and hierarchical level distinctions. To those who argue bureaucracy is inherently bad, Perrow points out that "for routine work, the bureaucratic structure may be both the most efficient and the most humane. Not all people prefer the hectic, open-ended and uncertain character of nonroutine tasks, not even top management." (1970, p. 83). If this is true, it may be that some people like at least some routine in their work, and Perrow's model provides a valuable insight as to areas of routine and nonroutine. Craftsmen, for example, have some routine in their work: very little variation in their material input. Engineers also have some routine in their work: search processes that are standardized. Each group, however, also has a degree of nonroutine in the jobs. One of the ironies of research teams whose jobs are essentially nonroutine in nature is that part of their work often involves



studies "to generate ways of routinizing production and building better bureaucratic controls into organizations" (ibid.).

In the discussion of technology and structure, particularly within the open system model, the division of an organization into separate parts has become more evident. There are, in fact, many functional areas in an organization, and one useful way of classifying structural systems in an operation is studying functions. Katz and Kahn (1967) offer five subsystems of organizational structure: production, maintenance of working structure, boundary systems, adaptive systems and managerial systems (p. 80). The production system is concerned with converting inputs to outputs in line with the goals of the company, and is associated with specialization of labour. The maintenance system handles the interface of job and the company's labour force, the notion of contract between worker and employer (Thompson, 1967). The dimension of structural formalization, the company remuneration plan, and training programs are part of the maintenance system. It might be argued that the production and maintenance systems comprise the technical core (ibid.) of the company.

Boundary systems link the organization to its environment with respect to both input and output exchanges (cf. the open system model) and to acquiring acceptance within the environment (cf. Perrow, 1970, Chapter 4). The adaptive system is involved with planning and development activity to ensure that the company can remain viable over time. Adaptation as a quality is considered fundamental to units of the economic sector of society according to Parsons (1971, Chapter 2). The managerial system is responsible for overall coordination and conflict resolution within the organization.

One viable proposition which flows from a consideration of structure and technology points to the likelihood that certain parts of an organization may be highly structured or bureaucratized while other parts may be less rigorously structured or nonbureaucratic in nature (cf. Perrow, 1970, Chapter 3). Technology may provide the basis for the structure in evidence. Where the work is routinized, as in production perhaps, a bureaucratic network may prevail. Where the work is nonroutine, as in research, a nonbureaucratic structure may be found. Lawrence and Lorsch (1969) subscribe to this notion of internal differentiation of structure and the concurrent problem of appropriate integrating devices in their examination of organizations and their environment. It appears likely that environmental conditions bear directly on structure and technology to organizations in general and to specific parts, functional areas or units of the organization. In this sense, organizational theory relates to how bureaucratized an organization is as a whole (cf. Pugh, 1973), and to how bureaucratized specific units of the organization may be (cf. Lawrence and Lorsch, 1969). Both may be tied in turn to technological and environmental conditions.

Viewing the overall nature of organizations and the principles of their design, Woodward (1965) in a widely cited study of administrative practice concluded that "while at first sight there seemed to be no link between organization and success, and no one best way of organizing a factory, it subsequently became apparent that there was a particular form of organization most appropriate to each technical situation" (p. 228). She discerned three types of production systems: unit and small batch, large batch and mass, and process. An example of each might be a company making a number of units of equipment according to customer specification; a company operating an assembly line producing standard equipment for the

general market place, and a company involved in the production of chemicals. The study unveiled systematic differences amongst these three types of production systems on a large number of structural variables. If the three systems are viewed as stages of technical advancement, some of the variables showed a direct relationship with advancement in technology, others showed a curvilinear relationship. She found, for example, that the number of levels in line production departments was lowest in unit batch operations, somewhat higher in mass production outfits, and highest in process operations (p. 210). The span of control of the chief executive officer followed the same pattern. Specifically, the median number of persons reporting to the chief executive officer was four in unit batch, seven in mass production and ten in process operations (ibid.).

There were also differences in the occupational composition of the production systems. The ratio of managers and supervisors to line personnel tended to increase in moving from unit batch, to mass production, to process operations (pp. 212-213). The most qualified managers and supervisors were found in process operations (p. 214). The size of support staff including clerical and administrative staff followed the same pattern as the managerial ratio (p. 217). A curvilinear trend appeared in the span of control of first line supervisors. The average number of persons controlled by the supervisor was found to be higher in mass production operations than in unit batch and process systems (p. 220).

Roles also changed amongst production or technological settings. A system of "management by committee" was more common in process operations than in the less complex unit batch and mass production outfits. Differences in the positional impact and decision-making processes appeared. The draughtsman, for example, in the unit batch operation provided a main

link between product development and actual product manufacture. In the mass production system, this principal responsibility was tempered, and the draughtsman became a part of a more complicated coordinating system between product development and production (p. 221).

Perhaps one of the main conclusions offered in the Woodward study is that there may be no one best way of organizing. This theme is also evident in the research findings of Burns and Stalker (1961) and Lawrence and Lorsch (1969). In examining organizations and change, Burns and Stalker discerned marked differences in organizational design and process between those companies operating in a relatively stable environment and those companies operating in a changing environment. These two groups were termed mechanistic and organic operations respectively, and in general, the former possessed a tighter, more bureaucratic-like structure, while the latter tended to be looser and distinctly nonbureaucratic.

The nature of the external environment is central to the "contingency theory" of organizations, a term advanced by Lawrence and Lorsch (1969). Their research included the study of companies "in industries with different rates of technological change" (p. 19) and "in industries in which the dominant demands seem to come from different sectors of the environment" (p. 20). They found "that organizational variables are in complex interrelationship with one another and with conditions in the environment" (p. 157). The form of structure within production, marketing and research units in companies appeared to relate to the degree of certainty and the degree of diversity prevalent in their respective environments. The more these conditions varied amongst units, the greater the structural differences amongst units. Ultimately, companies were faced with bringing the units together into a coordinated network, and it appeared that the means

chosen for integrating units and resolving conflicts provides an important aspect of how successful companies were in practice. In this sense, the organizations which were found to be most successful were the operations whose units were differentiated in line with environmental differences but integrated in an appropriate manner. Forms of integration varied with the degree of differentiation in structure. Of the high performance organizations, the plastics firm operating in a dynamic environment and characterized by high differentiation relied on an integrative department. The food organization with moderate differentiation used individual integrators. The container organization with relatively low differentiation employed direct managerial contact. Other integrating devices include cross-functional teams, hierarchical ties, and paper exchange networks (pp. 137-140). Perhaps a notable outcome of this research is the idea that some conflict between parts of an operation is inevitable, and that one distinguishing feature of successful companies is their ability to resolve conflict and integrate their parts. Hall (1972) argues in this manner. "Lawrence and Lorsch's research ... has indicated that conflict, where it is an integral part of the system and is managed effectively, can contribute to organizational effectiveness." (p. 240). The management of differentiation and integration appears central to organizational analysis and understanding.

A major contextual variable which is widely examined as a correlate of structure is the size of the organization, operationalized most often in terms of number of employees. Hall (1963) found no relationship between size and bureaucratic characteristics, but Hall and Tittle (1966) uncovered certain ties between size and bureaucracy when bureaucracy was formulated as a total phenomenon. Hall et al. (1967), as reported in Hall (1972),

argued that size had no generalized association with structure. Scott (1975) reexamined the Hall et al. (1967) data and reached an alternative point of view on their meaning. "Our interpretation of these data leads to the different conclusion that this study indicates a modest but reasonably consistent positive association between organizational size and three dimensions of structural differentiation." (p. 11). Perhaps then, the Hall et al. paper may hold evidence of certain relationships between size and structure. Blau (1974) provides an argument that "increasing organizational size promotes differentiation, but it does so at a declining rate" (p. 328). This is taken as a conflicting finding against the current of Woodward (1965) and Hall et al. (1967). In light of Scott's interpretation of Hall et al., it appears the Blau study reinforces Scott's conclusion, and the papers may be supportive rather than antipodal in their findings.

It seems likely that both technology and size relate to structure, and that both should be considered within research models. Hall (1972) points to the need for examining "the interaction of size and technology" (pp. 122-123) in prioritizing their importance in organizational analysis. Pugh et al. (1969) found that technology had decided association with all dimensions of structure including structuring of activities, concentration of authority, and line control of workflow. Size of organization on the other hand was related solely to structuring of activities. The effect of size on the technology data was not considered in the original paper. Hickson et al. (1969) took the manufacturing firm's data from Pugh et al. (1968, 1969) and completed a more encompassing study of structure, size and technology. In general, size had an association with most aspects of structure, and although technology also exhibited association with a number

of aspects of structure, when size was partialled out of these relationships, the coefficients of correlation were reduced significantly. In short, the variable size was instrumental on the associations found between technology and structure. This led Hall (1972) to say that "Hickson and his associates have correctly concluded from their data that size is more important than technology in determining structure" (p. 121). Pugh (1973) points in the same direction. "In general, our studies have confirmed that the relationship of technology to the main structural dimensions in manufacturing organizations are always very small and play a secondary role relative to other contextual features such as size and interdependence with other organizations." (p. 205). Blau et al. (1976) in a study of technology and organizations in manufacturing support these findings. "In contrast to mechanization, size exerts a considerable influence in the structure of factories." (p. 26). The effect of technology, however, is still significant according to the Blau et al. paper. Their research shows "that the technology is associated with the structure of factories independent of their size, though these effects become apparent only if types of technical systems are distinguished and procedures are employed that reveal curvilinear relationships" (p. 27). The importance of methodology perhaps cannot be understated. Partial correlation techniques for example "only indicate linear relationships" (p. 28) and thus may hid curvilinear patterns. Using Woodward's (1965) concept of technological production systems, differences in structure became apparent in the Blau et al. (1976) study, and principally adhere to a curvilinear relationship, with mass operations varying from small batch and process systems. For example, "work in mass production is more routine than that in small batch factories, while work in process production is least routine

... These differences are reflected in a pronounced  $\cap$ -shaped relationship of the spans of control of production foremen with the three types of technology" (p. 29). The Blau et al. (1976) paper represents certain support to Woodward (1965) in terms of the merit in distinguishing amongst productions systems in any analysis of organizational structure, and emphasizes the need for a consideration of both technology and size in understanding organizational design.

#### E. ORGANIZATIONAL FUNCTIONS AND PROCESSES

Organizational functions and processes reflect activity within structure by members of the organization whose behavior is affected both by the organization itself and by their individual nature. Triandis (1966) suggests that "a function may be defined as an attribute or process that is hypothesized as intervening between some feature of organizational design (input, structure) and some organizational output" (p. 67). He relates organizational functions to Bakke's (1959) "essential processes" within organizations, a reference point shared by Pugh et al. (1963) in the development of their research framework for the empirical study of organizations. These latter authors characterize functions as "activities", and note that "structure is indeed a construct derived from [organizational] activities" (p. 300). Hall (1972) argues that organizational processes represent "the major ways in which an organization moves from one state to the next" and further, that "organizational structure sets the stage for these processes to occur" (p. 201).

The functions and processes in an organization include an array of variables. Hall (1972) offers a summary examination of five processes: power, conflict, leadership, decision-making and communications (Part



Three). Pugh et al. (1963) based on Bakke (1959) view activity as it relates to five organizational processes: specifically, identification, perpetuation, workflow, control, and homeostasis. These activities involve organizational measures regarding the acquisition of legitimacy and resources in the firm's environment; resource flow within the organization, including ideas, people, material and money; items like motivation, direction, fusion and problem-solving; and organizational production and distribution. The Katz and Kahn (1967) functional systems noted earlier may be considered within this framework. Functions and processes are thus envisaged as "part of the dynamics of organizational life" (Hall, 1972, p. 203) and represent a major aspect of organizational research and study. To appreciate organizational processes, it would appear necessary to examine both the nature of organizations and the nature of members who comprise the organization.

#### F. ORGANIZATIONAL PERFORMANCE, OUTPUTS AND OUTCOMES

Organizations as action systems have objectives, and thus "another variable in the analysis of organizational behavior is an organization's success in reaching its stated goals" (Pugh et al., 1963, p. 312). Certain of the items in this area are at the level of the organization as a whole, items like profitability, adaptability and market standing (*ibid.*, p. 313). Others involve groups within the organization including variables as worker satisfaction with fellow employees (Triandis, 1966, p. 62). At the level of the individual in the organization, major outcomes of concern include turnover, absenteeism and individual worker satisfaction (*ibid.*). Productivity, viewed in terms of product quality and quantity, has relevance at the organizational, group and individual level.

Hage and Aiken (1967) distinguish between structure and performance variables in organizations in line with Pugh et al. (1963). Hage and Aiken (1967) view structure as "the arrangements of positions or jobs within the organization" (p. 482) including aspects as complexity and centralization, whereas performance "refers to the outcomes of the arrangements of positions" (ibid.) including program change and satisfaction. In large part this follows Hage's (1965) dichotomy between means and ends, where the means broaches structure and the ends broaches performance (p. 265). Triandis (1966) defines structures as "the relationships among key elements of the organization" (p. 59) while outputs are "measures of organizational effectiveness". The examination of performance or outputs is an important aspect of the general study of organizations.

#### G. THE STUDY OF ORGANIZATIONS

Pugh (1966) views organizational theory in terms of organizational structure and functions, and the behavior of members of the organization within groups and as individuals. Organizational context is proven to have important ties to structure. Further, since organizations are distinguished from other types of social arrangements by virtue of having objectives (Parsons, 1956), the subject of performance properly falls within the study of organizations. This framework provides a capsule of the Pugh et al. (1963) "conceptual scheme for organizational analysis".

Triandis (1966) formulates a comparable framework with some differences. Organizations are viewed in terms of inputs, structure, functions and output. Significantly the input variables include both organizational context and the personality traits of organizational members. Structure

includes abstract qualities of the organization like specialization and the fit between jobs and members. Functions refer to action within structure, and include items like training programs for members, modes of goal formulation; integrating techniques as part of leadership and similar activities. Outputs relate to objective organizational characteristics like productivity and turnover, and to attitudinal variables like worker satisfaction. Triandis states that, from his review of the literature and his discussions with other students of organizations, "the number of variables involved in the description of organizations is very large. It is a fairly sure guess that at least a hundred input variables are unrelated to each other and yet important, and that about fifty structure variables, thirty function variables, and close to twenty output variables are also involved. Furthermore, the specification of the relationships among these two hundred variables is by no means simple." (p. 89). Perhaps one of the challenges of organizational theory, and particularly the empirical research in organizational theory, is to bring together these variables into a comprehensive focus. It is evident that contextual, structural, functional, performance and psychological variables are involved in this research, with most behavioral variables falling within the performance set and attitudinal variables representing part of the psychological set. To the extent that certain attitudinal variables represent responses to the job, they might appropriately be treated as performance variables as well.

Scott (1975) points to three trends in the study of organizations. Structure as organizational form is treated more as a dependent variable in the current empirical analyses (cf. Pugh et al., 1969) rather than a given or ideal type (cf. Weber, 1946, 1947). The thrust is to explain

variance in structure through research models' (p. 2). Increasingly the models are reflective of open systems where organizations are seen in an ongoing relationship with their environment, rather than closed systems with organizations perhaps operating unto themselves. This implies a certain degree of dependence within the framework, the element of environmental uncertainty (cf. Thompson, 1967) and the fact that the organization is not cut-off from society but is a part of society. Input, output and feedback transactions in addition to the basic transformation activities in organizations become instrumental to organizational understanding. Further, the study of organizations has moved from case analysis to the comparative analysis of organizations, and indeed both forms of research are important as sources of information. Methodological improvements in research have paced this trend, conceptually (cf. Lazarsfeld and Menzel, 1961) and technically (cf. Appendix B).

#### H. ROLES, THE NATURE OF JOBS AND HUMAN ACTORS

Levinson (1959) relates three popular interpretations of the term organizational role. Often it is used to connote the norms and expectations of a position in the organization. This interpretation is consistent with Kahn et al. (1964) and Etzioni (1964) as discussed earlier. Role, however, may also suggest "the members orientation or conception of the part he is to play in the organization" (p. 515) which places a degree of definition within the grasp of the role player rather than the organization. Further, role may refer to "the actions of the individual members" (ibid.). Stogdill (1966) broaches this usage of the term when he defines role as what incumbents to a position actually do (p. 19). Argyris (1957) similarly argues that role may comprise all of the actions

of an individual within the organization, including formal and informal undertakings. Although the term role is not used in the theory in a universal fashion, the focal point for role analysis is Kahn et al. (1964). Hall (1972) argues that "Robert Kahn et al. have provided the most widely used and systematic framework for the understanding of the phenomena under discussion." (p. 191). It follows that role is perhaps most widely used to represent the organizational expectations of a person occupying a position in the operation.

Position in this sense and following Levinson (1959) is "an element of organizational autonomy, a location in social space, a category of organizational membership" (p. 514). This is comparable to the term office employed widely by Weber (1946, 1947) and denotes a job in an organizational configuration (Pugh et al., 1968). Levinson further points out that "it is meaningful to say that a person 'occupies' a social position; but it is inappropriate to say, as many do, that one occupies a role". This leads to a contemporary phrase that a person occupies a position and performs a role in an organization (cf. Kahn et al., 1964). There is perhaps no one slate of job dimensions in organizational analysis. The Hall et al. (1967) framework noted previously provides one valuable method of probing organizational formalization and complexity as revealed in role perceptions. Hackman and Lawler (1971) drawing from Turner and Lawrence (1965) classify jobs in terms of six dimensions as variables: variety, autonomy, task identity, feedback, dealing with others and friendship opportunities. Sims et al. (1976) confirmed these dimensions as relatively orthogonal characteristics of jobs using factor analytic techniques. Hackman (1977) modified the core dimensions of variety, autonomy, task identity, and feedback in a recent article on job design, and perhaps

his article summarizes the current job dimension slate resulting from his extensive research with others in the subject. Hackman (1977) advances five core dimensions. These include skill variety, relating to "the degree to which a job requires a variety of different activities ... which involve the use of a number of different skills and talents ..." (pp. 244-245); task identity defined as "the degree to which the job requires completion of a 'whole' and identifiable piece of work ..." (p. 245); task significance or "the degree to which the job has a substantial impact on the lives or work of other people ... (ibid.); autonomy referring to "the degree to which the job provides substantial freedom, independence and discretion to the individual ..." (ibid.) and feedback meaning "the degree to which carrying out the work activities required by the job results in the individual's obtaining direct and clear information about the effectiveness of his or her performance" (ibid.). The group dimensions do not appear in the current article. The dimensions of skill variety, task identity and task significance relate to the meaningfulness of work in the job situation, autonomy relates to responsibility of work and feedback relates to knowledge of results (p. 243). These relationships are enunciated as "critical psychological states" which intervene between the job dimensions and work outcomes including job satisfaction. Conceptually this ties the individual and the organization together, a central feature of the notion of role.

The study of organizational roles is important for at least two reasons. Roles represent a meeting point between the individual and the organization, and much of organizational theory can be synthesized in the concept of role. Both factors bear examination. In the first place, role may be seen as the point at which the societal member and the organization meet and link (Katz and Kahn, 1967, p. 197), are at direct interface (Hall, 1972, p. 196) or unite (Lichtman and Hunt, 1971, p. 252). The individual

joining an organization brings a certain history, experience, education, skill and cognitive and affective style. The organization offers a job which must be done. Work organizations are often particularly careful in recruiting and selecting individuals to fill jobs and perform roles (cf. Etzioni, 1971, p. 259). In this way, the individual person becomes a member of the organization, and company officials are concerned about having the right person for the job or more generally having a company work force that fits their purpose, is suited for the work, understands the work and is committed to the firm. Thus, the organization has certain needs of the individual. Somewhat more specifically Katz and Kahn (1967) define three qualities that are essential in this regard: individuals must join and stay in the firm, they must perform their roles as defined, and they must provide additional input to the betterment of the company beyond that called for in the role definition in order for the company to remain viable (Chapter 12). These concerns underlie company motivational techniques and socialization programs. Socialization may be defined as the change-over in the individual from a member of society to a member of an organization, holding a position with certain role responsibilities; it is "the process of 'learning the ropes', the process of being indoctrinated and trained, the process of being taught what is important in an organization or some subunit thereof" (Schein, 1968, p. 210). By selectivity in recruiting procedures, companies can choose individuals from the population who fit the company mold quite readily, and possess the skills and knowledge required for the job. This reduces the requirement for socialization programs (Etzioni, 1964, p. 70) although they may well be offered as a means of relating company needs of the individual to the individual in the company setting. Where selectivity is not open to

or practiced by a company, the importance and value of socialization programs is enhanced.

Davis (1971a) views persons as potentially involved in three aspects of work processes: "energy supplier ... a guider of tools [and] ... regulator of a working situation or system, an adjustor of difficulties" (p. 438). He argues that the first two qualities are increasingly a function of machines and capital, and that persons are thus involved more in the regulatory aspects of work. This perhaps falls in line with the stages of technological progress which is forwarded by Woodward (1965). Process production systems are more capital intensive than small batch and mass production systems, and the company work force is readily envisaged as less involved in providing the major source of energy and acting as the prime guider of tools. Machines perform these functions, while persons regulate them and meet contingencies. Role routine is often cited as a principal variable of jobs (Inkson et al., 1970) and it appears likely that routine would be greater in jobs where persons are simply suppliers of energy as distinct from guiders of tools and regulators. The demands of the jobs also vary. Ashby (1956) points out that the variety of outcomes of a regulated situation is directly affected by the variety inherent in the regulator. It appears likely that more formal and diversified skills are required in regulator functions than in the other work functions.

Individuals entering organizations vary. At a basic level, persons have different demographic profiles. On a more sophisticated level, persons may be seen as having different needs that they wish to have satisfied in life and thus often in the roles they play in organizations. Maslow (1954) has offered a needs hierarchy for man which comprises five tiers: physiological requirements, safety and security, belongingness and love,



self-esteem and autonomy, and self-actualization. Maslow believes in general that as human needs at the lower end of the hierarchy are satisfied, the natural inclination of man is to seek the gratification of higher level needs. Thus the movement is from initial gratification of physiological needs towards a self-actualization in life. This proposition is reflected in Herzberg (1966) and is addressed by Etzioni (1971). The fact that work organizations often do not develop the type of environment that is conducive to higher level needs satisfaction is fundamental to Argyris (1957, 1960). In the abstract, individuals may be seen as having needs out of life which may be satisfied in the roles they perform in organizations, just as organizations have needs that must be met by its members and which are conveyed to its members. The tie between the two needs sets is captured in the concept of role.

A second reason why the concept of role is so important is offered by Hickson (1966). It would appear that "[organizational] theory has converged upon the specificity (or precision) of role prescription and its obverse, the range of legitimate discretion" (p. 225); and that "there is a strong bimodal tendency in what many authors have written" (p. 226) which may be transmitted in terms of the degree of role prescription. The distinction in organizational types offered by Burns and Stalker (1961) is a case in point: mechanistic organizations tend to be tight or rigorous in role prescription, while organic organizations are much looser and less rigorous in role prescription. Similar distinctions are evident in Becker and Gordon (1966) in their discussion of procedural specification, and in McGregor's (1960) Theory X and Theory Y, to name two additional references. It would thus seem that role characteristics once discerned provide a valuable insight to the nature of organizations and the way they are established.

## I. JOB SATISFACTION

Job satisfaction is perhaps one of the most important and widely studied outcomes of the work situation. Job satisfaction as a variable represents one aspect of the personal value of a job to its incumbent (cf. Work in America, Appendix A here). Hulin and Blood (1968) point out that "trite as it may seem, a high level of job satisfaction among industrial workers may be an appropriate goal in itself" (p. 204). Kahn et al. (1964) represent job satisfaction as one of a worker's "responses to the job" (p. 44), or more specifically "the balance of satisfaction-dissatisfaction he feels about [his work]" (ibid.). Porter and Lawler (1965) classify job satisfaction and morale under the general heading of attitudinal data. Attitude is defined as "'opinion concerning some object' in this case, as or aspects of jobs" (p. 304). It is thus divorced from behavioral outcomes of the job which are more objective in nature, and include items such as "performance and output rates or ratings, turnover rates, absenteeism rates, accident rates and employee grievance rates" (ibid.). The extent to which certain behavioral outcomes of a job such as turnover and absenteeism reflect worker satisfaction or dissatisfaction in the job, and are thus surrogates of satisfaction with the job, represents a relationship widely explored in organizational theory (cf. Paulson, 1974). One model is offered by Hulin and Blood (1968) in terms of the flow relationships involved. Jobs have particular characteristics that are perceived by their holders in certain ways. This perception leads to an affective response by the job holders which includes the element of job satisfaction as a variable. The affective response is then translated into a behavioral response including the elements of absenteeism, turnover, and production as variables. Hackman (1977) points

to critical psychological states as intervening between core job dimensions and personal and work outcomes within the work environment. In either case psychological states of mind and perceptions are instrumental in understanding the element of satisfaction, and the notion of individual differences is particularly prominent in the Hulin and Blood model.

One reason why the study and application of job satisfaction research is important rests in the notion of societal dynamics and concern with the general well-being of societal members. It may be argued that persons have numerous roles in the societal milieu. "Role-pluralism, the involvement of the same persons in several collectivities, is a fundamental feature of all human societies." (Parsons, 1971, p. 12). In this sense, "the life of the individual can [ ] be seen as an array of roles which he plays in the particular set of organizations and groups to which he belongs" (Kahn et al., 1964, p. 11). If society is viewed in terms of its cultural, political and economic components (Parsons, 1971; Mayhew, 1971) and if persons are viewed in terms of role-pluralism, important ties may exist amongst characteristics of human activity in one subsystem and the other subsystems. "All parts of society are, after all, mutually interactive." (Work in America, 1973, p. 92). In particular, the terms of activity for persons in work organizations may have systematic bonds with activity in cultural and political affairs, and vice-versa. Some foundation for this proposition is introduced in Work in America where it is held, for example, that research indicates "those workers with jobs that measure high on variety, autonomy and use of skills were found to be low on measures of political and personal alienation" (ibid., p. 31). The outcomes of work activity might also have a direct bearing on the general well-being of human performers, and their actions within society as a whole. Kahn et al. (1964)

relate the following argument which underscores societal dynamics as part of their research on role conflict and ambiguity in work organizations.

"We assert also that the difficulties people have with their organizational roles increase as conflict and ambiguity increase, and that these difficulties are expressed in performance, not necessarily in the role in which stress was experienced, but somewhere in the array of roles which constitute the social and affiliative life of the person - as husband and father, as worker, as friend and as citizen." (p. 376).

Studies seem to indicate that job satisfaction has significant association with more favourable levels of mental and physical health in the population (Work in America, 1973, Chapter 3). Thus, research which centers on job satisfaction and its correlates within work organizations may open the door in hand with research on societal roles in general to the development of industrial and societal policies which enhance human well-being. One cautionary note might be offered. There are numerous outcomes of industrial activity beyond member satisfaction which have an impact on society and the multiple roles of persons in society. Perhaps two major outcomes in this respect are productivity and profitability. It appears appropriate to balance recommendations relating to the quality of work and job satisfaction with study of their impact on other outcomes of the work situation. Trade-offs and priorities may be involved in the ultimate decision framework. Research into job satisfaction is no less important because of this circumstance, but the need for an encompassing view is underscored.

### 1. Organizational Structure and Job Satisfaction

Porter and Lawler (1965) provide a review of the literature pertaining to the "properties of organization structure in relation to job attitudes and job behavior" (p. 303). They conclude that "in general, the impact of structural variables appears to be clearer on attitudes than on behavioral variables" (p. 323). A number of structural variables is discussed.

Looking at organizational levels, they found early work indicates that job satisfaction increases with occupational level, as does morale (p. 306). Operationalizing Maslow's hierarchy of needs for a survey of management, Porter is reported to have found that "satisfaction increased with each higher level of management for three of five needs (esteem, autonomy and self-actualization), and profiles of satisfaction were generally similar across levels ... It should be emphasized that satisfaction in this study was measured by the difference between obtained and expected fulfillment." (ibid.). This study was interpreted to indicate that lower level managers are less satisfied than higher level managers, and that lower level managers have a wider gap between job expectations and subsequent fulfillment than do higher level managers (ibid.). Further work indicates higher level managers are more "inner-directed" than lower level managers (p. 308).

With respect to line and staff positions, empirical work indicates according to Porter and Lawler that incumbents to line positions are generally more satisfied than incumbents to staff positions within management ranks (p. 310). Research on span of control and its relationship with job satisfaction and behavior is sparse and inconclusive (p. 312). Organizational size was discussed in terms of subunit size and the size of the total organization. On the subject of subunit size, a majority of the studies indicates that workers are more satisfied in smaller subunits. Managerial data are unavailable (p. 313). Absenteeism and turnover also increased with subunit size (p. 315). Significantly, the authors point out that "reviews of the literature have not found that job dissatisfaction is associated with low productivity" (p. 317). On the size of total organizations, early work indicates that morale and satisfaction are higher

in small companies. Porter found in his research that size and level of management were intricately related in assessing job satisfaction. Lower level managers in small companies were more satisfied than their counterparts in large companies. Upper level managers, on the other hand, were more satisfied in the larger companies than in the smaller operations. Managers in larger companies were more "inner-directed" than managers from small companies (p. 318). Relating subunit size and total organization size data, Porter and Lawler cite Porter (1963) where he argues in one of his studies that "an increase in total size of an organization ... will not necessarily reduce the morale and job satisfaction of employees as long as intraorganization work units are kept small" (p. 319).

Size of the organization is treated in the literature as a key contextual variable (cf. Hall, 1972; Pugh et al., 1969). Porter and Lawler (1965) note that "very few studies have been carried out on the relationship of size of total organization to either job attitudes or job behavior" (p. 319). It is evident, however, that structure and satisfaction have certain relationships, and it would appear desirable to bring together size, structure and satisfaction into a comprehensive research model. This portrays an example of multivariate research using contextual, structural and performance variables, and is indicated in Porter's work, although ostensibly few others.

The shape of organizational structure is discussed from two vantage points by Porter and Lawler: tall or flat structures and centralized or decentralized structures. On tall or flat structures, the reviewers cite their own work (1964) where they found that in general, this aspect of shape did not affect satisfaction. When size was controlled, however, flat organizations were associated with greater management satisfaction

than tall organizations within the smaller firms; while tall organizations were associated with greater management satisfaction than flat organizations within the larger firms. In a subsequent replication of this study, Porter and Siegal (1964) confirmed that flat organizations have greater management satisfaction than tall organizations within smaller firms, but there was no difference in levels of management satisfaction between tall and flat structures in larger firms (Porter and Lawler, 1965, p. 320).

Further, the reviewers observe that the type of company may be an important contextual variable in relating structure and job attitudes and behavior (p. 321). On the issue of centralization in structure, Porter and Lawler argue that studies indicate "no clear support for the proposition that decentralization can produce either improved job attitudes or performance" (p. 322).

Allen and Hage (1966) examined relationships between organizational centralization and formalization and member alienation from work and alienation from expressive relations. Alienation is considered comparable to job dissatisfaction, and may be tied either to personal development or to work with others. The results showed in general that alienation on both measures increased with centralization and formalization in structure. More specifically, they found that in terms of alienation from work, the level of alienation increases with greater hierarchy of authority, less participation in decision-making, greater job codification, and stronger measures of rules observation. Participation in decision-making was particularly strong in the centralization field, proving more significant than hierarchy of authority. It appears that persons are more satisfied when they can partake in decision-making processes. Significantly, this variable proved less important in expressive relations at the zero-order

correlation level. Both measures of formalization had strong, independent positive associations with alienation from work. With respect to alienation in expressive relations with others, the level of alienation followed the same basic pattern as in alienation from work, and proved particularly strong in relationship to rule observation and hierarchy of authority. As these organizational structural qualities increased, so did alienation in expressive relations. Job codification also was positively correlated with alienation in expressive relations. Rule observation, a form of supervision, proved the predictor of this type of alienation.

Hage and Aiken (1967a) found a positive correlation between job satisfaction and the rate of program change, and a negative correlation between satisfaction with expressive relations and the rate of program change. They suggest that these findings may make it "plausible to argue that the organizational conditions that facilitate the introduction of change, namely, occupational diversity and decentralization, reduce satisfaction with expressive relationships because of the conflicts they engender" (p. 487). In general, the research of Aiken and Hage (1966, 1967a, b, 1968, 1969) provides an excellent demonstration of multivariate techniques in organizational analysis, and the examination of contextual, structural and performance variables within one model.

## 2. Organizational Performance and Job Satisfaction

Schwab and Cummings (1970) in a review article offer three relationships that are forwarded in the literature with respect to the association between performance and satisfaction. The first relationship is that satisfaction leads to performance, where "the work of Herzberg and his colleagues provides perhaps the best illustration of current theory and research formulated on [this] view" (p. 131). Herzberg (1966) interprets



his research to suggest that factors involved in the worker's environment can be divided into two distinct groups: the satisfiers or "motivators" and the (potential) dissatisfiers or "hygiene" factors. In order for a company to achieve high levels of satisfaction amongst its employees, the company must eliminate dissatisfaction by maintaining high levels of hygiene factors, and coincidentally it must develop satisfaction by nurturing motivation factors. The hygiene factors related to requirements at the lower end of the Maslow hierarchy, or what Herzberg terms the animal needs of man, and include items such as supervision, general administration, working conditions, interpersonal relationships with peers and others, status, job security, salary and effect on personal life. The motivators, on the other hand, are related to the needs at the upper end of the Maslow hierarchy, in what Herzberg terms the human or psychological growth area. They include the areas of achievement, recognition for achievement, work itself, responsibility, advancement and the possibility of growth (Chapter 6).

The second type of association between satisfaction and performance is "the view that the satisfaction-performance relationship is moderated by a number of variables" (Schwab and Cummings, 1970, p. 130) including self-esteem, ability of the individual, urbanization, geographical data, occupation, organization, the individual, community, equity, aptitude and interest (pp. 139-140). This list, which admittedly overlaps between items, reflects the complexity of the problem of relating the two subject variables. Moreover, certain opinion holds that job satisfaction and industrial performance are possibly independent outcomes of the work situation, and "relationships between satisfaction and performance need be neither direct nor particularly strong" (p. 133). Katz and Kahn (1967) share this view.

"Productivity is a measure of role performance and for most production workers such performance has been almost completely standardized. Hence, it relates very little to individual variables of motivation and satisfaction and much more to system determinants of the flow of materials, the organization of the work process, the speed of the flow process .., and the like." (p. 347). The impact of technology on productivity cannot be understated, and bears examination in the design of jobs (cf. Hackman, 1977, p. 246).

A third form of association centers on the idea that performance leads to satisfaction. This concept is perhaps best exemplified in Porter and Lawler (1968) and their version of the expectancy model of motivation and performance. They argue that performance or accomplishment in the work situation is a function of three variables: ability, or the skill and the knowledge that a person brings to the job; role perceptions, or the impression a person has of what he is required to do; and effort or motivation: Motivation in turn is a function of the company's reward structure, which coincidentally is the intervening variable between performance and satisfaction. The value of the reward and the relationship perceived between effort and reward affect motivation; while the nature of rewards and their perceived equity affect the bond between performance and satisfaction. In this sense, rewards affect the work situation through motivation, and the relationship between performance and satisfaction is mediated by reward fulfillment and equity in reward structure. Satisfaction in turn feeds back into the motivation-performance formulation as an input for subsequent action within the work situation. An ongoing cycle is thus established

(Chapter 8).

### 3. Environment and Job Satisfaction

The nature of the environment in which a company operates is established as instrumental in the structuring of the firm (Burns and Stalker, 1961; Thompson, 1967; Lawrence and Lorsch, 1969). Blood and Hulin (1967) provide research findings which show "that workers living in communities which should foster alienation from middle-class norms structure their jobs and their lives predictably differently from workers in communities where adherence to middle-class norms would be expected" (p. 244). Communities typically regarded as hosting an alienation with middle-class norms are lower class groups in large industrial settings where the group is large enough to sustain itself as an entity (p. 238). Certain of the job satisfaction in this study is difficult to interpret, and the study is carefully qualified as a pilot project. The findings suggest, however, that the culture of the workers is an important variable in assessing and determining organizational characteristics: "although integrated workers desire greater responsibility and autonomy, alienated workers may be happiest when given a job which demands little personal involvement either in terms of task skills or identification with the goals of management." (p. 245). This argument is advanced further in Hulin and Blood (1968) where alienated persons are associated with blue collar city workers, and nonalienated persons are associated with white collar city workers and all rural workers. Alienated persons are believed happiest in routine jobs.

The research of Turner and Lawrence (1965) also relates the importance of the town-city differences in the reaction of employees to similar jobs. For example, jobs perceived high on variety, autonomy, responsibility and similar traits were associated more strongly with job satisfaction in the

town population as compared to the city population (p. 128). When overall "requisite task attribute scores" were compiled from job traits, no relationship was found between these scores and job satisfaction. There was, however, a positive association between these measures for the town population, and a negative association for the city population (p. 129). It appeared that the environment of the workers had a bearing on their response to jobs.

#### 4. Job Dimensions and Job Satisfaction

The research of Turner and Lawrence (1965) provides an introduction to a significant branch of organizational theory, specifically the relationship between job dimensions and job satisfaction, which is perhaps highlighted in the recent report which was commissioned by the United States government and entitled Work in America (1973). It is argued by many including Argyris (1957, 1960), Herzberg (1966), Myers (1970) and others that job enlargement, job enrichment or job redesign is associated with a more satisfied and more productive work force. Previously, it has been established that specialization, division of labour and routinization enhance productivity. This poses a dilemma to organizational designers: simply how specialized should an operation be. The answer is important in the respect that the final decisions affect productivity, member commitment to the organization and job satisfaction. These variables in turn are associated with market position (prices being constant), creativity and initiative (cf. Thorsrud, 1972), absenteeism and turnover, and societal well-being. Turner and Lawrence (1965) hypothesized that jobs associated with variety, autonomy, required interaction, optional interaction, skill requirements and responsibility would be related to job satisfaction and high attendance at work. In general, they found that these "task attributes" hung together and that

their hypotheses stood up, albeit more cogently for town rather than city workers in a number of instances. In terms of job satisfaction, then, it would appear that an element of variety and autonomy should be a part of jobs.

Katz and Kahn (1967) state that "studies corroborate one another in demonstrating that the more varied, complex and challenging tasks are higher in worker gratification than less skilled, routine jobs" (p. 368). They in turn cite a number of studies which show satisfaction is higher in jobs requiring greater skill, having more variety, allowing more self-expression, combining more operations and having a purposeful cycle of events. Routine is associated with frustration. Satisfaction is associated with less turnover and absenteeism.

Davis (1971) outlines four job requirements for the post-industrial era: responsible autonomy, adaptability, variety and participation. Responsible autonomy allows a worker control over his area of work. Adaptability is important because it sets an atmosphere where "the individual can learn what is going on around him, can grow, can develop, can adjust" (p. 426), and has ties to the higher needs levels of man. Variety is valuable because routine is stifling, and variety provides an outlet for knowledge and skill application. Participation means involvement in matters affecting the work place (cf. Aiken and Hage, 1966). These characteristics appear compatible with job satisfaction in certain contexts.

Hackman and Lawler (1971) operationalized six job characteristics: four core variables, namely variety, autonomy, task identity and feedback, and two interpersonal variables, specifically dealing with others and friendship opportunities. They related these variables to job performance, satisfaction and absenteeism. Core dimensions had a strong, positive tie

with job satisfaction, and particularly "the satisfaction of higher order needs" (p. 227) including personal growth and self-esteem. Further and in line with Turner and Lawrence (1965) and Hulin and Blood (1968), the authors argue that "the present study demonstrates that individual higher order strength ... moderates the relationship between job level [jobs high on core dimensions] and satisfaction" (p. 229). The notion of individual differences is evident in this remark and perhaps Hackman and Lawler are able to summarize much of the debate in this area when they say that "both the advocates of a 'scientific management' approach to job design (make the work routine, simple and standardized) and the more recent supporters of 'job enlargement' (make the work complex, challenging and demanding of individual responsibility and decision-making) appear to have attached insufficient importance to individual job interactions in determining affective and behavioral reactions to jobs" (p. 228). The underlying importance of individual differences rings clear in Turner and Lawrence (1965), Blood and Hulin (1967), Hulin and Blood (1968) and Schwartz and Gruenfeld (1975). Technology often forms a constraint to action alternatives. Thorsrud (1972) believes "while job enlargement has proved effective for some conditions, it would be inappropriate for others ... the kinds of change required are likely to be related to the kind of technology involved" (p. 455). Nor is the relationship between performance and job satisfaction entirely clear, as discussed above.

Although the number varies between operations, some jobs in virtually any operation offer autonomy, variety and responsibility. Following Thompson (1967) this would be true for jobs assigned to deal with environmental uncertainty, when the environment holds a degree of heterogeneity or instability, or both. It would be less true for jobs buffered

from the environment, and routinized in terms of technology (cf. Perrow, 1967, 1970). Many jobs internal to an operation cannot be routinized. This is true when there is variability in the requirements for action in a job, or when search procedures associated with the job are not standardized, or both. These jobs hold some variety by virtue of their nonroutineness, and are a part of most operations. This leaves the routine jobs, the bureaucracy, the buffered technology. These jobs represent perhaps the majority of jobs available to the labour force. Most of the incumbents to these jobs are satisfied (Blauner, 1960) but many would like to change jobs (Kahn et al., 1964). The issues of desired, required or preferred job autonomy, variety and responsibility in large part are appropriately directed at this group of jobs, their incumbents, and their designers.

## CHAPTER II

## RESEARCH METHODOLOGY AND ORGANIZATIONAL CHARACTERISTICS

A. INTRODUCTION

The focus of attention in the present study is organizational research and analysis involving structural, contextual and performance characteristics of work organizations, with special attention accorded to job satisfaction as a performance characteristic. A number of previous research efforts reflects the desirability of simultaneously considering structural, contextual and performance constructs within a research model (Pugh et al., 1969; Aiken and Hage, 1966; Porter and Lawler, 1965), and multivariate statistical techniques permit the development of these models (Heydebrand, 1967). The present study is in keeping with this orientation.

The purpose of this chapter is to provide a background to the original survey on which the present study is based, to outline the research methodology used in the study and to describe the six organizational characteristics which are central to the project. In total, numerous statistical applications are employed as part of the study. The primary applications include factor analysis, contingency tables, correlation analysis, one way analysis of variance and discriminant analysis. Each of these applications is considered in terms of the objectives of the study and its particular relevance to the subject matter. The six organizational characteristics which fall out of the factor analysis are fully defined.



## B. THE ORIGINAL SURVEY AND SAMPLE

The empirical information for the present study is developed from the Edmonton section of the Canadian Attitude Study conducted in 1969-1970 by the Faculty of Business Administration and Commerce, University of Alberta. The questionnaire for the original survey appears as Appendix D of this report. It includes a series of questions relating to political demographic and organizational variables. Only organizational variables are examined in the present study, and the basic file for the project includes responses to questions numbered 24 through 49 inclusive which deal with role perception, and question 80 which deals with the classification of the organization that the respondent is working with at the time of the survey. Data from 621 respondents are in the original file. Role perception variables are re-numbered 1 through 26 for purposes of this study.

The report is a portion of a more embracing body of empirical research conducted in the Faculty of Business Administration and Commerce, University of Alberta based on the same survey. The information gathered was worked extensively by Jan Lawson and reported in her thesis entitled "The Political Attitudes of Middle Managers" (1971). It was further analyzed by L.G. Elliott for a research paper entitled "A Multivariate Comparative Analysis Using Structural, Contextual and Behavioral Variables" (draft, 1975). This present study may be viewed as an abstraction and re-interpretation of certain orientations and (to a degree) segments of these previous examinations, and as an extension of these studies which incorporates and augments these efforts within the stated purpose of the analysis. In this sense, the three studies may be viewed together as a cumulative body of empirical research.

The survey involved a group of managers in the Edmonton area. Lawson (1971) explains the survey in the following manner:

"The survey was not a random sample but was limited to a group of upward mobile, white collar and managerial middle class [persons] involved in management development courses in the Management Development program offered by the Department of Extension at the University of Alberta, Edmonton. [ ] The written questionnaire was administered during classes so that virtually all those who were in the program in the Fall of 1969 or the Spring of 1970 are included in the 621 responses made. The individuals administering the questionnaire explained the questionnaire. The respondents were allowed to ask any questions they wanted and the administrators stayed until everyone had finished so that questions could be dealt with adequately. Complete anonymity was guaranteed." (p. 49).

While detailed characteristics of the sample appear elsewhere (Lawson, 1971, Chapter 2) and are not reiterated in their entirety here, two points bear particular note as important qualifications to the present study. Firstly, the respondents proved to be "upper middle class in terms of income, occupation and education, and in terms of these variables in a fairly homogeneous group" (pp. 62-63), and secondly, respondents appeared to be "upward mobile" within the organizations to which they belonged (pp. 63-64 and p. 49, as cited above). The project therefore reflects characteristics of this type of labour force participant and organizational member.

### C. ROLE PERCEPTION VARIABLES AND FACTOR ANALYSIS

The starting point in the present research is the slate of role perception variables in the original survey questionnaire (cf. Appendix D). Respondents were asked to complete twenty-six role perception questions which were drawn from three sources: a series of questions

developed by Hickson (undated) which serve to probe the concept of role specificity (cf. Hickson, 1966), a series of questions from Kahn et al. (1964) which relate to job satisfaction and appear in a modified form in the survey questionnaire (cf. Lawson, 1971, pp. 48-49) and a series of group cohesion questions formulated by Seashore (1954) and which appear in Miller (1964, pp. 138-139). Attention is directed to the individual in the work organization, and to the way the individual perceives the role that member is performing and certain of its outcomes. No objective data were gathered in terms of role activity in organizational structure. Nor were questions asked of individual respondents about the nature of organizational roles in general or about the activity of other persons within the organization. A note on research strategies which accompanies the present study as Appendix B presents a perspective on how this particular approach to organizational analysis compares to other research designs.

The 26 role perception variables are subjected to factor analysis as a means of reducing the initial slate of variables to a series of comprehensive organizational characteristics. This procedure follows Lawson (1971) and is consistent with the use of factor analysis in the social sciences.

"The major use of factor analysis by social scientists is to locate a smaller number of valid dimensions, clusters or factors contained in a larger set of independent items or variables ... Factor analysis can help determine the degree to which a given variable or several variables are part of a common underlying phenomenon." (Nie et al., 1974, p. 10).

It is appropriate to acquire an overview of factor analysis. The basis of factor analysis rests in the notion of intercorrelations amongst

variables (Cooley and Lohnes, 1971, p. 129). The thrust of factor analysis is to explain each variable in terms of a series of common factors and a unique factor in each instance. For present purposes the main problem is to isolate the variables which are explained in large part by one common factor, to then isolate other variables which are explained in large part by a second common factor and so on. In this sense, the common factors can be traced to specific sets of variables, and the duty of the researcher is to identify the "underlying phenomenon" which describes those variables. The following table shows an actual example.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
VAR01	-.28	.63	-.12	.07	.06	.05
VAR02	-.08	.58	-.05	.14	-.24	-.08
VAR03	.03	.42	.05	-.01	.05	.14
VAR04	-.19	.57	-.06	.21	.17	.13
VAR05	-.15	-.11	-.02	.15	.81	.11
VAR06	-.05	-.01	.00	.19	.84	.03
.....						
.....						
.....						
VAR26	.08	-.11	.77	-.13	.06	.02

This table represents a portion of the actual factor analysis solution ultimately used in the project. Note that the major common factor explaining both variable 5 and variable 6 is factor 5. The variables themselves are represented in the following equations, where F represents the common factor, small letters are regression weights and UF is the unique factor.

$$\begin{aligned}
 \text{VAR05} &= -.15F_1 - .11F_2 - .02F_3 + .15F_4 + .81F_5 + .11F_6 + 1UF \\
 \text{VAR06} &= -.05F_1 - .01F_2 + .00F_3 + .19F_4 + .84F_5 + .03F_6 + 1UF \\
 \text{or} \\
 \text{VARx} &= aF_1 + bF_2 + cF_3 + dF_4 + eF_5 + fF_6 + 1UF
 \end{aligned}$$

Since the factors are orthogonal, the numbers and small letters in the table and equations actually represent regression weights and correlation coefficients. In this sense, the above equations are regression equations for the variables. The numbers are typically termed "loadings". A major question surrounds the amount of variance in the variable that is explained by any given factor. In the orthogonal solution, this represents the square of the loading coefficient, and thus the factor with the highest loading in any given variable will explain the largest proportion of the variance. In the example above, factor 5 explains the greatest proportion of the variance in variable 5 and factor 5 similarly explains the greatest proportion of the variance in variable 6. A second question surrounds the amount of variance in the variable that is explained by all common factors. This in effect amounts to the addition of all loadings squared for each variable, and is termed its communality. In the above example, the common factors explain 72% of the variance of variable 5 and 74% of the variance of variable 6. Communalities are typically given as decimals, in the above cases .72 and .74 respectively.

Turning attention to the common factors themselves, it is appropriate to isolate those variables which are essentially explained by any one particular common factor. "Explained" in this sense means those variables whose variance can be traced in large part to one factor. This effectively amounts to a study of loadings, since the loadings squared represent variance explained. In the above case, the highest loadings in variables 5 and 6 are in factor 5, and only these variables out of the full 26 are driven by factor 5. Thus factor 5 is discussed in terms of these two particular variables. The job change characteristic in the present study is based on factor 5, and is discussed in some detail below.

Factor 5, however, also plays a role in explaining all other variables. After all, it is a common factor and is included as part of the regression equation for each variable, although not with the highest loading in any case except variables 5 and 6. One major question that arises in discussing common factors is the amount of variance they explain in all variables.<sup>3</sup> This effectively amounts to the sum of the loadings squared they have on each variable. When all data are standardized, and the variance of each variable equals 1, then the total amount of variance in a series equals the number of variables. Thus, the amount of variance in the present study is 26. Squaring the loadings in each variable for one particular factor (using principal factor) and adding them gives the amount of the variance explained by that factor. This amounts to its eigen value. The eigen values from the S.P.S.S. (Nie et al., 1975) are compiled for the initial factor matrix. Job change as a factor, for example, is factor 3 in the initial factor matrix and has an eigen value of 1.88. This amounts to 7.2% of the total variance in the series of variables (i.e.,  $1.88 \div 26$ ). Understandably this figure is cited as an important dimension of the factor's role in the study. One popular method of cutting off common factors in an ordered series of factors based on eigen values is to consider all factors with an eigen value of 1 or greater. The philosophy essentially is that factors which explain less than this amount of variance are probably not important to the analysis. If all factors explained precisely the same amount of variance, then all eigen values would equal 1, and the number of common factors would equal the number of variables. But typically some factors explain a good amount of the variance, and have an eigen value much greater than 1. Having a cut-off at 1, then, provides a basis for separating the major common

factors from what might be called and ultimately becomes the unique variance in each variable. Using the eigen value = 1 criterion in the present study leads to seven common factors.

Factor analysis is used in the present study as a means of grouping together variables which are mutually highly correlated as a step towards the formation of organizational characteristics. In general, this is facilitated by developing a factor solution which results in a series of common factors which have high loadings on selected variables. Presumably it is also important to include as many variables in the ultimate series of common factors as possible. Strictly speaking, this is possible simply by lowering the acceptance level for the values of loadings (or correlation coefficients or regression weights). It appears wise, however, to have a relatively high acceptance level for loadings simply out of good judgment. If a variable has a very low loading on all common factors, it clearly is not being explained by these factors and does not contribute significantly to knowledge about any of the factors. For present purposes, no loading of less than .5 is considered significant. This appears reasonable in light of survey findings and is discussed further below.

Factor analysis itself involves three steps in a project as the present study. The first step comprises development of intercorrelations between variables. The second step represents the compilation of initial common factors. The third step involves rotation of these factors with the objective of obtaining a solution which contains one distinctive factor loading in each variable, and which results in each common factor essentially loading high on certain variables while loading low on all other variables. S.P.S.S. handles these three steps within the program

"FACTOR". There are numerous rotation procedures which may be adopted. Perhaps the most popular is varimax which involves rotating the axes in the orthogonal solution to a point where the certain loadings of specific variables within a common factor approach 1 while loadings on other variables within the common factor approach 0. This "is equivalent to maximizing the variance of the squared loadings in each column; hence the name 'varimax'" (Nie et al., 1975, p. 485). Quartimax rotation on the other hand, centers attention on each variable, and works to have one common factor load high on any specific variable while having all other common factors load low on the variable in focus. This procedure is done for all variables in the study. Equimax rotation attempts to combine varimax and quartimax procedures into one procedure. Oblique rotation does not require orthogonal factors in the oblique factor structure and "the factors are allowed to be correlated if such correlations exist in the data" (Nie et al., 1975, p. 486).

In the present study, factor analysis is applied to the twenty-six role perception variables through a series of applications. The results of 18 factor analytic outcomes are reported in Appendix C of this study. In the terminal solution, six organizational characteristics are derived from the factor analysis. The characteristics are titled in an analogous fashion to Lawson (1971) but certain of the factors have different compositions from Lawson as reported and discussed in the Appendix C. Predictably perhaps, job satisfaction and group cohesion represent the first two. The remaining four characteristics, which comprise variables from the Hickson (undated) role specificity series, are titled job change, job uncertainty, role definition and job routine. A summary of the factor analysis is provided in Exhibits 2-1 and 2-2.



## EXHIBIT 2-1 SUMMARY RESULTS OF FACTOR ANALYSIS

<u>ORGANIZATIONAL CHARACTERISTIC</u>	VARIABLE LIST * V = VARIMAX ROTATION EIGEN VALUE = 1 V <sub>6</sub> = VARIMAX, FORCE 6 FACTORS
1. Job Satisfaction	V = 15,16,17,18,19,21 V <sub>6</sub> = 15,16,17,18,19,21
2. Group Cohesion	V = 24,25,26 V <sub>6</sub> = 24,25,26
3. Job Change	V = 5,6 V <sub>6</sub> = 5,6
4. Job Uncertainty	V = 8,9,10 V <sub>6</sub> = 8,9,10,12
5. Role Definition	V = 13,14 V <sub>6</sub> = 13,14
6. Job Routine	V = 2,3,4,11 V <sub>6</sub> = 1,2,4,7
7. No Name	V = 12 V <sub>6</sub> = None

\* Based on loadings of .5 or greater

EXHIBIT 2-2 DISCUSSION OF TWO DIMENSIONAL PLOTS OF ORGANIZATIONAL CHARACTERISTICS DERIVED FROM FACTOR ANALYSIS

Comment On With Respect To	1. JOB SATISFACTION (VAR 15, 16, 17, 18, 19, 21)	2. JOB ROUTINE (VAR 01, 02, 04, 07)	3. GROUP COHESION (VAR 24, 25, 26)	4. JOB UNCERTAINTY (VAR 08, 09, 10, 12)	5. JOB CHANGE (VAR 05, 06)	6. ROLE DEFINITION (VAR 13, 14)
1. JOB SATISFACTION	(P1) reasonably well clustered not strictly orthogonal	(P2) tightly clustered not strictly orthogonal	(P3) tightly clustered orthogonal	(P4) tightly clustered orthogonal	(P5) tightly clustered orthogonal	(P9) tightly clustered not strictly orthogonal
2. JOB ROUTINE	(P1) reasonably well clustered not strictly orthogonal	(P6) tightly clustered orthogonal	(P7) not tightly clustered strictly orthogonal	(P8) tightly clustered orthogonal	(P10) tightly clustered orthogonal	(P11) tightly clustered orthogonal
3. GROUP COHESION	(P2) reasonably well clustered not strictly orthogonal	(P3) reasonably well clustered orthogonal	(P4) reasonably well clustered orthogonal	(P5) reasonably well clustered orthogonal	(P6) reasonably well clustered orthogonal	(P7) reasonably well clustered orthogonal
4. JOB UNCERTAINTY	(P3) reasonably well clustered orthogonal	(P4) reasonably well clustered orthogonal	(P5) reasonably well clustered orthogonal	(P6) reasonably well clustered orthogonal	(P7) reasonably well clustered orthogonal	(P8) reasonably well clustered orthogonal
5. JOB CHANGE	(P4) reasonably well clustered orthogonal	(P5) reasonably well clustered orthogonal	(P6) reasonably well clustered orthogonal	(P7) reasonably well clustered orthogonal	(P8) reasonably well clustered orthogonal	(P9) reasonably well clustered orthogonal
6. ROLE DEFINITION	(P5) reasonably well clustered orthogonal	(P6) reasonably well clustered orthogonal	(P7) reasonably well clustered orthogonal	(P8) reasonably well clustered orthogonal	(P9) reasonably well clustered orthogonal	(P10) reasonably well clustered orthogonal

The organizational characteristics themselves are best described as scores of variables that fall within the separate factors and have high factor loadings. To an extent, the approach parallels Pugh et al. (1968) where a series of scales representative of dimensions of organizational structure were subjected to factor analysis to arrive at a series of "underlying" dimensions of structure. These underlying dimensions are subsequently referred to as "the" dimensions of organizational structure in the Pugh et al. (1969) study of content and structure. There is appeal in procedure in the respect that no organizational traits are imposed on the data. All characteristics may be regarded as empirically derived qualities of the organizations which are reported in the role perception variables and isolated through factor analysis. This varies, for example, from the framework of Hackman and Lawler (1971) in their study of employee reactions to job characteristics. These researchers began with six job characteristics, specifically variety, autonomy, task identity, feedback, working with others and friendship opportunities as part of their empirical base (cf. Turner and Lawrence, 1965). There is value in both approaches, and the particular job qualities studied by Hackman and Lawler have certain acceptance (cf. Sims et al., 1976). The present approach has the advantage of ensuring a series of relatively independent characteristics, which minimizes the possibility of confounding underlying influences confusing the data frame. This is particularly valuable in exploratory and descriptive research, a category which properly reflects the nature of the present study.

Before proceeding to an outline of the job characteristics in the study, it is appropriate to develop a perspective on the general orientation of the paper particularly as it relates to factor analysis, organizational characteristics and correlation analysis. One of the major outcomes

of the application of factor analysis to the role specificity scale developed by Hickson (undated) is that the fourteen variables in the scale are not all mutually highly correlated in the present sample. Some evidence in other studies, notably Inkson (1970) and Payne and Pugh (1976), suggest that this role specificity scale broke into two dimensions: role routine and role definition. Four factors break out in the present study: job routine, job uncertainty, role definition and job change. In the terminal orthogonal factor analytic solution, these factors are uncorrelated by definition. The factors each represent a linear combination of all variables, some with high loadings and some with low loadings in each case. Varimax rotation forces these loadings towards 1 and 0 in the factors, serving in a sense to amplify the variables which are particularly important to the separate individual factors and de-emphasizing other variables. Based on the variables with high loadings in a factor, the individual factor can be named in accordance with the underlying phenomenon the variables connote.

It is desirable to more fully examine the nature of role dimensions as envisaged in the four separate and uncorrelated factors. In a sense, the challenge is to unravel underlying relationships amongst the four dimensions themselves (and with job satisfaction and group cohesion ultimately). The statement is inherently paradoxical to the extent that by developing a factor solution which is orthogonal, there are by definition no underlying relationships amongst the factors, and the dimensions are all independent of one another. It is important to note, however, that the separate factors represent different weightings of all variables. Each factor is driven strongly by some variables, and it is

these variables which really reflect the character of the factor. To a degree, all other variables are spurious. Conceivably weightings on variables which are spurious to the character of the factor may create conditions of orthogonality. Thus, although the factors themselves are orthogonal and uncorrelated, it appears that the major variables which comprise the factors and drive them need not necessarily be orthogonal to one another. This precise circumstance arises in the present project, as evidenced in the plots of the orthogonal factors (Exhibit 2-2 and Appendix E).

Further, and in addition to this previous point, it is important that in the factor analysis of the role specificity scale itself (variables 1-14), the principal variables in each factor were precisely the same in both the orthogonal varimax and oblique solutions (Exhibit C1, columns 9 and 10). This perhaps unusual circumstance indicates that a factor analysis which allows some correlation amongst factors (i.e., the oblique technique) leads to a solution which parallels the orthogonal solution in terms of the basic character of the factors as reflected in variables with high loadings. Even the magnitude of the loadings is comparable in the two solutions, which might suggest that it is the variables with low loadings in the factors which distinguishes the orthogonal solution from the oblique solution. The oblique solution has the following correlation matrix for factors, confirming a solution which lacks orthogonality.

	Job Routine	Job Uncertainty	Role Definition	Job Change
Job Routine	1.00	-.24	.16	-.11
Job Uncertainty	-.24	1.00	-.13	.14
Role Definition	.16	-.13	1.00	.07
Job Change	-.11	.14	-.07	1.00

This correlation matrix is based on factor scores derived from the oblique solution (n=621), and it is clear that there are underlying relationships amongst the factors. Since the basic character and major variables of these factors is similar to the orthogonal solution, the matrix fortifies the argument that underlying relationships are prevalent amongst key aspects of the factors. It is desirable to pursue this avenue as a major direction of the project. To summarize, from the plots of the orthogonal factors and a study of relationships of principal variables within the factors, and from the oblique solution of the role specificity scale, it appears that although the factors in the orthogonal solution are uncorrelated and four independent dimensions fall out of the job routinization scale, when these factors are viewed in terms of their driving variables, underlying relationships are prevalent in the data.

One approach to studying underlying relationships in the data would involve taking factor scores from the oblique solution(s) and examining the data amongst one another. This avenue represents a major departure from the previous work with the survey information on which this project is built. Further, this alternative is not consistent with the choice of the orthogonal varimax force 6 solution for the study which has intuitive advantages in the project as noted in Appendix C. A second approach to further work involves the generation of scales for the organizational dimensions based on the terminal factor analytical solution. In this sense, the role perception variables are treated as a slate of questions which are formed into scales based on the factor analytical solution. Selltiz et al. (1959) distinguish two traits common to questionnaires which are used to form scales: "the items (variables)

must elicit responses that are psychologically related to the attitude being measured" (p. 357) and "the scale (must) differentiate among people who are at different points along the dimension being measured" (p. 358). The first point suggests that two related variables at a minimum must be party to a scale in order for the dimension in focus to be confirmed, and the variables must be mutually highly correlated. Variables which are not correlated must be discarded since they are not measuring the underlying phenomenon. The usage of the Likert-type scale on each variable in the present study meets the second point noted. From the orthogonal factor solution, certain groups of variables fall together with high loadings on certain factors, while other variables fall together with high loadings on other factors. It appears viable to develop scales out of the variable groupings, and Lawson (1971) follows this approach. The present project represents an extension of Lawson's work and adopts the same approach. The action format essentially involves stripping the variables which drive separate factors, and grouping them together into scales with unit variable weightings. The subsequent scores of variable groupings are termed organizational characteristics. Variables which are spurious to a factor are removed, and variables which are retained are given equal weighting in the scale scores or organizational characteristics. The characteristics may then be explored amongst one another to uncover underlying relationships in the data, and to acquire a broader perspective of role relationships in the work place. The basic zero-order correlation matrix for the four dimensions of job routine, job uncertainty, role definition and job change based on scale scores follows.

	Job Routine	Job Uncertainty	Role Definition	Job Change
Job Routine	1.00	- .40	.28	- .17
Job Uncertainty	- .40	1.00	- .13	.30
Role Definition	.28	- .13	1.00	- .08
Job Change	.17	.30	- .08	1.00

The matrix (n=577) compares in general to the texture of the correlation matrix of the oblique factors. This is expected since the scale scores are based on the principal variables of an orthogonal factor solution whose structure parallels the oblique solution in terms of principal variables.

Lawson (1971) used factor analysis to develop political and organizational scales from a series of political and organizational variables. Her analysis included cross-study of the political and organizational scales, and study amongst a number of the political scales themselves. The present paper centers on examination of the organizational scales themselves. Both studies, therefore include examination of relationships amongst scales which are based on a factor analysis of variables and a varimax solution.

Overall, factor analysis is used to examine the nature of the initial scales in the study, specifically role specificity, job satisfaction and group cohesion; and further, to break variables into groups which have variables that are mutually highly correlated. The basic 26 by 26 correlation matrix in the project contains information on which such groupings are possible, but the intercorrelations are relatively weak and a clearer picture of mutually correlated variables is possible by factor analysis. With the expectation that certain underlying relationships exist amongst groupings of major variables based on factor



analysis, it is perhaps equally expected that an oblique factor solution would lend itself to the data. The oblique solutions (Exhibit C1, columns 6, 8, 10 and 17) contribute significantly to an understanding of the data. In particular, the oblique solution to the role specificity scale bears out analogous to the orthogonal varimax solution in terms of groupings of major variables. Since the orthogonal varimax force-6 factor solution provides the most favourable overall picture of the 26 role perception variables, it is chosen as the terminal solution. Its ties with the separate varimax and oblique solutions to the role specificity scale and to the job satisfaction and group cohesion scales, however, are instrumental to this choice.

#### D. ORGANIZATIONAL CHARACTERISTICS AND SCORES

##### 1. Job Satisfaction

Six variables comprise job satisfaction as an organization characteristic (Exhibit 2-3). Conceptually job satisfaction represents a general measure of satisfaction which includes member reaction to a number of aspects of concern and involvement in the work organization: satisfaction with the company as a whole (15), salary (16), the kind of work or the task done (17), personal progress in the company as it relates to the individual (18), and supervision (19), together with a measure of how well the job allows the individual to do things that the person is best at (21). Job satisfaction is reasonably well clustered with respect to all other characteristics (Exhibit 2-2). It proves to be orthogonal to job change, job uncertainty, and role definition, but is not strictly orthogonal to group cohesion and job routine (ibid., Appendix E) suggesting a lack of independence with these latter characteristics. In general, most respondents have

## EXHIBIT 2-3 JOB SATISFACTION CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
15	On the whole, how satisfied are you with the company where you work?	.80
16	How satisfied are you with your present salary?	.63
17	How satisfied are you with the kind of work (or task) you do?	.71
18	How satisfied are you with the progress you have made in this company?	.74
19	How satisfied are you with your present supervisor?	.64
21	How much does your job give you a chance to do the things you are best at?	.64

(b) Original Scale (Original scale is reversed for research compilations)

<u>Variable Number(s)</u>	<u>Original Scale</u>				
15-19	<u>Completely Satisfied</u>	<u>Well Satisfied</u>	<u>Neither Satisfied Nor Dissatisfied</u>	<u>A Little Satisfied</u>	<u>Very Dissatisfied</u>
	1	2	3	4	5
21	<u>No Chance At All</u>	<u>Very Little Chance</u>	<u>Some Chance</u>	<u>Fairly Good Chance</u>	<u>Very Good Chance</u>
	5	4	3	2	1

(c) General Response Based on Relative Scale Score Levels

<u>Level of Job Satisfaction</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	6-13	21	4
Medium	14-22	306	53
High	23-30	250	43
		577	100

a medium or high level of satisfaction with their jobs (Exhibit 2-3).

Azumi and Hage (1972) distinguish between morale or job satisfaction and alienation as part of their introductory note to a series of readings on performances and goals of the organization (Chapter 5). They argue that "morale or job satisfaction typically refers to how happy the workers or managers, or, in short, all the members of the organization are with their work, pay, fringe benefits and so on. Alienation is more related to whether the work has any meaning and whether the individual works for extrinsic reasons such as money or intrinsic reasons such as enjoyment of the job." (p. 419). Accepting this terminology, it would seem that the characteristic in the present study includes items reflective of both morale or job satisfaction and alienation. No attempt has been made to discern respondents' job expectations and need satisfaction levels (cf. Porter and Lawler, 1965) in a direct fashion. The fact that the survey population is a relatively homogeneous group may well control for these elements across the sample. The job satisfaction variable appears to provide a comprehensive measure of the worker's reaction to the job in terms of satisfaction or alienation realized, and should be comparable to the usage of the term in most empirical studies along this line (cf. Aiken and Hage, 1966; Blauner, 1960; Porter and Lawler, 1965; for example). It is classified as a performance or output variable for purposes of this study, in line with Pugh et al. (1969), Hage (1965) and Triandis (1966), amongst others.

## 2. Group Cohesion

On a continuum as an organization characteristic in this study, group cohesion relates to the way the men get along together in the work group(s) in the organization (24), the way the men stick together (25), and the way

men help each other on the job (26). It is a relative measure in the respect that the respondent is asked to compare his group with other groups on the three points in focus (Exhibit 2-4). Group cohesion is tightly clustered against all other characteristics in the factor analysis, and is orthogonal to all characteristics excepting job satisfaction (Exhibit 2-2, Appendix E). Most respondents are at a medium or high level of group cohesion; specifically, 58% judge their group cohesion as medium and 38% judge their group cohesion as high (Exhibit 2-4).

Groups constitute a first level of interaction between persons in society as a whole and in work organizations. They form one of the most important points of attention in understanding behavior and performance in work organizations, an argument which is possibly foremost in the landmark findings of the Hawthorne studies which "enabled us to assert that (a) major preoccupation of management must be that of organizing teamwork, that is to say, of developing and sustaining cooperation (amongst workers in the work place)" (Mayo, 1949, p. 229).

It might be postulated that groups in work organizations may be of two types: formal and informal, contingent on whether or not they are sanctioned by management. Groups often form in companies with or without the blessing of management. Bureaucratic principles which stress specialization of task and hierarchical authority (Weber, 1946) may be interpreted to hold a certain isolation of the individual in the job, even as a part of a work unit. Formal groups may be sanctioned by management as an organizational form within overall company structure as a part of positional interaction (cf. Triandis, 1966). On the other hand, when formal groups are not developed as a part of structure, or when workers seek alternative affiliation with others within the work setting, often workers

## EXHIBIT 2-4 GROUP COHESION CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
	How does your work group compare with other work groups in the company on each of the following points?	
24	The way the men get along together:	.81
25	The way the men stick together:	.83
26	The way the men help each other on the job:	.77

(b) Original Scale (Original Scale is reversed for research compilations)

Better than most	1
About the same as most	2
Not as good as most	3
Don't know	9

(c) General Response Based on Relative Scale Score Levels

<u>Level of Group Cohesion</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	3-4	24	4
Medium	5-7	334	58
High	8-9	219	38
		577	100

form informal groups in the company, sometimes within the work unit, perhaps cutting across work units. The natural growth of informal groups and of informal activity by workers may be spurned by conditions of "conflict, frustration, failure ..." experienced by workers (Argyris, 1960, p. 269). The Hawthorne tests showed that groups have a direct and major effect on organizational performance. "The working group as a whole actually determined the output of individual workers." (Mayo, 1949, p. 225). Since these results were published, much of the organizational literature has dealt with the subject of groups in organizations. Much of this literature is born out in the human relations school of thought, which, following Lichtman and Hunt (1971) may be viewed in terms of modern structuralists like Merton and Argyris, and of personalistic theories as espoused by Lewin and Likert and captured in concepts like group dynamics and power equalization (cf. Leavitt, 1965).

The importance of considering the position of groups in examining organizations is well entrenched. There may, however, be some danger in overstating the case. Groups and particularly informal groups may be far less numerous than many writers suggest. Etzioni (1971) points out, for example, that "there is mounting evidence ... the frequency with which workers are members of solidary work groups has been grossly overstated (in industrial organizations)" (p. 269). Elsewhere he notes that "the structuralists in their organizational researches found that informal work groups are not so common and the majority of workers do not belong to any" (Etzioni, 1964, p. 46). Bennis (1964) discusses the shifts in group characteristics which he envisages as a part of the current change in organizations toward more organic, adaptive structures, a change which is shared in principle by Toffler (1970).

"There will be a reduced commitment to work groups. These groups ... will be transient and changing. While skills in human interaction will become more important due to the necessity of collaboration in complex tasks, there will be a concomitant reduction in group cohesiveness." (p. 337)

To abstract, it appears necessary and desirable in work organizations to often have men working together to get a job accomplished. This is the nub of the formal work group, the individual working with others, and connotes a certain structure in the organization. "It is the difference between an individual acting directly upon a material to be changed (job technology) and an individual interacting with other individuals in the course of trying to change that material (structure)." (Perrow, 1967, p. 272). Often these groups have a lasting quality to them, their membership remains relatively constant over time, positions are not shifted, and members can develop work group ties, both formal and informal. Following Etzioni, perhaps too much emphasis has been placed on informal ties historically. Group cohesion as an organizational characteristic in the present study directs attention to the formal work group to which the member belongs, and elicits response to questions which may be affected by formal and informal ties that the member has within the group. It is thus a measure of overall group cohesion with a structural root. Porter and Lawler (1965) define organizational structure not simply as the positions and parts of a collectivity but include "their systematic and relatively enduring relationships to each other" (p. 269) as a portion of the terminology. Group cohesion in this study reflects an important aspect of this quality. Further, Triandis (1966) classifies group characteristics as size, permeability, viscibility (absence of strife), heterogeneity, fit and cohesiveness as structural variables in the organization. Informal circumstances within the formal work group may affect the degree of group

cohesiveness indicated in the present study. Persons may not help one another on the job, for example, not because of the formal structural requisites of the job, but simply because they do not wish to help one another (variable 26). Expressive relationships may thus have an impact on the indicator. This example, however, properly reflects low group cohesion, and properly is a part of an overall measure of group cohesion. To pursue this example further, Aiken and Hage (1966) have a variable that they call alienation from expressive relations which measures "dis-satisfaction in social relations with supervisors and fellow workers" (1966, p. 497). Two questions were asked: how satisfied are you with your supervisor, and how satisfied are you with your fellow workers.

Direct counterparts to these questions were asked in the present study. In the factor analysis, the former question fell into the job satisfaction measure (variable 19) and the latter question (variable 20) did not readily lend itself to any of the factors and was omitted from the final slate of characteristics (see Exhibit 2-9). It is, therefore, difficult to compare the group cohesiveness measure in this study with the alienation from expressive relations measure as defined and operationalized by Aiken and Hage.

The population in the present study is defined as white collar and managerial in nature. Many of the respondents can relate to a more or less formal work group with an enduring membership. In line with Bennis (1964) and Toffler (1970), many might relate to participation in groups, but the groups might not have an enduring membership, and indeed the goals of the groups as decision-making bodies may vary according to changing tasks. Formal groups may be formed to coordinate skills in the resolution of a problem facing the company, with membership in the group drawn from



disciplines which are appropriately involved in the problem settlement. Once the problem is resolved, the group is disbanded, and new groups form as new problems are encountered. The composition of groups, their size, and time horizon all vary with the problem. It is therefore important for organizational members to be effective in groups, but, as Toffler (1970) points out, "there (is) a concomitant reduction in group cohesiveness." (p. 337, see above). This type of situation is perhaps more prevalent in companies facing a changing environment (cf. Thompson, 1967; Lawrence and Lorsch, 1969) or dealing with dynamic technologies, and in positions dealing with these phenomena. It is difficult to judge what impact this circumstance has on the group cohesion measure in this study. To the extent that group cohesion can be related to job uncertainty (and job routine), a certain degree of analysis can be undertaken. This area of inquiry is pursued in the ensuing chapters. In general, it is perhaps fair to say that the group cohesion measure is somewhat tempered by the incidence of transitory groups, but the prevalence of these types of groups as it relates to the response in the study is unknown.

In their study of employee reactions to job characteristics, Hackman and Lawler (1971) have two variables which tie into the element of group involvement as a part of the nature of jobs. To measure the job dimension of "dealing with others", they asked respondents "to what extent is dealing with other people a part of your job?" on a scale marked very little, moderately and very much. To measure the job dimension of "friendship opportunities" they asked respondents "to what extent do you have the opportunity to talk informally with other employees while at work?" on the same scale (p. 222, emphasis removed). The measures of dealing with others and friendship opportunities are deemed independent job dimensions within their model,

and are subsequently related to other job dimensions and such dependent variables as satisfaction, performance and absenteeism. The group involvement dimensions may consequently be interpreted as tied to company structural conditions. Similarly, in the present study, the group cohesion characteristic is considered to reflect a structural quality in the work organizations of which respondents are a part. It is appropriate to probe ties between group cohesion as a structural characteristic with other structural characteristics and with performance and contextual characteristics.

### 3. Job Change

Job change as an organizational characteristic represents the extent to which the content of the position occupied by the respondent has changed over the course of the past year (5), and as a projection, the extent to which the content of the position is anticipated to change in the ensuing years (6) (Exhibit 2-5). The factor loadings on the two component variables are both high: .81 and .84 (2-5). It is tightly clustered and orthogonal to each of job satisfaction, group cohesion, role definition and job routine. The absence of strict independence from job uncertainty is pursued later in this paper. Job change is distinguished from job routine by definition for purposes of this study. Job change is regarded as a structural feature of the organization involving content changes in the job over a period of time, specifically one year in retrospect and one year in prospect. Job routine is a technological feature of the job involving part of its task and response dynamics. Conceivably a job may thus be routine in nature and also possess change over time. As such, the two characteristics are independent features of the role. The general response to job change indicates a distinct modal

EXHIBIT 2-5 JOB CHANGE CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
05	How much of the content of the job you are now in has changed in the past year?	.81
06	How much of the content of the job you are in now do you anticipate will have changed in a year's time?	.84

(b) Original Scale

<u>Most</u>	<u>Quite A Lot</u>	<u>Some</u>	<u>A Little</u>	<u>Almost None</u>
5	4	3	2	1

(c) General Response Based on Relative Scale Score Levels

<u>Level of Job Change</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	2-4	155	27
Medium	5-7	302	52
High	8-10	120	21
		577	100

group of respondents - 52% - with a medium level of job change, and a relative split amongst the other respondents, with 27% classified as low in job change and 21% classified as high in job change (Exhibit 2-5).

Pugh et al. (1968) spelt out six "primary" dimensions of organizational structure. These were specialization, standardization, formalization, centralization, configuration and flexibility (see Chapter 1 for details). The first five of these dimensions were operationalized. Flexibility, on the other hand, which specifically "involves changes in structure" (Pugh et al., 1968, p. 444) was not examined empirically within the Aston Groups' study of organizational dimensions (*ibid.*) and context (Pugh et al., 1969) of structure because of the requirement for a longitudinal frame, ostensibly unavailable or too costly to develop. These studies were centered on objective data, and the complications presented by flexibility as a structural characteristic to be measured are clear. Although the present study also lacks a longitudinal frame (it is a cross-sectional analysis like the Aston papers) the two variables which fall into the job change characteristic are of a time-related nature, and indicate "flexibility" in the content of the job and thus structural amendment to the job, based on recall and projection by the incumbent to the job. This avenue is open to the present study because it is based on role perception and not objective data, and thus can be examined empirically within a cross-sectional file. The requirement for a longitudinal file can be dropped. This methodological difference is reviewed in the research strategy note which accompanies this paper as Appendix B.

Job change in routine jobs may be generated for one of at least two reasons: to adapt the job to changing job requirements, or to modify the job in order to break the routine of work and provide the incumbent with

a degree of variety within the work setting. The first reason offered suggests that a job may be relatively routine in nature in the short-run, with certain specified requirements of it. Through time, however, possibly because of changes in the technology of the firm or changes in the task environment of the firm, the nature of the jobs must be changed to introduce new technology or cope with the environmental shifts. The modified jobs may themselves be routine, but they are changed. This argument is compatible with Thompson (1967) in his discussion of short-run certainty and long-run flexibility in the administrative process (Chapter 11). Organizations seek to routinize jobs, particularly within the technological core, but the routinized jobs must be adapted to reflect changes emanating from or brought about through technology or the firm's environment. "Survival requires adaptive as well as directive action in those areas where the organization maintains discretion." (p. 148, emphasis removed).

The second reason for job change is rooted in a belief that job change in itself creates a work atmosphere more conducive to goal attainment. "It has been shown that simple, routine nonchallenging jobs often lead to high employee dissatisfaction, to increased absenteeism and turnover, and substantial difficulties in effectively managing employees who work on simplified jobs." (Hackman and Lawler, 1971, p. 215). Some form of job change may serve to minimize the difficulties. In a limited context, this job change may amount to a degree of variety for incumbents of the work place, comparable to job rotation perhaps (Sayles and Strauss, 1966, pp. 48-50). Variety in the work task is often cited as a correlate of job satisfaction (Katz and Kahn, 1967). In an expanded fashion, job change may connote or lead into the concepts of job enlargement, job

enrichment and job redesign which are addressed by Argyris (1957, 1960), Herzberg (1966) and Myers (1970), amongst others.

Job change in jobs which are typically nonroutine in nature may imply a redundancy in terms, or alternatively, may suggest that job definitions are periodically amended to show certain aspects of the job which have some (temporary) value in relating the position to the organization as a whole. Inkson et al. (1970) have shown, for example, that there is a tendency for roles to be more formally defined in the United States than in Britain. "In the U.S. definition of a role is primarily a matter of documentation, whereas in Britain, it is a matter of tradition and practice." (p. 362). If the present sample is more reflective of American inclinations, and if the tendency is prevalent for all jobs, whether routine or nonroutine, it may be that job change is generated by the need to keep written job definitions current. This would amount to more of a problem with higher levels of nonroutine and role definition associated with the job.

#### 4. Job Uncertainty

Job uncertainty represents a combination of four variables (Exhibit 2-6). As a composite measure, it indicates the frequency with which problems occur in the job which have never occurred before (8), the frequency with which matters arise requiring fresh knowledge or new skills (9), the frequency of unforeseen things happening in the job (10) and the frequency of the respondent switching from one thing to another as part of the job (12). The characteristic is tightly clustered and orthogonal to job satisfaction and group cohesion. It is not tightly clustered but is orthogonal to role definition. With respect to both job change and job routine, however, job uncertainty is neither tightly

EXHIBIT 2-6 JOB UNCERTAINTY CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
08	How often do major problems occur in your job which have never occurred before?	.69
09	How often does something come up in your work which necessitates acquiring fresh knowledge or new skills?	.52
10	How often do completely unforeseen things happen in your job?	.74
12	How often do you have to switch from one thing to another?	.66

(b) Original Scale

<u>Most</u>	<u>Quite A Lot</u>	<u>Some</u>	<u>A Little</u>	<u>Almost None</u>
5	4	3	2	1

(c) General Response Based on Relative Scale Score Levels

<u>Level of Job Change</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	4-8	48	8
Medium	9-15	414	72
High	16-20	115	20
		<u>577</u>	<u>100</u>

clustered nor strictly orthogonal. A tentative proposition that flows from the absence of independence between job uncertainty and job change is that uncertainty may be associated with change, a relationship considered in greater detail as the paper progresses. Similarly, job uncertainty and job routine appear to have underlying ties which are pursued in the discussion of both characteristics. Of the survey respondents, 8% are at a low level of uncertainty, 72% are at a medium level, and 20% reported a high level of uncertainty as measured here.

Conceptually the term "uncertainty" as it relates to organizational theory or the study of organizations is widely employed. Thompson (1967) postulates that the degree of uncertainty faced by the organization and the organization's ability to reduce and cope with this uncertainty provide important differentiating dimensions of organizational understanding. He views the task environment in which the organization is operating and the technological imperatives in the company as the two prime origins of uncertainty for the organization. This latter position gains support from Burns and Stalker (1961) where they distinguish between mechanistic and organic organizations in large part as a function of the degree of uncertainty facing a firm in its environment and technology. When uncertainty is low, the organization tends to be structured in a mechanistic (cf. bureaucratic) fashion. When uncertainty is high, the organization tends to be structured quite differently, in a form called organic or organismic, reflected in the electronics industry for example "which (was) confronted with rapidly changing commercial circumstances and a much faster rate of technical progress" (Burns, 1963, p. 47).

Lawrence and Lorsch (1969) pursue environmental uncertainty as central to the organizational issue of appropriate differentiation and



integration. Like Burns and Stalker (1961), they argue that organizations appear to order their parts and positions differently in line with the level of uncertainty they face in their environment. Operationally, Lawrence and Lorsch developed a yardstick for measuring environmental uncertainty on three environmental issues: "the clarity of information, the uncertainty of cause and effect relationships and the time span of definitive feedback scores have been combined to get a total uncertainty score" (1969, p. 28). Using this yardstick against different forms of successful organizational structure they drew the following conclusion:

"The states of differentiation and integration in effective organizations will differ, depending on the demands of the particular environment. In a more diverse and dynamic field, such as the plastics industry, effective organizations have to be highly differentiated and highly integrated. In a more stable and less diverse environment, like the container industry, effective organizations have to be less differentiated, but they must still achieve a high degree of integration." (p. 108)

Thus the level of uncertainty in the environment in which a firm is operating appears to be central to the analysis of organizational structure. In this sense uncertainty may be viewed as a key contextual variable of organizational structure.

Hickson et al. (1971) in a study of intraorganizational power suggest that "uncertainty may be defined as a lack of information about future events, so that alternatives and their outcomes are unpredictable" (p. 542). They argue that "organizations do not necessarily aim to avoid uncertainty nor to reduce its absolute level ... but to cope with it" (p. 543). This argument is compatible with Thompson (1967) where he posits "that organizations cope with uncertainty by creating certain parts specifically to deal with it, specializing other parts in operating conditions of uncertainty or new certainty" (p. 13). Hickson et al.

hypothesize that "the more a subunit copes with uncertainty, the greater its power within the organization" (1971, p. 543). It appears that an organization as a whole faces a certain level of uncertainty, and in turn different parts and positions within the organization face uncertainty and cope with it, while others operate under more certainty.

Just as an organization has an environment in which it operates, each job in the organization has an environment or context within which the job is set. The incumbent to the job has a task to accomplish in accordance with the objectives of the organization. Perrow (1967, 1970) suggests that the technology of a job has two dimensions, a stimulus and a response. This essential dichotomy is in line with March and Simon (1958) in their discussion of problem-solving (Chapter 6). An occupant in a job "receives stimuli (orders, signals) to which he must respond ... (and) he 'searches' his mind to decide what kind of a response to make" (Perrow, 1970, p. 76). One or both of the stimulus and response in a job may hold variability for the job holder. If, for example, the job is part of a subunit in the organization designated to cope with environmental uncertainty, the stimulus often holds variability. "Uncertainty might be indicated by the variability of those inputs to the organization which are taken by the subunit." (Hickson et al., 1971, p. 543). To generalize, variability of stimuli can be viewed in terms of "the variety of problems which may lead to search behavior" (Perrow, 1970, p. 77), and can be associated with job uncertainty.

Similarly, response mechanisms may vary, procedures may be unclear, and approaches to stimulus resolution may be less than obvious. Pfeffer et al. (1976) in a study of uncertainty and social influences in decision-making make the following point:

"Uncertainty is defined in the present study as a lack of consensus about purposes and the means of achieving them; when uncertainty is high, the ability of a decision-maker to apply universalistic criteria is difficult. Yet the need to make a decision remains."

For whatever reasons, a lack of ends and means consensus or an absence of established problem-solving procedures being two, the response made in a job to the stimuli received may be viewed along a continuum of uncertainty. Cooper (1972) in his development of a framework for examining technology, distinguishes between task uncertainty and response uncertainty within the construct of skill variety as a technological dimension. Using the variables from Turner and Lawrence (1965), Cooper uses task uncertainty to relate to matters as the "degree of ambiguity of remedial action required to correct routine job problems ... (the) number of people required to interact with at least every two hours ... (and) the number of parts, tools and controls to be manipulated", as part of the job (1972, p. 141). On the other hand, response uncertainty relates to matters as the "amount of worker latitude in selection of work methods; in selection of work pace; in accepting or rejecting the quality of incoming materials; in securing outside services ... (the) amount of time required to learn to perform job proficiently ... (and the) amount of time worker is free to choose to leave work area without reprimand" (ibid.). This integration of Turner and Lawrence appears to cut a swath across the more traditional job dimensions of variety, autonomy, feedback, identity, dealing with others and friendship opportunities (cf. Turner and Lawrence, 1965; Hackman and Lawler, 1971; Sims et al., 1976). Perhaps job dimensions as variety, autonomy, and dealing with others, for example, can be related to one or both of the task and the response which are parcel to the skill set within the job. Conceivably

these dimensions could hold variable or different magnitudes within each of the task and the response, and thus uncertainty may be large in one area and distinctly less in the other area. This broaches Perrow's argument that jobs may often hold some routine and some nonroutine. Conversely, jobs may hold some uncertainty and some certainty.

Job uncertainty in the present study essentially measures the incidence of new problems in the job (8) which perhaps require new knowledge (9) and which are unforeseen (10) although possibly not unexpected. Further, the incumbent often is switching from one thing to another on the job (12). Elements of uncertainty in both stimulus and response are present within the characteristic. Alternatively and similarly, there are overtones to both task uncertainty and response uncertainty within the job. The occurrence of job uncertainty as an organizational characteristic does not, however, preclude the occurrence of job routine as an organizational characteristic as well. The argument is simply that jobs and organizations often and perhaps for the most part operate within the context of some uncertainty and some routine. Managerial positions may be in the forefront of this circumstance. The uncertainty and the routine may be related to one or both of job stimulus and response. Often they provide contrasts to each other on one yardstick. Often they are separate characteristics. The present study views job uncertainty and job routine as separate organizational characteristics with underlying bonds of association. This position is picked up in the discussion of job routine below.

##### 5. Role Definition

Role definition measures how precisely responsibilities in the job are laid down (13) and how precisely it is laid down which decisions the

incumbent to the job can take himself (14) (Exhibit 2-7). Role definition is tightly clustered and strictly orthogonal to job satisfaction, group cohesion, job change and job uncertainty. It is tightly clustered with respect to job routine but is not strictly orthogonal to this characteristic suggesting a lack of independence with routine as a separate factor. The general response in the role definition characteristic indicates 7% of respondents are at a low level of definition, 45% are at a medium level and 48% are at a high level (Exhibit 2-7).

The term role is used to indicate the expected behavior of a person occupying a position within the organization. "By role we mean the behavior expected from a person in the particular position." (Etzioni, 1964, p. 82f, emphasis removed). In this sense, a person may be viewed as filling a position and performing a role in an organization. A manager in a marketing department, for example, fills a position, Vice-President of Marketing perhaps, and in this position performs a role. This role is his expected behavior on the job. Within the total organizational structure and operation, it is important that persons filling positions and performing roles conduct themselves in accordance with role expectations. Specializations within the organization are linked, for example, and failure to adhere to roles may lead to a breakdown in the system, affecting effectiveness and efficiency. A certain image may be associated with a position, and is built into role expectations. Failure to portray that image and thus adhere to the expected behavior of the position may well affect the image of other occupants in similar positions in the organization and successors to the present incumbent. Actions of policemen and military personnel while in uniform are cases in point. Kahn et al. (1964) argue along this line that "one of the great inherent

## EXHIBIT 2-7 ROLE DEFINITION CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
13	How precisely are your responsibilities laid down?	.68
14	How precisely is it laid down which decisions you take yourself?	.71

(b) Original Scale (Original scale is reversed for research compilations)

<u>Very Precisely</u>	<u>Fairly Precisely</u>	<u>Not Very Precisely</u>	<u>Very Precisely</u>	<u>Not Laid Down At All</u>
1	2	3	4	5

(c) General Response Based on Relative Scale Score Levels

<u>Level of Role Definition</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	2-4	38	7
Medium	5-7	262	45
High	8-10	277	48
		<u>577</u>	<u>100</u>

needs of any organization is dependability of role performance" (p. 5). With the importance of role performance, it is clear that a person filling a position must understand his role. One tool available to management to expedite this understanding is to define the role for the incumbent to the position. Parameters are enunciated for the role, often in writing. Certain of these parameters which are designed to guide the actions of the individual in the position may be quite broad and allow some latitude; other parameters may be quite confining. In terms of an incumbent's perception of his role, role definition may be said to represent "the extent to which (persons) perceive their jobs and authority to be constrained within fixed limits" (Inkson et al., 1970, p. 355). This description connotes the use of the term role definition in this study.

Job networks are frequently classified (in writing) in organizations. The presence of the organizational chart with positions falling into hierarchical relationships is encountered within many formal organizations, and particularly the more bureaucratic or mechanistic types of organizations. Following Pugh et al. (1968), this scenario is representative of a high degree of configuration. "(Role structure) data would be contained in a comprehensive and detailed organization chart that included literally every role in the organization." (pp. 450-451). Roles in turn might be formalized, measuring high on "the extent to which rules, procedures, instructions, and communications are written" (p. 448) and standardized to the extent procedures are designated for all situations (ibid.). A high level of specialization might also be envisaged within this network, and perhaps a high degree of centralization. A semblance of order and routine appears to accompany this model. This may serve to explain why role definition and job routine are not strictly orthogonal

in the present study. Jobs which are routine in terms of rules, procedures, instructions, communications and hierarchical ties lend themselves to definition. To the extent that the organization seeks to develop a classification system, the designation of written job networks is expedited. Viewed as a variable, role definition may be linked to high levels of measures like concreteness of positional descriptions and the presence of written job descriptions as operationalized by Hall et al. (1967), and may be qualified in terms of the measures of job codification and job specificity as used by Aiken and Hage (1968).

Job networks on the other hand are often not classified (in writing) in organizations. Environmental or technological constraints may preclude this avenue to management (cf. Burns and Stalker, 1961). Management may choose not to develop a classification system. Jobs which are essentially nonroutine in nature do not lend themselves to ready definition. The collegial and organic models suggest low levels of configuration, formalization, standardization and specialization. Authority is often decentralized. Similar contrasts might be projected with the Hall, and Aiken and Hage measures (ibid.).

It is important not to overstate the power and implications of the role definition characteristic in the present study. Role definition denotes how precisely it is laid down which responsibilities and decisions are those of the incumbent to the role. As such, the measure connotes the confines of structure. On the other hand, the precise terms and qualities of the role definition are not pursued. Hall (1967), for example, deals with the matters as degree of formalization of authority structure, emphasis on using established communication channels, penalties for rule violation and like criterion to add depth to the notion of organizational complexity and formalization beyond role measures of concreteness of positional



descriptions and presence of written job descriptions. Similarly, Aiken and Hage (1966) examine in-depth qualities of jobs in determining elements of centralization and formalization in organizations, qualities not directly broached in the present study. The significance of this difference amongst measures is evident in the analysis of role definition and job satisfaction presented in the following chapter. The more general consideration of comparable measures of organizational characteristics is addressed in the research strategies note which appears as Appendix B.

#### 6. Job Routine

Job routine represents a combination of four variables (Exhibit 2-8). It denotes the extent to which the individual respondent thinks of the work in the job as routine (1), the extent to which an incumbent to a job can foresee the activity of the working week (2), the extent to which working days follow a similar pattern (4), and the extent to which work involves following regular set procedures (7). Job routine is reasonably well clustered with respect to job satisfaction, but the two characteristics are not strictly orthogonal. Job routine is tightly clustered with respect to both group cohesion and job uncertainty, but is not orthogonal to group cohesion. Job routine is not tightly clustered with respect to both job change and role definition, nor is it orthogonal to role definition although it is orthogonal to job change (Exhibit 2-2). In terms of a highlight, job routine lacks independence with job satisfaction, job uncertainty, and role definition, as evidenced in the previous separate discussions of each of these characteristics. The general response to job routine indicates 11% of the respondents are at a low level of routine, 70% are at a medium level of routine and 19% are at a high level of routine (Exhibit 2-8).

## EXHIBIT 2-8 JOB ROUTINE CHARACTERISTIC

(a) Composition

<u>Variable Number</u>	<u>Variable</u>	<u>Factor Loading</u>
01	How much of your work do you think of as routine?	.63
02	When you begin a working week, how much of what you will actually do during the week can you foresee?	.58
04	How many of your working days follow a similar pattern to one another?	.57
07	How often does your work involve following regular set procedures?	.69

(b) Original Scale (Original scale is reversed for research compilations)

<u>Most</u>	<u>Quite A Lot</u>	<u>Some</u>	<u>A Little</u>	<u>Almost None</u>
1	2	3	4	5

(c) General Response Based on Relative Scale Score Levels

<u>Level of Job Routine</u>	<u>Range of Scores</u>	<u>Number of Respondents</u>	<u>Percentage Respondents</u>
Low	4-8	62	11
Medium	9-15	406	70
High	16-20	109	19
		577	100

The routinization of jobs in work organizations is regarded by Perrow (1970) as a central tendency of management. "The thrust is to routinize, limit uncertainty, increase predictability, and centralize functions and controls. Whether the lure is security, power, growth or profits, and whether the field is government, industry, culture or welfare, bureaucratization proceeds apace." (p. 67). To fully routinize jobs implies the development of assured responses to all known job stimuli, and the minimizing of unknown or novel job stimuli. This total circumstance is difficult to envisage. Even in the most routinized of jobs, some problems invariably occur. Thus, jobs may hold a level of routine and a level of uncertainty. Further, some aspects of the job may typically defy routinization. Some jobs, for example, are involved with variability of job stimuli on an ongoing basis, but standard procedures are followed in resolving the problems. Following Perrow (Chapter 3), this would be prevalent in engineering work where the stimuli or objects that are encountered typically within the job are variable, but the search procedures used in the technology are relatively routine. Such may also be the case with many types of surgeons and nurses in hospitals where the job stimuli, the patients who require attention, often vary dramatically between one another, but the basic approach to treatment often follows a given routine (cf. Blau, 1974, p. 338). Job routinization may be a tendency for management, but it may not always be possible to routinize certain types of jobs, or to routinize the entire technology of certain types of jobs.

The crafts industry furnishes an interesting contrast to the engineering and medical examples (cf. Perrow, 1970). In crafts work, the nature of the task and raw material to be changed is essentially standardized. The procedures connected to the task and the ultimate response paths

are, however, variable and perhaps, problematic. Sayles and Strauss (1966) offer the following discussion of the craftsman and the relationship to management.

"The craftsman's job provides abundant variety. Unexpected problems constantly crop up, the solutions to which cannot be programmed by management. Thus, the employee must be allowed to choose his tools, methods and even pace to conform to the ever-changing work requirements as he sees them." (p. 31, emphasis removed).

This case is representative of a task which is relatively standardized, but there are varied stimuli within the response mechanisms of the organizational technology. Unlike engineering and medical work where the task varies and the procedures are more or less standard, the opposite appears to hold true. Evidence of variable stimuli occurring not simply within the general task or raw material to be changed, but also within the response mechanisms themselves suggests a more complicated view of technological stimulus than that advanced in a simple task-response discussion. Further, it provides greater distance between the complete routinization of work and its realization.

Montagna (1968) provides a valuable elucidation on the routinization of work in the accounting industry. Through time, much of the work undertaken by accountants, auditing for example, has been formulated into a code of industry rules and norms. "What was once unwritten rule or mystique is now rationalized; in the process of formalizing its rules, the profession transforms that knowledge from an intellectual to a mechanical technique." (p. 540). Montagna views this as a reduction of certainty and uncertainties' accompanying requirement for "professional judgment" (ibid.). Routinization has been aided by computerization, and the latitude of professional judgment has been further curtailed by the

proliferation of industry rules. Thus, it would appear many accountants are committed to routinized jobs to the extent they remain within these areas of attention. In other instances, as Montagna argues, "the public accountant's response to this threat has been to expand into new areas of uncertainty, especially management services and taxes" (ibid.). Perhaps junior accountants become involved in routinized sectors of the accounting industry working essentially with the engineering prototype technology, while their seniors enlist business, design procedures, and open new areas of activity that perpetuate the image of the accountant as a professional dealing with problems and with uncertainty. "The move into areas of uncertainty provides an important basis for continued professionalization." (p. 541).

It is significant in the present study that job routine and job uncertainty fall out as separate factors and that they are not strictly independent of one another. A hypothesis that one factor represents a quality of the stimulus in the job, while the second represents a quality of the response within the job does not appear valid following close analysis of individual variables in the characteristics. It is true that job uncertainty carries an undertone of stimuli variability, particularly with respect to problems encountered in the job. Problems may be central to the essential stimulus of the job: this is true for engineers, medical practitioners, accountants and research personnel. But problems may arise within the essential response mechanisms of the job as well: this is true for craftsmen. Problems, therefore, may be party to either the stimulus or response side of job technology, although they are seen as stimuli themselves. Fresh knowledge or new skills may be required to properly identify job stimuli or characteristics of the raw material in focus, as

well as to respond in proper fashion. Thus job uncertainty is more than a stimulus characteristic. Job routine broaches response mechanisms within the job technology in terms of procedures and patterns of activity, but as a whole the routine may be reflective of aspects within both the stimulus and response of the technological set. To abstract, it would appear that job uncertainty indicates a measure of the prevalence of new problems or unforeseen matters arising in the job and a constant switching between things, which together or periodically require fresh knowledge or new skills. Job routine measures the extent to which the job is essentially standardized in terms of job technology. In this sense they are somewhat but not totally exclusive. The relationship between the two characteristics are examined in some detail in the following chapter.

Inkson et al. (1970) defined the term role routine as the "extent to which managers perceive their roles as unchanged over time, both in the short-term and in the long-term" (p. 355). The sample item in this dimension provided by the writers was "how much of the content of the job you are now in has changed in the past year?", a variable which is used in the present study but which falls in the job change characteristic. Job routine in the series of characteristics used here is interpreted to measure technological routine within the job, a contextual factor job structure. Job change on the other hand measures changes in the content of the job over time, a structural characteristic of the job. In the Inkson et al. paper, role routine and role definition have positive correlations (p. 362). In the present study, the two characteristics, although somewhat different in nature, are not strictly orthogonal. Job routine and job change are orthogonal in this study. Relationships between characteristics are further examined in the ensuing section of this report.

### 7. Additional Role Perception Variables

There are five additional role perception variables in the survey questionnaire which do not readily relate to the six organizational characteristics and which are thus omitted from the final series of characteristics. These variables are specified in Exhibit 2-9.

### 8. Summary

Six organizational characteristics are derived from a series of twenty-six role perception variables by means of factor analysis. These characteristics are job satisfaction, group cohesion, job change, job uncertainty, role definition and job routine, and include twenty-one of the initial twenty-six variables. The characteristics may be identified in terms of job structure, the context of job structure and the performance of incumbents within the job.

Structural characteristics include role definition, job change and group cohesion. These characteristics are structural in the sense that they represent aspects of "the positions and parts of organizations and their systematic and relatively enduring relationships to each other" (Porter and Lawler, 1965, p. 303). Following Inkson et al. (1970) role definition represents "the extent to which (persons) perceive their jobs and authority to be constrained within fixed limits" (p. 355). Job change measures the extent of content modification in the respondent's position or role over time, specifically one year in retrospect and one year in prospect. Group cohesion represents the degree to which members of the respondent's work unit get along, stick together and help each other compared to other work units in the organization.

## EXHIBIT 2-9 VARIABLES NOT INCLUDED IN ORGANIZATIONAL CHARACTERISTICS

Variable  
Number

Variable

- 03 If someone completely new to your job had to take it on at short notice, how much of it would he be able to find out from a job description and/or a record of previous work?
- 11 Considering the various problems that arise in your work, how often is the solution clear?
- 20 How satisfied are you with your fellow workers?
- 22 Do you feel that you are really a part of your work group?
- 23 If you had a change to do the same kind of work for the same pay in another work group in this company, how would you feel about moving?



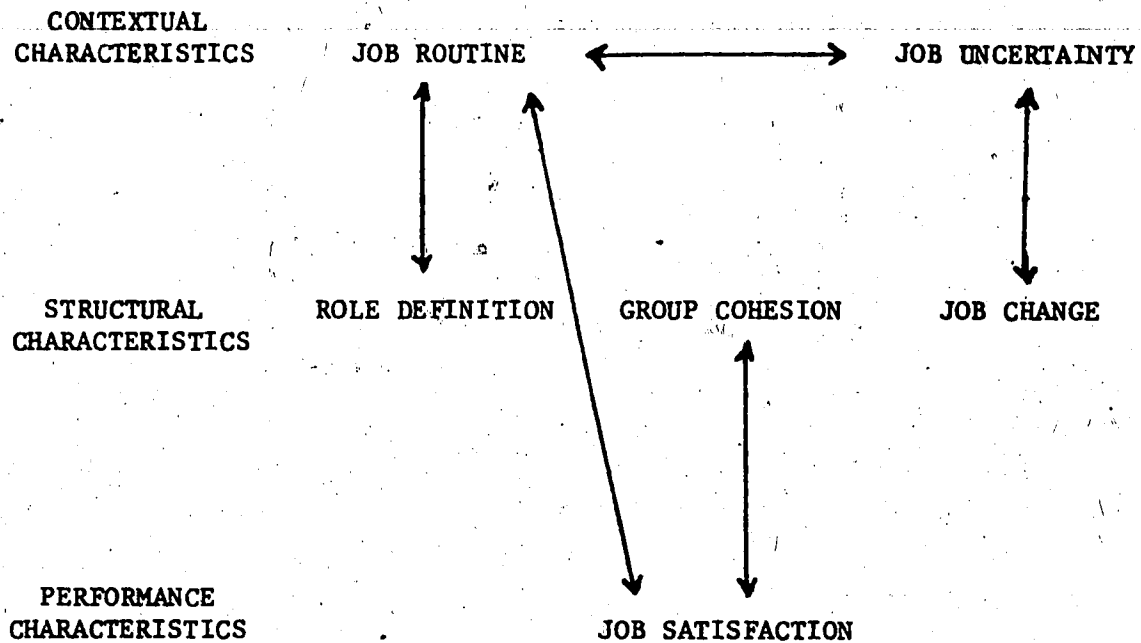
The contextual characteristics are job uncertainty and job routine. They are contextual in the sense that they portray aspects of "the setting within which structure is developed" (Pugh et al., 1969, p. 63). Job uncertainty indicates a measure of the prevalence of new problems or unforeseen matters arising in the job and a constant switching between things, which together or periodically require fresh knowledge or new skills. Job routine measures the extent to which the job is essentially standardized in terms of job technology. One performance characteristic is studied, namely job satisfaction, and represents general member reaction to the organization and the person's role. As such, job satisfaction is an outcome of organizational situations and activity.

The final series of characteristics resulted in five sets of characteristics lacking independence between one another. The two contextual measures, job uncertainty and job routine, lack independence. Job uncertainty is not orthogonal to job change, and job routine is not orthogonal to role definition, nor to job satisfaction. Group cohesion and job satisfaction similarly lack independence. A chart showing the organizational characteristics and these sets which lack independence appears as Exhibit 2-10.

E. SAMPLE REFINEMENT: ORGANIZATIONAL CHARACTERISTIC SCORES AND SCALE DEVELOPMENT

The initial file contains the original survey data for 621 respondents. Scores for the six comprehensive organizational characteristics of job satisfaction, group cohesion, job change, job uncertainty, role definition and job routine are calculated for each respondent, and are added to the initial file. Original scales are reversed in the cases of job

EXHIBIT 2-10 ORGANIZATIONAL CHARACTERISTICS IN TERMS  
OF CONTEXT, STRUCTURE AND PERFORMANCE:  
AN INITIAL CHART



NOTE: Arrows indicate sets of organizational characteristics which lack independence, and which are not strictly orthogonal to one another.

satisfaction, group cohesion, role definition and job routine as part of this procedure. The exhibits for each of these characteristics indicate this orientation in methodology. Checks are placed on each role perception variable to ensure that the data appearing in the matrix are within the bounds of acceptable response for survey purposes. In general, when the data for any variable are not within acceptable bounds, the respondent is dropped from the new data file. This is in keeping with Cooley and Lohnes (1971) whose "approach is to eliminate from the sample all subjects with incomplete score vectors" (p. 137). Initially this would appear to reduce the population from 621 to 463 since the information shows a preponderance of missing values in the job satisfaction and group cohesion variables. A number of these variables, however, is dropped in the final factor structure and substantially fewer than 158 cases are finally dropped. Following Elliott (1975), before any cases are dropped, a check of data is conducted against type of firm. This check reveals that only 23 cases fall into the entrepreneurial firm type category. Missing values for variables in cases classified as entrepreneurs are substituted by average values for the group as a whole, rather than dropping the cases from the file. Two cases are subject to this procedure. Where missing values (0,8,9) occur in all other types of firms and in cases unclassified by type of firm, the cases are dropped from the file. Because of certain differences between Elliott's factor structure and methodology, and the procedure chosen in the present paper, there is some difference in the number of missing values encountered and the number of cases dropped. Elliott ultimately used 579 cases, while 577 are used in the present study. A table showing the number of cases or respondents used in the Elliott paper and in the present study by type of firm appears

as Exhibit 2-11. The editing differences are slight, and should not affect overall findings. The factor structure changes, however, may explain the shifts in the discriminant analysis amongst firm types, revealed in comparing Elliott's work with the present study. In this respect, Elliott followed Lawson in large part (one variable was apparently dropped from job satisfaction), while the scores of organizational characteristics in the present paper are compiled on a new factor structure as described in Appendix C.

Scales may be qualified as being nominal, ordinal, interval or ratio in nature. Following Selltiz et al. (1959), a scale is nominal when it "consists of two or more named categories, into which objects or individuals or responses are classified" (p. 189). An example of a nominal scale would be marital status questions on a census form. Ordinal scales have a continuum to them and define "the relative position of objects or individuals with respect to a characteristic, with no implication as to the distance between positions" (p. 191). Attitudinal outlooks to specific situations viewed in terms of favourableness or unfavourableness are frequently measured in terms of ordinal scales. It is not often clear in these instances precisely how large perceived differences between favourableness and unfavourableness are amongst respondents, but a rank order of respondents is at a minimum an outcome of ordinal measurement. Interval scales differ from ordinal scales in the sense that distances between points on the scale are known and accepted. Thus on interval scales "not only are the positions arranged in terms of greater, equal or less; the units or intervals of measurement are equal" (p. 193). Following these authors, comparing interval scales to ordinal scales is like comparing thermometers to elastic bands.

## EXHIBIT 2-11 RESPONDENTS BY TYPE OF FIRM - FINAL DATA FILE

<u>Type of Firm</u>	<u>Elliott Paper</u>	<u>Present Paper</u>	<u>Original File</u>
1. Branch plants	254	253	267
2. Owner-managed firms	86	85	93
3. Local firms - hired management	28	28	31
4. Municipal government	29	29	31
5. Provincial government	78	78	83
6. Federal government	42	42	47
7. Entrepreneurs	23	23	23
8. Unclassified	39	39	48
	—	—	—
<u>TOTAL:</u>	579	577	621

In the thermometer, the degrees are an indication of high or low measurements, and the distance between degrees is known and accepted. The elastic band, however, can be stretched or relaxed by the holder or observer, and thus the distance between any two points is not known or accepted necessarily amongst a group of persons. Ratio scales "contain an absolute zero" (p. 194), and thus differences can be measured and related to an absolute as in weight measurement.

The scales in the role perception variables appear in the questionnaire (Appendix D) and for organizational characteristics, in the initial exhibit introducing each job characteristic (section D of Chapter II). These scales are Likert-type in design and provide a measure of the member response to certain aspects of the work place including role specificity (Hickson, undated), job satisfaction (Kahn et al., 1964) and group cohesion (Seashore, 1954). The center point of each scale may be regarded as middle of the road in terms of general reaction to the subject matter in focus, and the scale designers are acknowledged experts in research in the social sciences. Distances between points no doubt vary amongst respondents, and as Selltiz et al. (1959) argue "the Likert-type scale does not claim to be more than an ordinal scale; that is, it makes possible the ranking of individuals in terms of favourableness of their attitude toward a given object, but it does not provide a basis for saying how much more favourable one is than another ..." (p. 369). Scores for individual job characteristics represent sum values of scale totals for variables assigned to specific characteristics in line with the factor analysis. A major issue arises in judging how to split these scores in terms of general levels of response on the individual characteristics. It is desirable not simply to have a score for each job characteristic for each respondent, but also to compare

the level of that characteristic in terms of the characteristic itself and the levels reported by others. Working with a trichotomy of low, medium and high (cf. Lawson, 1971), it is desirable for analytic purposes to know in some instances whether the score of any particular individual may be classified as low, medium or high in terms of the job characteristic in focus, and in other instances, how the score of the individual compares to other respondents in the study. Strictly speaking, in order to develop these measures it is necessary to have interval scores. This ensures that distances between points are similar. Some, however, feel that interval measurement is not required as a prerequisite to usage of interval-type statistics. Nie et al. (1975) cite Labovitz (1970) in this respect:

"Except for extreme situations, interval statistics can be applied to any ordinal lead variable."

He argues:

"Although some small error may accompany the treatment of ordinal variables as interval, this is offset by the use of more powerful, more sensitive, better developed and more clearly interpretable statistics with known sampling error." (p. 6).

This argument perhaps is geared towards usage of means, standard deviations and Pearson correlations which strictly speaking are appropriate only in interval-type data (Selltiz, 1959, pp. 193-194). The main point in terms of the present study is whether or not it is permissible to judge a score as low, medium or high in terms of the scale itself. It is true, for example, that the scales in the study provide a range of response which is hardly intricate in nature and which have a middle of the road central point. If interval-type statistics can be used in this type of situation, and they are used widely, then it seems viable to

consider the scale itself as a perceptual thermometer, and rate low scores as low, moderate scores as medium and high scores as high. Based on this premise, a series of a priori scale levels are formulated for each job characteristic. This allows relative statements to be offered with respect to the survey population in terms of the scale itself.

In this way, statements are forwarded on the general level of job routine, role definition, job satisfaction, job uncertainty, job change and group cohesion. This appears as an extension to statements out of studies that suggest, for example, that few persons are really dissatisfied with their work. Richardson (1976) cites research conducted by the Michigan Survey Research Center in the following manner:

"Worker attitudes were recorded on a 1-5 scale, with 5.0 indicating very high satisfaction and 1.0 very low satisfaction. The results ranged between a low of 3.06 (financial rewards) and a high of 3.45 (resources) ... Three plus on a scale of 1 to 5 may not indicate wild enthusiasm, but it is firmly on the side of job satisfaction rather than dissatisfaction."  
(p. 239).

The study demonstrates usage of interval level statistics in ordinal level scales. The present paper formulates a measurement against the scale itself, and determines in each case whether the total score derived on a particular characteristic measures low, medium or high in terms of the scale. The scale itself is divided into equal thirds for this purpose. The ultimate divisions and response tabulations appear in the discussion of job characteristics above.

Empirical divisions are also compiled for the two contextual characteristics of job routine and job uncertainty and the performance characteristic job satisfaction. These divisions are based on the level of response in any particular case in terms of the general response in the



job characteristic and not the scale itself. A respondent is judged as low in the empirical or a posteriori scale if the score falls into the bottom third of responses to the characteristic. The medium third of responses are judged as medium, and the top third are judged as high. A comparison and discussion of a priori and a posteriori scales for the three characteristics appear in Chapters IV and V of the paper. House (1971) uses a somewhat different approach to empirical divisions but the result may be the same.

"The sample was divided into respondents with low-, medium-, and high-task autonomy. The medium group consisted of the third closest to the mean of the total population and included all tied subjects at the borderlines." (p. 494):

This approach is interesting in the respect that an interval level statistic, the mean of the sample, is used as an initial anchor point for division, which is, however, empirical and not a priori in nature. The mean value nonetheless is affected by the full breadth of response in the initial scale, and the procedure assumes some ability in the scale itself to distinguish between points in some consistent way. Interpreted in this manner, it does not appear to be a quantum leap to a priori division of respondents since the underlying assumptions are analogous.

## F. RESEARCH METHODOLOGY: ADDITIONAL STATISTICAL TECHNIQUES

### 1. Contingency Tables

Contingency tables are used chiefly in studying relationships between organizational characteristics as part of Chapter III of the study. From a priori scales, data for all pairs of characteristics are cross-tabulated, and those tables which are statistically significant appear in the text. Statistically significant, in this sense means that the characteristics are

not strictly independent of one another, and that there is some relationship in evidence between the characteristics as uncovered in the contingency table. An example may be that job routine and role definition are related directly, and it appears that high job routine is associated with high role definition while medium job routine is associated with medium and high role definition (Exhibit 3-4). This type of observation serves to complement the findings in correlation analysis, and this basic format is fundamental to Chapter III and part of Chapter IV.

Statistical significance in a contingency table is revealed in the chi-square statistic. The chi-square is based on differences between observed frequencies in cells within the contingency table and expected frequencies in cells should an even distribution prevail in the table. The greater the differences, the higher the chi-square and the more likely it is that the characteristics in the table are related in some manner. The lesser the differences, the lesser the chi-square and the less likely it is that the characteristics are related in a systematic way. The actual level of significance as well as the chi-square statistic is compiled within the S.P.S.S. program on contingency tables, and appears in the tables in the text of the present paper.

## 2. Correlation Analysis

Perhaps the central statistic in the present paper is the Pearson product-moment correlation coefficient for pairs of organizational characteristics. This statistic measures the direction and strength of relationship between any two characteristics based on a linear fit to observed values of the characteristics. Only statistically significant correlation coefficients appear in most tables. Statistically significant in this sense refers in general to the fact that there is 95%

assurance the relationship uncovered actually exists taking into account type 1 statistical error. It is developed from a null hypothesis that the intercorrelation equals 0, and when disproven, there is 95% assurance the relationship is significantly different from 0. The test statistic is the Students' *t*, which is directly affected by sample size. The relatively large sample size in the present study makes many intercorrelations significant when their actual strength of association is rather low. Type 1 error refers to the likelihood of rejecting the null hypothesis when it is true. The objective is to set a reasonable boundary for minimizing type 1 error, and the general level chosen in the present study is .05. In short, the objective is to ensure that when the null hypothesis is rejected, this should be done on the basis that there is small chance that the rejection is incorrect. Thus, in the present study, there is 95% assurance the relationship is significant when the above criterion is met. When the .05 criterion is relaxed, this is made explicit in the study. This relaxation is never more than slight.

Partial correlation analysis allows the derivation of correlation coefficients between pairs of characteristics while holding constant or removing the effect of one or more other characteristics. The actual procedure is discussed in Chapter IV as part of the introduction to higher order correlations. Nie et al. (1975) point out that partial correlation is "an excellent technique for uncovering spurious relationships, locating intervening variables, and can even be used to help the researcher make certain types of causal inferences" (p. 303). Indeed partial correlation analysis permits examination of more than two characteristics within the scope of correlation techniques, an extremely desirable quality in research along the lines of the present project.

This is true in the respect that fundamental or zero-order intercorrelations between a pair of characteristics can be studied; and then the same relationship can be studied by holding constant or partialling out the effect of other selected characteristics. This amounts to higher order correlations, said to be first order when one characteristic is controlled, second order when two characteristics are controlled and so on. Partial correlation provides one means of establishing how independent a relationship is of other characteristics in the study. If, for example, a fundamental relationship between two characteristics disappears when a third characteristic is controlled, then the fundamental relationship is probably not independent of the control characteristic. This provides depth to the basic correlation matrix, and is one particular orientation of partial correlation employed extensively in the present study. Research may indicate that height and reading speed are correlated in a study of public school students, but when age is controlled the relationship disappears. It would seem that age has a bearing in this case on the fundamental relationship, which is then said to be not strictly independent of age. Further analysis may show that the relationships between age and height and reading speed and perhaps higher than the tie between height and reading speed, and are appropriate to pursue in analysis following the initial study. Examples in the present project appear in Chapter IV.

### 3. One-way Analysis of Variance

One-way analysis of variance provides a procedure for establishing whether or not the mean values for different groups are significantly different on the variable in focus. Groups in this sense may be male and female, tall and short, or, as in the present study, levels of context and types of firms. The variable may be height, reading speed,

or, as in the present study, job satisfaction and similar organizational characteristics. The basic procedure involves designating the variable to be analyzed and specifying the groups in focus. Variance is calculated for the variable both within the groups and amongst the groups. If the variance amongst groups is large compared to variance within groups, the means are said to be different. The F statistic is used as a measure of differences, and typically the F ratio is included in reports of one-way analysis of variance. Statistical significance is comparable to the usage of the term in correlation analysis. Higher F ratios are indicative of greater differences in one-way analysis of variance, and thus reflect more distinct division amongst group means, and are more likely to be statistically significant contingent on sample size. There is an assumption of homogeneity of variance across groups in this procedure.

#### 4. Comparison of Means

It is often true that one-way analysis of variance results in an F ratio that is statistically significant but many of the means amongst the groups in focus are not really different while others are. It is desirable to have an ability to distinguish those groups which really have mean values which are the same from those groups with different mean values. Ultimately there may be overlap in the ordering, but the basic problem amounts to comparing the mean values of the various groups two means at a time to see which ones are the same and which ones are different. Numerous procedures exist including LSD, Duncan, Scheffe, SNK, and Tukey. LSD, a form of Students' t test, is the least conservative of the procedures and is not recommended "if the analysis of variance is not significant" (Nie et al., 1975, p. 427). The analysis of variance using one-way analysis is generally significant in the present study, and LSD

is used to distinguish amongst groups. Compared to both Tukey and SNK, it distinguishes more often. Mean values and standard deviations are provided in all instances as backup information and furnish a necessary perspective on the levels of group means falling out of the LSD analysis.

#### 5. Discriminant Analysis

Discriminant analysis provides a procedure for formulating linear combinations of variables that best "discriminate" amongst group means that are not equal. Cooley and Lohnes (1971) describe discriminant analysis in the following manner:

"The discriminant model may be interpreted as a special type of factor analysis that extracts orthogonal factors of the measurement battery for the specific task of displaying and capitalizing upon differences among criterion groups. The model derives the components which best separate the cells or groups of a taxonomy in the measurement space." (pp. 243-244).

When groups show differences amongst one another on mean values of a slate of variables, discriminant analysis, in like fashion to factor analysis, allows for these variables to be combined into one or more component functions which distinguish the groups from one another. When more than one function is significant, the multiple functions are independent of one another. Loadings of particular variables on the discriminant function(s) provide a basis for analysis; as in factor analysis. Significance levels are based on a lambda statistic which follows a chi-square distribution. Discriminant analysis is a valuable step beyond one-way analysis of variance in studying differences amongst groups in terms of different types of conditions on a common plane. There is an assumption of a homogeneous covariance matrix across groups in this procedure.

G. RESEARCH METHODOLOGY: AN OVERVIEW AND LINKAGE TO THE STUDY

The purpose of this paper is to study relationships amongst contextual, structural and performance characteristics in work organizations, with special attention accorded job satisfaction as a performance characteristic. Twenty-six role perception variables are subjected to factor analysis, resulting in six organizational characteristics which are interpreted in terms of context, structure and performance of work organizations. An orthogonal factor solution ultimately is chosen as optimum, although most of the resulting characteristics are not strictly independent of one another. One of the main problems in the paper is coming to grips with why this lack of independence is apparent. Fundamental relationships between pairs of organizational characteristics are studied as Chapter III of the report. Higher order relationships are pursued in Chapter IV. Further, since two characteristics are classified as contextual within the initial factor series and since context may be conceptualized in terms of distinct levels, the impact of different levels of context on relationships amongst characteristics is pursued as part of Chapter IV. Contextual combinations are also considered. Job satisfaction is dealt with in greater detail as the focus of Chapter V. As a performance outcome of context and structure, the different levels of job satisfaction are treated as groups within a discriminant analysis set around contextual and structural characteristics. A comparative analysis of organizational characteristics across different types of work organizations is undertaken as Chapter VI of the paper. This involves the introduction of a new contextual characteristic, namely charter-ownership-control, and a discriminant analysis on seven groups of work organizations, using the organizational characteristics developed from the factor analysis

as input to the discriminant functions. Research methods are selected in line with the objectives of the project, and serve the purpose of the paper well. More detail on the statistical applications appears within the text of the study as each application is introduced.



CHAPTER III  
FUNDAMENTAL RELATIONSHIPS BETWEEN  
ORGANIZATIONAL CHARACTERISTICS

A. INTRODUCTORY NOTE

As a first step in the analysis of the organizational characteristics derived from the factor analysis, a correlation coefficient matrix has been constructed which relates each of the individual characteristics to the five other characteristics separately. This matrix appears as Exhibit 3-1. Correlation coefficients provide an indication of the direction and strength of movements between two variables. Strictly speaking, factor analysis using orthogonal techniques leads to factors which are not correlated. The visible absence of orthogonality amongst certain organizational characteristics as demonstrated and discussed in Chapter II and related sections of the appendix shows clearly that some of the characteristics in the present study are correlated. Correlation coefficients for these sets appear in Exhibit 3-2.

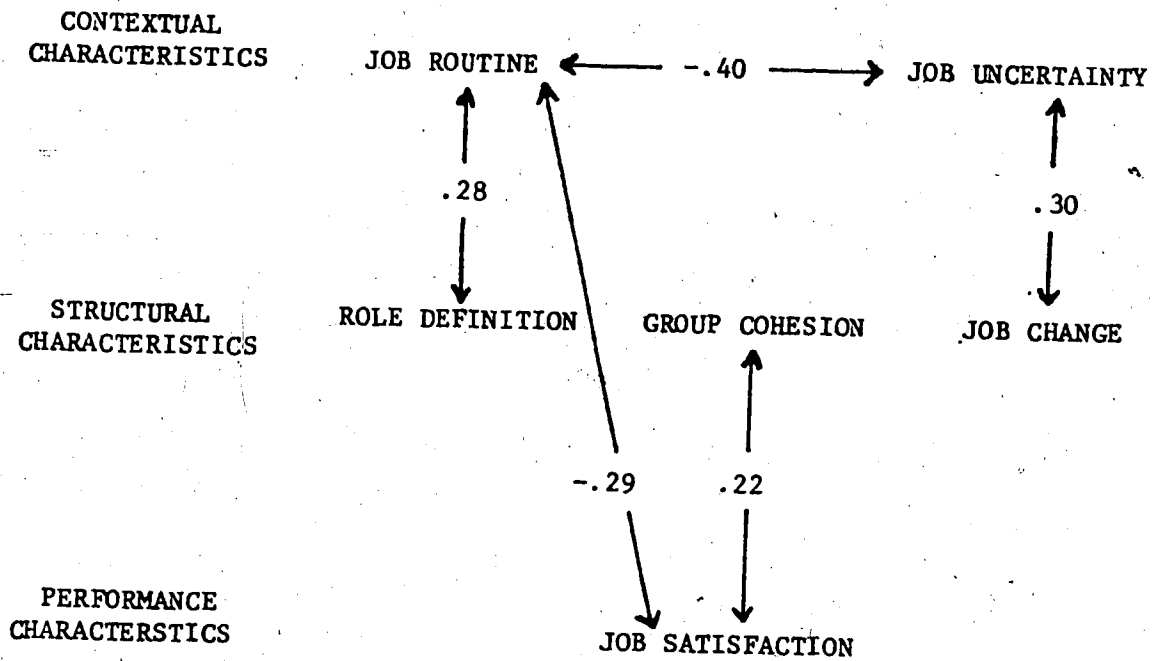
The correlation matrix shows that other sets of characteristics which appear to be orthogonal on the surface are in fact correlated, while two sets are confirmed as orthogonal. The analysis of the lack of independence amongst most characteristics represents the heart of this section of the paper. Discussion centers on the correlation coefficients in evidence, and provides a basis of understanding of why the coefficients appear as they do. The correlation coefficients are supplemented by cross tabulations of sets of characteristics in a number of instances to provide relative magnitudes of characteristics compared to one another.

EXHIBIT 3-1 INTERCORRELATIONS BETWEEN ORGANIZATIONAL CHARACTERISTICS

	CONTEXTUAL CHARACTERISTICS		STRUCTURAL CHARACTERISTICS			PERFORMANCE CHARACTERISTICS
	1 Job Routine	2 Job Uncertainty	3 Role Definition	4 Job Change	5 Group Cohesion	6 Job Satisfaction
1. Job Routine	*	-.40	.28	-.17	-.12	-.29
2. Job Uncertainty	-.40	*	-.13	.30	.12	.18
3. Role Definition	.28	-.13	*	-.08	-.02**	.11
4. Job Change	-.17	.30	-.08	*	.04**	.12
5. Group Cohesion	-.12	.12	-.02**	.04**	*	.22
6. Job Satisfaction	-.29	.18	.11	.12	.22	*

\*\* Not significant at .05 level

EXHIBIT 3-2 ORGANIZATIONAL CHARACTERISTICS WITH  
CORRELATION COEFFICIENTS FOR SETS OF  
CHARACTERISTICS WHICH LACK ORTHOGONALITY



NOTE: Arrows indicate sets of organizational characteristics which lack independence, and which are not strictly orthogonal to one another.

Numbers represent zero order correlation coefficients between characteristics. All are significant at .05.

The approach in this section is examine contextual characteristics at the outset (Part B), followed by an analysis of structural characteristics (Part C). Then contextual and structural characteristics are examined together by taking each structural characteristic and studying it in terms of the contextual characteristics (Part D). Finally, job satisfaction, the performance characteristic in the present study, is examined in terms of the contextual and structural characteristics (Part E). There is a temptation often to infer specific causal linkages in the data. Sellitz et al. (1959) make the following point:

"If one wishes to draw the inference that one variable (X) is the 'cause' of another (Y), three types of evidence are necessary: (1) that X and Y vary together in the way predicted by the specific hypotheses; (2) that Y did not precede X in time; and (3) that other factors did not determine Y." (p. 422).

Simply stated, this examination has no hypotheses, no information on time occurrences is available and little information on other factors affecting variables is available. Causal linkages are thus not intended as definitive statements. More, where an element of causality creeps into the analysis, it might be considered suggestive of a hypothesis which may be subject to empirical study in a future study properly designed to meet the above requirements.

## B. CONTEXTUAL CHARACTERISTICS

Job routine and job uncertainty represent the two contextual characteristics in the present study. Job routine measures the extent to which the job is essentially standardized in terms of job technology. Job uncertainty reflects the prevalence of new problems or unforeseen matters arising in the job and a constant switching between things, which together or periodically require fresh knowledge or new skills (Chapter II). The two

characteristics are negatively correlated, with a correlation coefficient of  $-.40$  (Exhibit 3-1). This suggests that more job routine or technological standardization is associated with less job uncertainty; or alternatively, that more job uncertainty or the increasing frequency of new problems, unforeseen matters, task switching and the requirement for fresh knowledge and new skills is similarly associated with less job routine. An analysis of the intercorrelation might begin in the theory of decision-making, or steps in the essential work process. This is appropriate since "the concept of decision-making should be central to any theory of administration" (Mouzelis, 1967, p. 123) and routine and uncertainty can be linked to decision-making constructs.

March and Simon (1958, Chapter 6) argue that "activity (individual or organizational) can usually be traced back to an environmental stimulus of some sort, e.g., a customer order" (p. 139) which leads to a response. This stimulus-response approach to the study of individual or organizational action is comparable to Perrow's (1967, 1970) job technology discussion reviewed in Chapter II above. March and Simon (1958) continue by suggesting that certain types of stimuli are typically associated with a series of "routinized" action steps. Other types of stimuli are associated with a series of routine "problem-solving activities" which precede and establish the actual action steps that the individual or organization will take with respect to the stimulus. A third type of stimulus may be associated with a series of nonroutine problem-solving activities which precede and establish the ultimate response which is made. In this sense, the stimulus-response view is often complicated by an intermediate response stage specifically related to assessing the stimulus, defining alternative courses of action, evaluating them and choosing the preferred course which

is then translated into the individual's or organization's response. This intermediate step is an instrumental aspect of the essence of individual or organizational decision-making or problem-solving, and in itself may be more or less routine as a procedure and activity. Thus "the response to a particular stimulus may involve more than performance - the stimulus may evoke a spate of problem-solving activity - but the problem-solving activity may itself be routinized to a greater or lesser degree" (p. 140). Hypothetical examples may add depth to this outline. In an automotive parts department of an automotive service centre, mechanics request certain parts from the stockmen on an ongoing basis. Terms are well known amongst the personnel and often the process is expedited by a standard order form. The stimulus to the stockman is relatively familiar, and his response (or performance) may be envisaged as relatively routine. The job technology is standardized. Mechanics, on the other hand, who perform work on automotive engines and transmissions, are faced with greater variability in their stimuli. Different types of problems can occur in a car engine or transmission, and the mechanic must assess the problem before taking an action. The problem-solving steps follows a basic format, however, and the actual work may be viewed as relatively routine. The engine designers in automotive companies are confronted with variability in their stimuli to the extent that new needs and problems are perpetually before them. Problem-solving includes the definition of innovative alternatives and within the scope, perhaps, of the scientific method, an essentially nonroutinized flow prevails and new ideas are mandatory. This amounts to unanalyzable search in the words of Perrow (ibid.), and the job technology is nonroutine in its broadest sense. On a continuum of job routine defined in terms of standardized technology, the stockman

is representative of high routine, the mechanic as medium in routine and the engine designer is nonroutine.

New problems, unforeseen matters, and task switches may be party to any of the job outlined, however, and the requirement for fresh knowledge and new skills is not beyond any. The stockman, for example, may be faced with inventory difficulties. Conceivably certain parts may be in short supply from time to time, either because of supplier shortages or an unexpected demand. Mechanics may be faced with new types of task difficulties which require new approaches to his work. Changes in the nature or design of engines, of course, present both with the need to learn the new parts and specifications. This type of situation amounts to job uncertainty, and is evident in its fullest sense in the engine designer's position which intuitively appears to hold the largest degree of job uncertainty. In any of these positions, to the extent that new problems or unforeseen matters are treated with routinized procedures, the job has both job uncertainty and job routine. Other combinations exist. Overall, it appears that job uncertainty and job routine may be seen as relatively exclusive of one another, or that is, they are separate dimensions or characteristics of the job, and as one increases, the other perhaps is tempered. The negative correlation coefficient in the present study supports this view.

The respondents in the survey which is used as the data base for this paper are white collar and managerial in their orientation. It is therefore appropriate to develop a hypothetical example for this type of occupational grouping. A government official working as an agent in an inspection branch handles a series of cases in his job which amount to the stimuli for his actions. Often these cases are carefully documented

on standardized forms, and the information and the general nature of the cases are relatively similar through time. The incidence of novel situations is low, and the exceptions, where they do occur, are referred to the supervisor for decision. Thus, the response mechanisms in the job are relatively routine and automatic. Certain cases are handled one way, while certain cases of another known variety are handled in another established manner. Although some discretion is required, the response is essentially routinized. The agent's job as outlined amounts to a routinized technology.

The supervisor's job is somewhat different. For the most part, routine stimuli that can be handled in routine ways through lower level paths in the organization do not draw the supervisor's attention. It is the problem cases, the novel ones and exceptions to known and established varieties that reach the supervisor. Blau (1974) reports on the agent-supervisor relationship in a government office in the following manner:

"Official provisions were made to assist agents with their difficult cases. Decisions of a specified complexity or significance - for example, if the amount of money involved exceeded a certain sum - had to be authorized by the supervisor, who, in turn, had to obtain authorization from his supervisors in certain cases. Similarly, if an agent encountered a problem he could not solve, he was expected to consult his supervisor, who, if he could not furnish the requested advice himself, gave the agent permission to consult a staff attorney." (p. 159).

Cases brought to a supervisor are probably handled in a standardized problem-solving manner. Previous cases are reviewed, alternative solutions are defined, an evaluation of alternatives is undertaken and a favoured alternative is selected. This procedure may be done quickly as a mental exercise, or elaborately, perhaps in writing, over a period of time. Typically one alternative may be upward or lateral referral of the matter



for expert opinion elsewhere in the organization. Overall the supervisor is demonstrative of an essentially routinized problem-solving approach, applied to variable stimuli, before individual or organizational action is undertaken. As alternatives become more difficult to define, as emphasis is shifted to developing precedents for subsequent cases of a particular variety of stimulus, or as other new circumstances enter the job situation, the problem-solving loses its routine manner and becomes less standardized. Planners and supervisors involved in the actual development of routinized procedures for certain types of stimuli are confronted with the mandate of considering all options and foreseeing (all) contingencies. These jobs hold very little routine in the job technology. Comparing this work to research and development, its contribution is significant to ongoing operations. "One of the purposes of the R and D firm, or the nonroutine organization, is to generate ways of routinizing production and building better bureaucratic controls into organizations." (Perrow, 1970, p. 83).

New problems, unforeseen matters and task switching, which together or periodically require fresh knowledge or new skills may be encountered in any of the positions described. This amounts to job uncertainty as defined and operationalized in the present study. The agent involved in a substantially routine job technology may be confronted with a series of major new changes in his manual of operations, or with a series of new problems which require referral to the supervisor. The agent may find that more of his ongoing work load requires consultation with the supervisor. Uncertainty increases in short. The agent's job remains routine in nature, but it is perceived as less routine because of increasing uncertainty. Thus, there is a negative correlation between job routine and job uncertainty, as evidenced in the present study. In the example

of the supervisor, a situation perhaps more reflective of the managerial classification, there may result an increasing incidence of cases which cannot be readily related to existing precedents, alternatives and ready classifications. Where the case cannot be passed on in the organization (cf. Blau, *ibid.*) the incumbent is placed under increasing levels of uncertainty, and a premium is set on the supervisor's ability to develop a decision framework which leads to a "satisfying" solution for the organization (cf. March and Simon, 1958, Chapter 6). The contrast between job uncertainty and job routine is in greater evidence. Perhaps researchers and planners are placed in this circumstance on an ongoing basis. Development of more sophisticated techniques which assist managers in making decisions under conditions of uncertainty serve to routinize at least a portion of the decision framework and its administration (cf. Raiffa, 1970). In one way, this development of routinized procedures and techniques surfaces in the field of management science, and includes the techniques of linear programming, sensitivity analysis, game theory, simulation, program evaluation and review technique, Markov processes, and dynamic programming (cf. Bierman *et al.*, 1973). Along this line, Simon (1960) points out how novel stimuli facing organizations and managers traditionally have been dealt with by "judgment, intuition and creativity ... rules of thumb (and) ... selection and training of executives", but in modern circumstances novel stimuli are dealt with systematically through "heuristic problem-solving techniques applied to: (a) training human decision-makers, (b) constructing heuristic computer programs" (p. 196). This amounts to a new source of a measure of routine in managerial positions. Whereas historically "an increase in the use of categorization for decision-making decreases the amount of search for alternatives" (March and Simon, 1958,

p. 39, emphasis removed) and therefore leads to routine in the job technology, there appears to be less likelihood of categorization in a number of instances facing managers, and the routine is in approaches to decision frameworks employed under conditions of uncertainty rather than categorization of responses per se.

To abstract, it might be argued that management jobs hold some routine and some uncertainty. This is supported by the incidence of two distinct characteristics representative of these qualities falling out of the factor analysis of the role perception variables. Routine may be present in the stimulus facing the actor, in the development of a decision framework and its application to the extent such a framework is required, and in the action steps taken by an actor in ultimate response to the stimulus. Non-routine would be present with one or more of variability in stimuli facing the actor, the absence of a logical flow to a decision framework and its application to the extent such a framework is required, and potentially novel steps taken by an actor in ultimate response to the stimulus. Routine as an organizational characteristic thus measures the extent to which the job is essentially standardized in its technology. Job uncertainty reflects new problems, unforeseen matters, and task switching which together or periodically require fresh knowledge or new skills. Job uncertainty is parcel to the vast majority of managerial positions, and to the extent that it occurs, respondents perceive their jobs as less routine. This hypothesis is supported by the significant negative correlation of  $-.40$  between the characteristics (Exhibit 3-1). Similarly the modal group of respondents measuring high on job uncertainty experience medium job routine; while the modal group of respondents measuring high on job routine experience medium job uncertainty (Exhibit 3-3). Significantly, a

## EXHIBIT 3-3 CROSS TABULATION OF JOB UNCERTAINTY AND JOB ROUTINE

		<u>JOB UNCERTAINTY SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB ROUTINE SCALE	LOW	2	30	30	62
	MEDIUM	26	300	80	406
	HIGH	20	84	5	109
<u>COLUMN TOTAL:</u>		48	414	115	577

(Percentage Respondents)					
JOB ROUTINE SCALE	LOW	0	5	5	10
	MEDIUM	5	52	14	71
	HIGH	3	15	1	19
<u>COLUMN TOTAL:</u>		8	72	20	100

Technical Note:  $\lambda = 60.0$  4 d of f significance = .00

clear majority of the respondents view their jobs as medium in job routine and medium in job uncertainty; while only a few - in fact, 50 out of 577 respondents - are experiencing either high on routine and low on uncertainty or low on routine and high on uncertainty (ibid.). It appears that a majority of the respondents experience modest levels of routine and uncertainty; that those facing high uncertainty can associate with some routine but not high levels of routine; and that those facing high routine can associate with some uncertainty. Overall, routine and uncertainty are negatively correlated. The incidence of rising uncertainty with less routine or rising routine with less uncertainty is consistent with Davis' interpretation of Ashby where Davis argues that "in the work situation, where unexpected things will happen, the task content of a job and the training for the job should match this potential variability" (Davis, 1971, p. 427). As uncertainty increases in the form of unexpected things happening, the content of the job and the skills required for the job must be expanded to cope with it. This implies proper training, less routine and perhaps job change. "Adequate adaptation is only possible if an organism already has a stored set of responses of the requisite variety." (ibid.). It may be that the "stored set of responses" must be upgraded periodically, the notion of acquiring fresh knowledge and new skills. Experience serves also to enhance an incumbent's repertoire of potential responses (cf. Blau, 1974, p. 184). Routines thus formulated may serve to adjust to uncertainty or even perceive it to be of a lower valence than previously. In this latter instance, increasing job routine is associated with lower job uncertainty. Job change is mentioned as a potential outcome in this sequence, and it is appropriate to turn to a consideration of the structural characteristics in the study before discussing the contextual and structural characteristics together.

## C. STRUCTURAL CHARACTERISTICS

Role definition, job change and group cohesion constitute the three structural characteristics in the present study. Role definition indicates the degree to which a respondent's job and authority is "constrained within fixed limits" (Inkson *et al.*, 1970, p. 355). Job change represents the degree to which there is content modification in the position over time. Group cohesion is a relative measure of the degree to which members of the respondent's work unit get along, stick together and help each other compared to other work units in the organization. Group cohesion is likely a function of formal and informal ties that the respondent has in the formal work unit of which the member is a part (Chapter II).

The most striking observation that can be made on the intercorrelations between structural characteristics is the virtual lack of significant relationships that prevails (Exhibit 3-1). All characteristics are orthogonal between one another (Exhibit 2-2), and the only significant correlation coefficient is a slight negative bond of  $r = -.08$  between role definition and job change (*ibid.*). The coefficients of association at the zero-order level are insignificant (at  $p = .05$ ) between role definition and group cohesion and between job change and group cohesion (Exhibit 3-1). The slight negative relationship between role definition and job change is reviewed presently, but for all intents and purposes, it is surmized that structural characteristics in this study are relatively independent of one another at the lowest level of intercorrelation. Hickson (1966) in his paper on role specificity phrases the following remark:

"Grouping writers by the variables they have associated with role specificity draws attention to other ranges of variables, where little or nothing has been done ... It could be asked whether there are more groups per organization if specificity is lower: Are they smaller? Are they more cohesive? ..." (p. 234).

Role definition in the present study provides a surrogate measure of role specificity to the extent it reflects the degree of constraint perceived by the individual performing a role in the organization. Presumably this is connected to aspects of the organization as job descriptions, operations manuals and prescribed lines and bounds of authority. Thus it specifically broaches "the specificity (or precision) of role prescription and its obverse, the range of legitimate discretion" (ibid., p. 225) felt by the respondent in the role. No data are available in the present study on the number or size of groups forming at different levels of role definition, but the element of group cohesion is operationalized, and the information indicates at the zero-order level that no relationship prevails between role definition and group cohesion. Thus it appears fair to say that greater or lesser role prescription in general does not affect the degree of group cohesion in any systematic way. This ostensible independence of structural characteristics may not, however, hold under different contexts, for example in the contexts of job routine and job uncertainty as defined in the present study. The following remark by Heydebrand (1973) is valid to consider:

"Simple correlations between different dimensions of 'organization' or 'bureaucracy', if taken at face value, imply a simplistic, additive conception of organizations, rather than one in which different dimensions are seen as potentially contradictory, functionally interdependent or as interacting with each other ... Moreover, simple correlations do not reveal the variability of structural patterns which is due to the variation in basic organizational parameters." (p. 168).

The contextual characteristics of job routine and job uncertainty represent two parameters to the structural characteristics of role definition, job change and group cohesion. Significant relationships between sets of structural characteristics may well exist when context is directly considered. This avenue of inquiry is pursued in the following chapter. Basic zero-order intercorrelations amongst sets of contextual and structural characteristics are discussed later in this chapter.

The lone significant relationship amongst structural characteristics is a slight negative bond,  $r = -.08$ , between role definition and job change. This suggests that increasing degrees of role definition are associated with less job change over time, or alternatively, that less job change over time results in higher levels of role definition. In laying out the characteristics of the ideal type of bureaucratic organization, Weber (1947) forwarded the following statement with respect to specialization, the organizational position and rational legal authority:

"A specified sphere of competence. This involves (a) a sphere of obligations to perform functions which has been marked off as part of a systematic division of labour, (b) the provision of the incumbent with the necessary authority to carry out these functions, (c) that the necessary means of compulsion are clearly defined and their use is subject to definite conditions ...

The organization of offices follows the principle of hierarchy; that is each lower office is under the control and supervision of a higher one."  
(p. 18).

As in the case of role specificity (Hickson, op. cit.), the essence of the sphere of competence notion parallels role definition conceptually. Weber envisaged persons filling positions and performing roles within a clearly defined hierarchy in an ordered fashion. Changes in the terms outlining the sphere of competence presumably emanated from the non-bureaucratic head of the organization, the "ultimate source of authority"



(Weber, *ibid.*, p. 20) since there is for any person in the bureaucracy "a complete absence of appropriation of his position by the incumbent" (p. 19); or, as Etzioni (1964) stated, "the positions cannot be monopolized by any incumbent. They have to be free to be allocated and re-allocated according to the needs of the organization." (p. 54). The present study treats role definition as a variable in the study of organizations (cf. Hall, 1963; Udy, 1959; Stinchcombe, 1959) and similarly treats job change as a potential occurrence in the organizational structure over time. In this sense, conditions of relative stability in the organization can be maintained in some instances, perhaps resulting in little job change, or conditions may warrant and lead to change in the content of positions. Blau (1974) makes the following opening remark as a portion of a discussion on the developmental dimension of organizations:

"Change in the organization is the result of the very interdependence between elements that is often assumed to imply a stable equilibrium. Even if there were a perfect organization with no problems, changes in its environment would soon create some." (p. 72).

It appears that some degree of change is almost inevitable. As in the case of role definition and group cohesion, it also appears that the relationship between role definition and job change may be affected by its context, specifically the degree of job uncertainty experienced in the job if Blau's line of reasoning is followed. This point is picked up in the following chapter. At this stage, based on data presented at the zero-order correlation level, it seems that role definition and job change move in opposite directions. Jobs which change more over time may be more difficult to classify in a rigid manner (even) if rigid classification is desirable. On the other hand, jobs which do not change significantly over time are probably easier to put a handle on for organizational

designers, and thus the tighter role definition is evidence in instances of reduced job change.

D. STRUCTURAL AND CONTEXTUAL CHARACTERISTICS

Examination of fundamental relationships between structural and contextual characteristics provides a study of contrasts. Individual structural characteristics are correlated in opposing directions to each of the contextual characteristics, and all correlation coefficients are significant at .05 (Exhibit 3-1). Role definition, which is not strictly orthogonal to job routine, has a positive correlation coefficient of .28 with this contextual factor, and a negative correlation coefficient of -.13 with job uncertainty. Job change, which is not strictly orthogonal to job uncertainty, has a positive correlation coefficient of .30 with this contextual factor, and a negative correlation coefficient of -.17 with job routine. Group cohesion which is tightly clustered and orthogonal to both job routine and job uncertainty has a negative correlation coefficient of -.12 with job routine and a positive correlation coefficient of .12 with job uncertainty. It is appropriate to discuss the structural characteristics separately in terms of their contextual contrasts.

1. Role Definition and Context

Role definition is positively associated with job routine, the extent to which the job is essentially standardized in terms of job technology, and negatively correlated with job uncertainty, a measure of the incidence of new problems, unforeseen matters and task switching in the job. Thus, the more routine that is connected to the job, the more incumbents perceive their roles as limited to specific terms of activity and jurisdiction.

Similarly, it may be argued that organizations are in a better position to handle complexity and uncertainty as routines are formulated, and as differentiation of roles is extended. Blau (1974) presents this case in the following manner:

"The division of labour segregates tasks into homogeneous jobs ranging usually from quite routine to very difficult ones ... By reducing the range and enhancing the homogeneity of the tasks in any given position, the division of labour promotes specialized expertness as well as routinization." (p. 338).

Thus, role definition and job routine do not preclude job uncertainty within organizational roles. Indeed a measure of role definition and job routine serve to create the framework within which the conditions of uncertainty can be handled. Blau gives with an example from the field of medicine:

"The brain surgeon's job encompasses, strictly speaking, a narrower range of more homogeneous duties than the G.P. Every fact enables the former successfully to do tasks the latter cannot undertake." (ibid.).

No doubt the brain surgeon is confronted with a degree of uncertainty in his work. He is coincidentally, however, involved in a relatively homogeneous task adhering to certain procedures within a defined role. The degree of uncertainty tempers the extent to which the role may be defined, while the element of homogeneity in task and standardization in procedures reinforces role definition. Thus "one important result of the technology employed by an organization is the specification of jobs having certain characteristics. The technology determines the extent to which the job may be programmed (i.e., employee behaviors may be precisely specified)." (Triandis, 1966, p. 64). The present study suggests that roles may be more clearly defined or are perceived as more defined as job routine increases. Increasing job uncertainty is associated with less role definition.

The notion of job routine and job uncertainty both being embraced within the concept of role definition and having the observed associations is reflected in the following abstract from Hickson et al. (1971) with respect to coping with uncertainty in the organization:

"Routinization of coping by information and absorption is embodied in job descriptions and task instructions prescribing how to obtain information and to respond to uncertainty. For maintenance personnel, it lays down how to repair the machine; for the physicians, it lays down a standard procedure for examining patients and sequences of remedies for each diagnosis." (p. 547).

Conditions or situations of uncertainty in the organization generate a need for organizational response. Often certain routines are available as a vehicle of response. These routines are designated within the role structure of the organization. Uncertainty itself does not lead to role definition. In fact, the present study suggests job uncertainty mitigates against role definition. The availability of routines to cope with uncertainty, and the differentiation amongst roles in adjusting to and dealing with uncertainty in the organization are the apparent elements supporting role definition, and the present study shows job routine and role definition in positive association. When routines are not available and differentiation is not possible, then role definition loses salience, and coping with uncertainty becomes more problematic. This precise circumstance is represented in the organic or organismic form of organization described by Burns and Stalker (1961) and reported by Burns (1963) in the following way:

"Organismic systems are adapted to unstable conditions, when new and unfamiliar problems and requirements continually arise which cannot be broken down and distributed among specialist roles within a hierarchy. Jobs lose much of their formal definition." (p. 48).

Uncertainty in this instance cannot be handled through specializations and routines which in turn are associated with role definition. As such, jobs are not clearly differentiated and new organizational forms emerge of a looser and more interactive nature. The sample in the present study does not appear reflective of the organismic type of organization since job routine as well as job uncertainty surfaces as a contextual variable. For the same reason, the sample is not reflective of the mechanistic (Burns and Stalker, 1961) or bureaucratic form, which is centered around routinization. The sample holds conditions of routine and conditions of uncertainty, a situation perhaps indicative of a large number of managerial positions. Uncertainty mitigates against role definition although often it creates the need for role definition in order for the organization to cope in an ordered way with the uncertainty. Routine supports role definition to the extent that the routines are available for coping with uncertainty. Role definition reflects differentiation and specialization of labour, and a patterned response to uncertainty and format to organizational action. The modal group of respondents in the present study experience medium job routine, and are at medium and high levels of role definition (Exhibit 3-4). Conditions of uncertainty, routine and role definition are prevalent features of respondents in this study.

## 2. Job Change and Context

Job change is positively associated with job uncertainty and negatively associated with job routine, a reversal of the situation viewed with role definition. The correlation coefficient between job change and job uncertainty is .30, and the correlation coefficient between job change and job routine is -.17. Thus, the more incumbents to jobs are faced with new problems, unforeseen matters and task switches which

EXHIBIT 3-4 CROSS TABULATION OF ROLE DEFINITION AND JOB ROUTINE

		<u>ROLE DEFINITION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB ROUTINE SCALE	LOW	12	29	21	62
	MEDIUM	24	197	185	406
	HIGH	2	36	71	109
<u>COLUMN TOTAL:</u>		38	262	277	577

Technical Note:  $\lambda = 33.7$  4 d of f significance = .00

together or periodically require new skills or fresh knowledge, the more their jobs change through time. Similarly, the more their jobs are standardized in terms of essential technology, the less their jobs change. Job change in the present study reflects modification in the content of the job over a period of time; one year in retrospect and one year in prospect. It implies flexibility in structure (cf. Pugh et al., 1968).

Most respondents - 529 out of 577 - in this study experience medium or high levels of uncertainty (Exhibits 2-6 and 3-5). Similarly most respondents - 515 out of 577 - in the study experience medium or high levels of job routine (Exhibits 2-8 and 3-6). Discussion of job change as an organizational characteristic includes an argument that job change may be initiated for at least two reasons: out of organizational necessity to remain in tune with organizational needs and circumstances which often change, or by choice of the organization, perhaps as a vehicle to break job monotony or routine for incumbents (Chapter II). Evidence in the present study appears to suggest change resulting out of necessity since job uncertainty is positively associated with job change. Perhaps conditions of uncertainty which amount to new problems or unforeseen matters on the job are met in part through job routines and a clear understanding of role participation in the organization. Through time, the uncertainty in certain situations generates a need for new routines which are reflected in job change. Research and development departments often are involved in formulating new or better routines to handle existing and new problem areas (cf. Perrow, 1970, Chapter 3). If job change is a predominant tool used by management to break the routine for workers perhaps by replacing one routine with another or rotating workers between jobs, then a positive association might be expected between job change

EXHIBIT 3-5 CROSS TABULATION OF JOB CHANGE AND JOB UNCERTAINTY

		<u>JOB CHANGE SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB	LOW	26	19	3	48
UNCERTAINTY	MEDIUM	112	223	79	414
SCALE	HIGH	17	60	38	115
<u>COLUMN TOTAL:</u>		155	302	120	577

Technical Note:  $\lambda = 35.0$  4 d of f significance = .00

EXHIBIT 3-6 CROSS TABULATION OF JOB CHANGE AND JOB ROUTINE

		<u>JOB CHANGE SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB	LOW	13	25	24	62
ROUTINE	MEDIUM	102	220	84	406
SCALE	HIGH	40	57	12	109
<u>COLUMN TOTAL:</u>		155	302	120	577

Technical Note:  $\lambda = 21.7$  4 d of f significance = .00



and job routine. Such is not the case in the present study. It appears, in fact, that job routine mitigates against job change just as job uncertainty mitigates against role definition. Routines once formulated and introduced into jobs are not simple to change, and the more routines there are the harder it is to bring forward change. This may be due to simple organizational stationary inertia. Another difficulty may rest with the workers themselves. Tannenbaum (1966) forwards the following example as part of a discussion with respect to change and meeting resistance to change in organizations

"The Harwood Corporation, a manufacturer of pajamas employing a predominantly female work force, normally enjoyed good labour relations, except for a chronic difficulty stemming from the commercial necessity of making frequent changes in its products and in its methods of doing jobs. Employees intensely resisted these changes. Grievances were frequent among those affected by the changes, turnover shot up, efficiency dropped ..." (p. 88).

Tannenbaum further argues that "workers are by no means the only persons who oppose innovation in organizations" (p. 94) but managers as well are often a party to this attitude. No doubt major changes in an organization represent a major commitment for management. It is easier to live with the system that exists than to enter into a new alignment with its (inevitable) concomitant uncertainties. Yet change itself is inevitable (cf. Blau, 1974, p. 72). Lawrence and Lorsch (1969) argue in the following manner:

"Every organization, whether growing or not, is periodically faced with the necessity of bringing about some fundamental changes in the behavior of its members if it is to stay effectively related to its changing environment." (p. 232).

These authors subsequently point to "environmental trends - faster change and greater heterogeneity" (pp. 235-238) which may be interpreted as

presenting the organization with greater uncertainty. Perrow (1972) is not convinced of this trend affecting all organizations.

"To see (large, powerful) organizations as adaptive to a 'turbulent', dynamic, everchanging environment is to indulge in fantasy. The environment of most powerful organizations is well controlled by them, quite stable, and made up of other organizations with similar interests or ones they control." (p. 199).

Some organizations, nonetheless, are faced with environmental uncertainty, and structural modifications and educational programs are two response mechanisms which allow the organization to adjust to this uncertainty (Lawrence and Lorsch, *ibid.*, p. 232). Changes in structure and role expectations represent job change. Educational programs include measures of participative management and group dynamics (cf. Tannenbaum, *ibid.*). Existing routines may temper the changes of success in both, and it is this hurdle amongst others that must be overcome if the organization is to adapt successfully. Where existing routines are retained by staff even in light of job change in role descriptions, the problem of goal displacement is in evidence (cf. Etzioni, 1964, p. 12). Georgopoulos and Tannenbaum as reported by Etzioni (*ibid.*) consider one of the important measures of organizational effectiveness to be "organizational flexibility, defined as the ability to adjust to external or internal change" (p. 18). Job uncertainty may or may not lead to job change. In instances where the uncertainty can be braced with existing routines in the existing role structure, little job change may be necessary or in evidence. In other instances where the uncertainty is perhaps reflective of a need for change, job change is required and introduced in effective organizations. These two different types of situations are possibly borne out by the data in the present study (Exhibit 3-5). The modal group of respondents experience medium job uncertainty, but are dispersed amongst low,

medium and high job change. Respondents with low job uncertainty group in low and medium job change, while respondents with high job uncertainty group in medium and high job change. Predictably, the pattern between job routine and job change is somewhat the reverse (Exhibit 3-6). The modal group of respondents experience medium job routine, and as in the case of job uncertainty, are spread amongst low, medium and high job change. Respondents with low job routine group in medium and high job change, while respondents with high job routine group in low and medium job change.

### 3. Group Cohesion and Context

Group cohesion as a structural characteristic of organizations represents the degree to which members of the respondent's work unit get along, stick together and help each other compared to other work units in the organization. Group cohesion directs attention to the formal work group to which the member belongs, and is affected by formal and informal bonds that the member has within the group (Chapter II). In terms of contextual characteristics, group cohesion is negatively associated with job routine and positively associated with job uncertainty. The correlation coefficients are  $-.12$  and  $.12$  respectively. It appears that the more routine the job, the less the group cohesion; and the more uncertainty in the job, the greater the group cohesion.

Groups represent the first level of interaction between individuals in the work setting. Pugh (1966) has emphasized the importance of the study of groups together with examination of the individual and the organization as a whole under the umbrella of organizational theory (see Appendix B). Much of the literature pertaining to groups deals with group phenomenon from a behavioral perspective. Concern is directed at items as participation, potency, stratification, flexibility, synergy, visudity,

hedonic tone, control, homogeneity, group intimacy, and other areas of group classification (Borgatta, Cottrell and Meeger, 1956, p. 13). Much can be learned from behavioral data, and this knowledge can be put to good use. As Bennis and Shepard (1965) point out, it is critical that groups develop successfully as a prerequisite to solid group action.

"Until the group has developed methods for reducing uncertainty in (areas of internal uncertainty), it cannot reduce uncertainty in other areas, and in its external relations." (p. 80). To complement behavioral data, the sociologist can contribute by way of examining group characteristics amongst different organizational contexts (cf. Perrow, 1970, Chapter 4). This is the orientation of the present study. The group characteristic in focus is group cohesion and the contextual characteristics are job routine and job uncertainty.

Blau (1974) points out that group cohesion is an organizational variable which is often problematic to management.

"But does management's interest in efficient operations necessarily make it interested in the existence of highly integrated work groups? This can by no means be taken for granted, inasmuch as the social cohesion of work groups, which may strengthen the informal enforcement of output restrictions, is not consistently associated with superior performance." (p. 337).

Blau cites Seashore (1954) as a source in this observation, and the echo of Mayo (1949) and the Hawthorne experiments is clear (see Chapter II). When does an organization foster group cohesion, and in what contexts is group cohesion prevalent? To the extent that the present study reflects organizational action, group cohesion is positively associated with job uncertainty and negatively associated with job routine. Conditions of uncertainty perhaps present the incumbent with the need to consult others, an alternative possibly supported by the organization and represented in group cohesion. Sayles and Strauss (1966) have the following examples:

"A new sales clerk may not be sure about how to handle a complicated problem of returning some merchandise. A lab technician may be hesitant about asking his boss to repeat instructions, yet he is afraid that he may ruin the experiment unless he receives additional information. In each case the employee turns to his fellow workers for assistance, often preferring this source of help." (p. 86).

Blau (1974) reports similar activity amongst agents in government offices (pp. 157-169). Montagna (1968) portrays accountants conducting relatively routine work as in an ongoing audit in a certain isolation, but solving problems in groups. Accountants, no matter how routine or nonroutine their work, always have consultation avenues open to them in the event of difficulty or uncertainty. Pfeffer et al. (1976) argue that decision-making processes under circumstances of uncertainty include "the use of particularistic criteria, such as social similarity and social relationships" (p. 230) which may well connote group cohesion. Burns (1963) reports greater interaction amongst personnel under unstable environmental conditions, and a clearer designation of individual tasks under stable environmental conditions. It is evident that findings in the present study have support in the literature.

The cross-tabulation of group cohesion and job uncertainty indicates that respondents with medium and high job uncertainty have medium and high levels of group cohesion (Exhibit 3-7). These data appear to support the hypothesis that job uncertainty and group cohesion go arm in arm as organizational characteristics. Working together as a unit may well provide an organizational response to uncertainty. The cross-tabulation of group cohesion and job routine is not significant at .05, and is therefore omitted from the study.

## EXHIBIT 3-7 CROSS TABULATION OF GROUP COHESION AND JOB UNCERTAINTY

		<u>GROUP COHESION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
<u>JOB UNCERTAINTY SCALE</u>	<u>LOW</u>	1	31	16	48
	<u>MEDIUM</u>	19	253	142	414
	<u>HIGH</u>	4	50	61	115
<u>COLUMN TOTAL:</u>		24	334	219	557

Technical Note:  $\lambda = 14.7$  4 d of f significance = .00

### E. JOB SATISFACTION AND CONTEXT AND STRUCTURE

Job satisfaction as an organizational characteristic represents a general measure of member reaction to a series of aspects of member involvement in the work organization, including satisfaction with the company as a whole, salary, tasks done, personal progress and supervision and a measure of how well the job allows the individual to do things the person is best at (Chapter II). It has undertones of morale as well as satisfaction, and may be regarded as a contrast to member alienation (ibid.). With respect to contextual characteristics, job satisfaction is not strictly orthogonal to job routine, and has a negative correlation coefficient of  $-.29$  with job routine. Alternatively, job satisfaction has a positive correlation coefficient of  $.18$  with job uncertainty (Exhibit 3-1). In terms of structural characteristics, job satisfaction has positive correlation coefficients with each of the structural traits: the coefficients are  $.11$  with role definition,  $.12$  with job change and  $.22$  with group cohesion (ibid.). Job satisfaction is not strictly orthogonal to group cohesion.

Job satisfaction is tempered by job routine and supported by job uncertainty according to findings in the present study. One of the orientations of organizations is the routinization of work within its system (Perrow, 1970, p. 67). Sayles and Strauss (1966) note the implications of routinization of blue collar jobs as it affects job satisfaction:

"Management pays a price for the work simplification, routinization and ease of supervision inherent in mass production work. The cost is largely in terms of apathy and boredom as positive satisfactions are engineered out of jobs." (p. 47).

Similar circumstances arise in "white collar factors" described in the following manner:

"On a single work floor, there may be an acre of desks and work tables stretching as far as the eye can see. Minutely described, mechanized short-cycle jobs, requiring such tools as card punchers or typewriters, are being performed by clerical personnel, all of whom receive very similar wages." (p. 69).

Routine in these instances leads to boredom and monotony in the jobs, which is associated with job dissatisfaction as a central tendency. Davis (1971) argues that "routine, repetitious tasks tend to extinguish the individual" (p. 427). Katz and Kahn (1967) surmise that "studies corroborate one another in demonstrating that the more varied, complex and challenging tasks are higher in worker gratification than skilled, routine jobs" (p. 368). Hulin and Blood (1968) point out that "some workers prefer routine, repetition and specified work methods to change, variety and decision-making" (p. 204). This notion of individual differences is indicated in the following statement by MacKinney et al. (1962):

"It is nearly 50 years since Munsterberg pointed out that there is always someone who is challenged by, and perfectly happy doing, those exceedingly routine jobs that American industry is famous, or infamous, for.

Now this strongly suggests that satisfaction with a job is not merely a function of the job. Rather it is a function of both the man and the job or "... a function of the man-job interaction." (p. 50).

This argument is central to the findings of Hackman and Lawler (1971) and to the debate surrounding any massive redesign of jobs in industry (cf. Work in America) (see Chapter I and Appendix A). Individual differences aside, it is apparent that certain industrial changes including greater "continuous process technologies" and mechanization of work flows to some extent, and shifts towards service industry jobs not reflective of "white



collar factories" are reducing the general level of routine experienced by workers. "Newer technologies do ~~not~~ <sup>live</sup> up to the promise of significantly greater through-the-job satisfactions than many of the more traditional jobs associated with manufacturing." (Sayles and Strauss, 1966, p. 79). The present study indicates a negative association between job routine and job satisfaction. Significantly, however, the majority of respondents experience medium to high levels of routine and are at medium to high levels of job satisfaction (Exhibit 3-8). Even though there is routine in their jobs and the routine tempers job satisfaction, the respondents are generally satisfied in absolute terms. This supports Blauner (1960) who argues in the following manner:

"The studies of job satisfaction ... question the prevailing thesis that most workers in modern society are alienated and estranged. There is a remarkable consistency in the findings that the vast majority of workers in virtually all occupations and industries, are moderately or highly satisfied, rather than dissatisfied with their jobs." (p. 247).

Perhaps at least a portion of the generally high level of satisfaction reported by respondents is due to the second contextual characteristic, job uncertainty, which is positively associated with job satisfaction. Job uncertainty presents the incumbent to a job with a measure of variety which is often cited as a correlate of job satisfaction (see Chapter I). Thus "managers get the same pleasure from the 'fielding' of the everchanging variety of problems that a baseball player gets from a championship game" (Sayles and Strauss, 1966, p. 74). Blauner (1964) provides a ready contrast between job uncertainty and job routine within industry in a discussion of variety and diversity. The element of changing technologies is also evident.

## EXHIBIT 3-8 CROSS TABULATION OF JOB SATISFACTION AND JOB ROUTINE

		<u>JOB SATISFACTION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB ROUTINE SCALE	LOW	1	19	42	62
	MEDIUM	10	219	177	406
	HIGH	10	68	31	109
<u>COLUMN TOTAL:</u>		21	306	250	577

Technical Note:  $\lambda = 33.3$  4 d of f significance = .00

## EXHIBIT 3-9 CROSS TABULATION OF JOB SATISFACTION AND ROLE DEFINITION

		<u>JOB SATISFACTION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
JOB DEFINITION SCALE	LOW	3	20	15	38
	MEDIUM	10	157	95	262
	HIGH	8	129	140	277
<u>COLUMN TOTAL:</u>		21	306	250	577

Technical Note:  $\lambda = 13.3$  4 dof f significance = .01

"The extreme rationalization and division of labour in the textile mill and on the automotive assembly line result in jobs which are the ultimate in repetition and routine. The variety of jobs of chemical workers in a continuous process plant is considerably greater. For maintenance workers, who make up 40 percent of the plant force, the very nature of their work disallows a repetitive cycle of operations, except for those tasks involved in regular prevention checks of equipment. Scheduling of maintenance work is determined by what piece of equipment breaks down, and there is obviously no way to standardize this." (p. 118).

No doubt the chemical workers have an element of routine in their work, but they also have a measure of uncertainty. This uncertainty which presents itself in the form of machine breakdowns, or other new or unforeseen problems, represents variety in the job. The variety is associated with a certain pleasure in the job site. Dealing with uncertainty presupposes a degree of discretion and responsibility on the part of the job-holder. Blau (1974) points out that "there is a fair amount of evidence that the exercise of discretion and responsibility increases satisfaction at work" (p. 63). This scenario shows the inherent value in treating job uncertainty and job routine as separate organizational characteristics. The general impression derived from the data in the present study is that job satisfaction is supported by job uncertainty and tempered by job routine. Combinations are pursued in the following chapters.

The positive association between job satisfaction and role definition suggests that respondents whose roles are more clearly delineated and confined experience higher levels of satisfaction. The cross-tabulation of job satisfaction and role definition reinforces the correlation coefficient of .11 (Exhibit 3-9). Stogdill (1966) argues that one prerequisite of morale in organizations is "a clear definition of roles, which permits each member to know what he is expected to do" (p. 38). There is a

concomitant requirement for enough latitude that the member can perform his job "with confidence and a feeling of accomplishment" (ibid.). Some role definition appears desirable, but it cannot become too restrictive. As a morale booster, the member must have a clear understanding of his part in the total system. Kahn et al. (1964) point out in a similar way that "ambiguity about role expectations tends to lead to dissatisfaction with the job in general and to feelings of futility", (p. 86). Again, role definition is related to job satisfaction, as in the present study.

Apparent contrary evidence exists. Aiken and Hage (1966) in a study of alienation amongst professionals in sixteen health and welfare agencies found alienation from work to be positively associated with formalization measures of job codification and rule observation, and with centralization measures of hierarchy of authority and absence of participation in decision-making. It may well be that these indicators are reflective of the degree of latitude given to incumbents in jobs, rather than to the notion of role definition within a differentiated structure. It is likely that this latter quality is being tapped in the present study which asks how precisely responsibility and decision areas are laid down for respondents (Exhibit 2-7). Aiken and Hage, on the other hand, appear to pursue qualities of these areas which provides a more in-depth view of the roles themselves. Thus, job codification, for example, is not simply the presence or absence of a job description but "reflects the degree to which job incumbents must consult roles in fulfilling professional responsibilities" (p. 502). In this sense, the Aiken and Hage paper may provide a logical extension of the present study. Their general finding is supported by Blauner (1960) who states that as a generalization "the greater the degree of control that a worker has (either as a single dimension or as a total composite) the

greater his job satisfaction" (p. 234). Neither study seems to preclude an understanding of role and thus the element of role definition as a part of organizations which have satisfied workers. Their attention is directed at particular qualities of the role structure, qualities which have no direct counterpart in the present study.

Job change represents content modification over time in the job occupied by respondents, and has a positive correlation coefficient of .12 with job satisfaction (Exhibit 3-1). Higher levels of job change are typically associated with higher levels of job satisfaction (Exhibit 3-10). Previous analysis has shown that job routine mitigates against job change, while job uncertainty is associated with job change. Further, respondents in the present study have a negative bond between job routine and job satisfaction and a positive tie between job uncertainty and job satisfaction. The positive correlation coefficient between job change and job satisfaction may reflect an affinity within the respondent group to changes in job routines over time which serve to introduce some variety into their jobs, even though they respond negatively to these routines in practice. Thus, the present cohort is not reflective of the workers in Harwood reported by Lannenbach (1966) and cited earlier, who resisted changes in routine. Respondents in the present study appear to welcome change in their jobs. Existing routines may still dampen the likelihood of change, and organizational uncertainty may still generate the need for change, but the (eventual) adoption of change is associated with increased job satisfaction.

Hage (1965) treats organizational adaptiveness or flexibility as an organizational end which is measured in terms of the number of new programs introduced to an organization over the course of a year, or the number of new techniques brought forward in an organization over the course of the

EXHIBIT 3-10 CROSS TABULATION OF JOB SATISFACTION AND JOB CHANGE

		<u>JOB SATISFACTION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
<u>JOB CHANGE SCALE</u>	<u>LOW</u>	11	85	59	155
	<u>MEDIUM</u>	8	166	128	302
	<u>HIGH</u>	2	55	63	120
<u>COLUMN TOTAL:</u>		21	306	250	577

Technical Note:  $\lambda = 12.1$  4 d of f significance = .02

EXHIBIT 3-11 CROSS TABULATION OF JOB SATISFACTION AND GROUP COHESION

		<u>JOB SATISFACTION SCALE</u>			<u>ROW</u>
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>	<u>TOTAL</u>
(Number of Respondents)					
<u>JOB COHESION SCALE</u>	<u>LOW</u>	6	13	5	24
	<u>MEDIUM</u>	14	184	136	334
	<u>HIGH</u>	1	109	109	219
<u>COLUMN TOTAL:</u>		21	306	250	577

Technical Note:  $\lambda = 42.6$  4 d of f significance = .00

year (p. 265). As an organizational end or performance outcome (cf. Pugh et al., 1963; Hage and Aiken, 1967) the concept of adaptiveness and its operational measures are viewed as a possible consequence of organizational means or structure. In this sense, certain structural sets and conditions are related to certain ends or performance outcomes (cf. Chapter I). Performance outcomes may, however, be related to one another as an additional source of organizational insight. In this view, Hage and Aiken (1967) found a positive correlation between rate of program change and job satisfaction in sixteen social welfare agencies (p. 484). Relating this finding to the present study, it seems likely that program change would bear out in job change as a structural construct in organizations. Program change is more prominent in decentralized, more complex and less formalized settings (ibid.). The program change itself may be perceived by incumbents as a job change, a perception that management perhaps would not take exception to in general, given the decentralized nature of the structure and the high professional content of the work force. Professionals in professional organizations are often given more latitude in defining and relating to their jobs than are professionals in non-professional organizations which adhere more to bureaucratic principles (cf. Etzioni, 1964, Chapter 9). The Hage and Aiken data are then interpreted as supportive of the general findings in the present study that job change and job satisfaction are positively correlated.

Group cohesion and job satisfaction have a positive correlation coefficient of .22 (Exhibit 3-1) and medium to high levels of group cohesion are associated with medium to high levels of job satisfaction (Exhibit 3-11). It appears in general that respondents experience greater job satisfaction when they perceive themselves to be in work units that are characterized by

the members getting along, sticking together and helping each other relative to other work units in the operation. Blauner (1960) argues that "there is much evidence to support the proposition that the greater the extent to which workers are members of integrated work teams on the job, the higher the level of job satisfaction" (p. 239). Triandis (1966) cites Seashore (1954) as reporting "that high cohesiveness was related to less job-related anxiety" (p. 74) which probably is reflected in increased job satisfaction. Stogdill (1966) argues that job satisfaction and group cohesion are directly related (p. 36). Hackman and Lawler (1971) report positive correlations between general job satisfaction and two group measures of dealing with others and friendship opportunities (p. 229). Work in America (1973) has the following passage within its summary of the nature of work dissatisfaction in American industry:

"Most people are more satisfied to work as members of a group than in isolation. Workers prefer jobs that permit interaction and are more likely to quit jobs that prevent congenial peer relationships." (p. 95).

Burns and Stalker (1961) associate the worker in isolation as parcel to the mechanistic form of organization, and the worker as part of interactive groups as central to organic organizations. Hage (1965) in turn ties low job satisfaction to the mechanistic model, and high job satisfaction to the organic (or organismic) model (p. 272). Technological imperative in the interests of productivity may restrict the encouragement or development of groups and group cohesion, but generally speaking, it appears persons are more satisfied when working in cohesive groups.



## CHAPTER IV

## A PERSPECTIVE ON JOB CONTEXT AND HIGHER ORDER

## RELATIONSHIPS AMONGST ORGANIZATIONAL CHARACTERISTICS

A. A PERSPECTIVE ON JOB CONTEXT

The contextual characteristics of job routine and job uncertainty represent two aspects of the technology of jobs in the organization. Technology in this sense represents the flow of activity in the job commencing with a stimulus, moving through a (potential) stage of problem-solving and concluding with a response. Job routine relates to overall standardization within this flow. Job uncertainty represents the incidence of new problems or unforeseen matters and a constant switching between things as part of this technology, which together or periodically require the job incumbent to develop new skills or acquire fresh knowledge. Jobs may be more or less routinized at any and all stages of the technology and the level of overall routinization is indicated in the job routine characteristic. Problems, unforeseen matters, task switching and skill upgrading can similarly arise at any and all stages of the technology, and the general level of this circumstance is indicated in the job uncertainty characteristic. Together, job routine and job uncertainty represent the context of the job.

In order to examine the relationship of these contextual characteristics to each other and to structural and performance characteristics, two sets of job routine and job uncertainty scales are developed. The first set, designated as set A, is a priori in nature, and is formulated on the basis of relative scale score levels in the organizational characteristic. Scores in both job routine and job uncertainty are in the

range of 4 to 20 (Exhibits 4-1 and 4-2). Respondents are grouped as low in each characteristic in the score range 4-8; as medium in the score range 9-15 and as high in the score range 16-20. This distribution is a priori in the sense that the ranges are imposed on the data. Respondents measuring low in the a priori scale are judged as low because they fall within the bottom level of the total score range. Similarly, respondents measuring medium in the a priori scale are classified medium because they fall within the middle level of the total score range; and respondents measuring high are in the top end of the total score range. The advantage of this scale is that it reflects relative positions on the scale itself. Thus a respondent is judged not in terms of the general response to the characteristic, and therefore, is not low, medium or high because of the way the person matches against other respondents, but the respondent is classified in terms of the scale itself. The strength in this approach hinges on the accuracy of the survey instrument to distinguish amongst low, medium and high in any true sense of relative positions. To the extent that this may not be the case, this approach has an inherent disadvantage. No data were collected to validate the a priori scales. The original scales, however, are drawn from acknowledged experts in empirical research, and the mid points are suggestive of moderate levels of the characteristics in focus. For these reasons, a certain confidence can be placed in the a priori scales to reflect relative positions of respondents on the characteristics measured.

In order to provide depth to the initial profile and to circumvent hesitations in the a priori scales, a second set of scale values is constructed on an a posteriori or empirical basis. Respondents in both job routine and job uncertainty are divided into three groups roughly equivalent

EXHIBIT 4-1 JOB ROUTINE SCALES

Job Routine Characteristic	A Priori Job Routine Scales - Set A. Scales Based on Relative Scale Score Levels			A Posteriori Job Routine Scales - Set B. Scales Based on Relative Scale Score Levels					
	Score	Respondents		Score	Respondents		Score	Respondents	
	No.	(%)	(Cum %)	No.	(%)	(Cum %)	No.	(%)	(Cum %)
	4	2	.3						
	5	21	.3						
	6	11	1.9	4-8	62	10.7	4-11	213	36.9
		21	3.6						
	8	26	4.5						
	9	42	7.3						
	10	57	9.9						
	11	52	9.0						
	12	87	15.1	9-15	406	70.4			
	13	63	10.9				12-14	207	35.9
	14	57	9.9						
	15	48	8.3						
	16	39	6.8						
	17	32	5.5				15-20	157	27.2
	18	21	3.6						
	19	10	1.7	16-20	109	18.9			
	20	7	1.2						
			100.0						
		577	100.0						

Low Job Routine

Medium Job Routine

High Job Routine



to equal numbers of respondents. Unfortunately, large numbers of respondents at split points in the sample make equal groupings impossible. Respondents measuring low on the a posteriori scale are low in the sense that they fall into the bottom group of respondents of the total score range. This represents the score range 4-11 in each instance, and represents 36.9% of the respondents in job routine, and 35.2% of the respondents in job uncertainty. Respondents measuring medium on the a posteriori scale are the middle group of respondents in the range of response. In each case, this represents the score range of 12-14. Strictly speaking, it may be more accurate in the case of job routine to have the split at 13, since the difference between 62.9% and 66.7% is less than the difference between 66.7% and 72.8%, and ideally the split is made at 66.7%. However, a split at 62.9% of the cumulative percentage on job routine would subsequently compare to a split at 71.4% on the job uncertainty scale. This large difference between scales would result in substantially more respondents falling into medium job uncertainty than medium job routine, and would be the result of a 2.3% difference in the job routine response levels. It is therefore decided to treat both distributions in a like manner, and have the same score range for each. This amounts to the next 35.9% of the job routine respondents, and the next 36.2% of the job uncertainty respondents. Since these two groups are almost the same in percentage terms, a further defense is mustered for the split at 14 rather than 13 in the job routine scale. The group of respondents at the top end of the respondent range are designated as high in terms of routine and uncertainty on the a posteriori scale, and fall in the range 15-20 in each instance. This represents 27.2% of the job routine characteristic and 28.6% of the job uncertainty characteristic. A more in-depth note on scales appears as

part of Chapter II. The job routine and job uncertainty scales are provided in Exhibits 4-1 and 4-2 respectively.

The relationship between job routine and job uncertainty appears complex. Hickson et al. (1971) point out that "most studies that refer to uncertainty contrast it with routinization, the prior prescription of recurrent task activities" (p. 546). In the present study, the negative correlation coefficient of  $-0.40$  between the two characteristics supports this contrast. A complete contrast would suggest that in general, high job routine would be associated with low job uncertainty, medium job routine would be associated with medium job uncertainty, and low job routine would be associated with high job uncertainty. As evidenced in Exhibits 4-3 and 4-4, this is not found to hold in the present study. Eight points of deviation from a complete contrast occur, as noted in Exhibit 4-4. The table is referenced later in the chapter in relating context to all of context, structure and job satisfaction in the work place. Perhaps the complexity of the relationship is revealed in the basis of routine and uncertainty as organizational characteristics.

Organizational design and action can be analyzed in terms of organizations coming to grips with conditions of uncertainty (Thompson, 1967) and formulating routines with which to proceed. Uncertainty may be generated as a consequence of the environment in which the organization is operating, or within the organization's essential technology (ibid., p. 1). Both may play a role, and indeed, one may be linked to the other. Technology in this sense represents the transformation of organizational inputs into outputs. Hickson et al. (1969) distinguish amongst operations, materials, and knowledge technologies. Scott (1975) examines each of these divisions in terms of emphasis on inputs, throughputs and outputs, and

EXHIBIT 4-3 RESPONDENTS GROUPED IN TERMS OF LEVELS OF  
JOB ROUTINE AND JOB UNCERTAINTY

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS (A Priori Scales)

		LEVEL OF JOB ROUTINE			ROW TOTAL
		HIGH	MEDIUM	LOW	
LEVEL OF JOB UNCERTAINTY	LOW	20	26	2	48
	MEDIUM	84	300	30	414
	HIGH	5	80	30	115
<u>COLUMN TOTAL:</u>		109	406	62	577

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS (A Posteriori Scales)

		LEVEL OF JOB ROUTINE			ROW TOTAL
		HIGH	MEDIUM	LOW	
LEVEL OF JOB UNCERTAINTY	LOW	87	75	41	203
	MEDIUM	51	78	80	209
	HIGH	19	59	92	165
<u>COLUMN TOTAL:</u>		157	207	213	577

EXHIBIT 4-4 MODAL RELATIONSHIPS BETWEEN LEVELS OF JOB ROUTINE AND JOB UNCERTAINTY USING A PRIORI AND A POSTERIORI SCALE SETS

A. LEVELS OF JOB ROUTINE AND MATCHING LEVELS OF JOB UNCERTAINTY FOR MODAL GROUPS

One-to-One Relationship Complete Contrast		Set A - Scales Based on Relative Scale Score Levels (A Priori Scales)		Set B - Scales Based on Relative Response Score Levels (A Posteriori Scale)	
Job Routine	Job Uncertainty	Job Routine	Job Uncertainty	Job Routine	Job Uncertainty
1. High	- Low	High	- Medium*	High	- Low
2. Medium	- Medium	Medium	- Medium	Medium	- Low-Medium*
3. Low	- High	Low	- Medium-high*	Low	- Medium-high

B. LEVELS OF JOB UNCERTAINTY AND MATCHING LEVELS OF JOB ROUTINE FOR MODAL GROUPS

One-to-One Relationship Complete Contrast		Set A - Scales Based on Relative Scale Score Levels (A Priori Scales)		Set B - Scales Based on Relative Response Score Levels (A Posteriori Scales)	
Job Uncertainty	Job Routine	Job Uncertainty	Job Routine	Job Uncertainty	Job Routine
4. Low	- High	Low	- Medium-high*	Low	- Medium-high
5. Medium	- Medium	Medium	- Medium*	Medium	- Low-Medium
6. High	- Low	High	- Medium*	High	- Low

\* point of deviation from complete contrast



categorizes areas of research and analysis in terms of the nine resulting groupings. Job technology in the present study refers to the stimulus - problem-solving - response sequence which is central to jobs as they exist (cf. Perrow, 1970; March and Simon, 1958). Two aspects of the job technology are the degree of routine which is prevalent and the element of uncertainty present. Both aspects are affected by the materials, operations and knowledge technologies in practice in organizations. Following Scott (1975), the variability of stimuli or number of exceptions encountered in the job (cf. Perrow, 1970) is representative of materials technology, and affects existing levels of routine and uncertainty in the job. Similarly, regulating environmental inputs (cf. Thompson, 1967), integrating workflow (cf. Pugh *et al.* 1969) or working in different levels of technical complexity (cf. Woodward, 1965) is representative of operations technology, and affects existing levels of routine and uncertainty in the job. The Hage and Aiken (1968, 1969) measure of job routine is classified as operations technology according to Scott (*ibid.*). Thirdly, the notion of analyzability of search (cf. Perrow, 1970) is representative of knowledge technology, and affects routine and uncertainty in the job, perhaps most directly in the problem-solving stage as outlined by March and Simon (1958). Thus the measures of job technology employed and operationalized in the present study represent general conditions of routine and uncertainty experienced in the job, and are a function of different aspects of the materials, operations and knowledge technologies practiced by organizations. It is not unexpected that their relationship would be complex.

Differentiation amongst jobs in line with specialization of labour precepts and integration of jobs and parts of the organization into a functional whole in line with organizational goals connotes organizational

structure. It includes measures of role definition, job change and group cohesion as operationalized in the present study. In line with Pugh et al. (1969) the organizational structure in practice may have significant associations with the context in which it is developed (see Chapter I). Context to these researchers is viewed in terms of elements as origin, ownership and control, size, charter, technology, location, resources and dependence (p. 63). Technology as measured in terms of workflow integration proves to have decided associations with the structural factors of structuring of activities, concentration of authority and line control of workflow. It is appropriate in the present study to probe relationships in evidence amongst the contextual characteristics of job routine and job uncertainty, and the structural characteristics of role definition, job change and group cohesion. Different contextual (or job technology) combinations, for example, may be disposed to certain structural conditions, while other contextual combinations may be related to alternative structural conditions. Hall (1972) argues in the following way:

"If administrative and organizational procedures are highly nonroutine and are laden with problems and new issues, a less complex, less formalized system would be expected." (p. 120).

The context outlined involves low job routine and high job uncertainty as measured in the present study, and Hall suggests that this context or job technology setting is probably associated with a less complex, less formalized structure. This may be indicated in low role definition, high job change and high group cohesion in the present study. In a similar vein, bonds of association between individual contextual characteristics and structural characteristics are appropriate to study. Further, one of the essential outcomes of the work situation is job satisfaction.

The contextual and structural characteristics of a job amongst other factors come to bear on job satisfaction realized in the job site. The orientation of examination is therefore extended to include the study of bonds of association between job satisfaction and contextual and structural characteristics, particularly in different contexts or job technology settings and in terms of specific structural characteristics.

B. INTRODUCTORY NOTE TO HIGHER ORDER RELATIONSHIPS AMONGST ORGANIZATIONAL CHARACTERISTICS

Zero-order correlation coefficients between two organizational characteristics provide an overall summary of fundamental relationships between characteristics, but hide the underlying dynamics amongst a number of organizational characteristics (Heydebrand, 1973). It is therefore desirable to move beyond simple intercorrelations by controlling for other specific characteristics which bear on fundamental relationships to uncover more specific information about relationships amongst organizational characteristics. The use of controls implies higher order relationships. For example, in the present study there is a zero-order correlation coefficient of  $-.13$  between role definition, a structural characteristic, and job uncertainty, a contextual characteristic. At the same time, there is a positive correlation coefficient of  $.28$  between role definition and job routine, the other contextual characteristic. It is appropriate to ask whether these two intercorrelations are independent of movements in the contrasting contextual characteristic, or whether the base findings actually disappear when the other contextual characteristic is considered and controlled. When one characteristic is controlled in this manner, and the subsequent

relationships are compiled and examined, the exercise represents the development of higher order relationships.

Statistically, higher order correlation coefficients may be derived through partial correlation techniques. Partial correlation serves in one sense to remove the effect of a control characteristic from the associations between two other organizational characteristics. Following Nie et al. (1975), job routine may be controlled in studying the relationship between role definition and job uncertainty by formulating a "predicted" series of values of role definition and job uncertainty based on their correlation with job routine, subtracting the "actual" series of values from the predicted values, and then compiling a correlation coefficient based on the "residual" value series of role definition and job uncertainty. These residuals are devoid of the effect of job routine, and the correlation coefficient between them represents the partial correlation coefficient between role definition and job uncertainty controlling for job routine. If the partial correlation is the same as the zero-order or fundamental correlation, then it might be said that the zero-order correlation is independent of the effect of the control characteristic. Changes in the correlation coefficient might in turn be explained in terms of control characteristics and the theoretical base of the study.

Heydebrand and Noell (1973) used control procedures on selected variables in their study of task structure and innovation in professional organizations. In terms of the contextual variable size and its effect on the innovation in organizations, the authors note that "the simple correlation  $f$  ( $r = .32$ ) between size and innovativeness does not accurately portray the slightly curvilinear relationship between the two variables that indicates that R & D projects occur most frequently in moderately-

sized agencies, rather than in very small or very large ones" (p. 317). Conceptually, this demonstrates the value of examining correlation coefficients within levels of contextual variables, a procedure adopted in the present paper. The authors continue their study of size in the following manner:

"Secondly, size is an important determinant of task complexity, that is the number of branches and the number of programs ... The effect of size on innovativeness is, therefore, an indirect one since it is mediated by task structure variables. Once these variables are controlled, the effect of size disappears and becomes even slightly negative suggesting that large agencies are somewhat less likely to innovate than smaller and medium-sized agencies." (pp. 317-318).

Thus, it is apparent that all variables might be studied in terms of one another within a coordinated analytical framework in order to uncover the true dynamics of the organizational characteristics in focus. Control procedures provide a statistical tool which assists in the process. This orientation to the present study is similarly adopted.

Aiken and Hage employ partial correlations extensively in their research. In their study of alienation (1966) they point out in support of multivariate analysis that "one of the problems confronting the social scientists is determining the effect of a variable independently of all others" (p. 504). The use of partial correlation techniques allowed them to argue in relating two measures of centralization to alienation that "participation in decision-making is more closely associated with work alienation than hierarchy of authority when the effect of each is controlled" (ibid.). Similarly, by controlling both measures of centralization and the job codification measure of formalization, the researchers were able to isolate the element of rule observation as being the singular most significant factor in influencing alienation from expressive relations.

"Among the four structural properties examined in this analysis, rule observation still has the strongest relationship with alienation from expressive relations when the effect of other variables is controlled." (p. 506).

An alternative procedure which may be used to control certain variables while studying the relationships amongst a number of organizational characteristics involves regression techniques. Blau (1974) discusses the usage of control procedures and regression analysis in contrast to the usage of contingency tables:

"To discern how some conditions in organizations influence others requires not only data on many cases ... but also controlling various correlates of a given condition to abstract its particular influence on another ... Whereas contingency tables make the interaction effects that reflect the distinct significance of the constellations of several organizational attributes apparent, interaction effects are easily overlooked and must be specifically searched for in regression analysis." (pp. 217-218).

The results of regression techniques are comparable to the usage of partial correlation techniques in practice as an exercise in developing higher order relationships amongst organizational characteristics (cf. Aiken and Hage, 1966). Similarly, Blau's critique of contingency tables, particularly evident in restricted sample sizes, is comparable to the difficulties perceived in the analysis of zero-order correlation coefficients.

The focus of attention in the present study is relationships amongst contextual, structural and performance characteristics of organizations, with particular attention accorded to job satisfaction as a performance characteristic. Central concern is directed to relationships between organizational characteristics in different contexts. In this sense, job routine and job uncertainty are controlled in developing an understanding

of organizational context, structure and job satisfaction. Two procedures are used. The first involves partial correlation techniques. The second procedure involves the compilation of zero-order correlation coefficients within specific levels of job routine and job uncertainty, and the application of partial correlation to these levels of routine and uncertainty. To simplify analysis, the exhibits are constructed in such a manner that only statistically significant coefficients are shown. Further discussion of correlation techniques appears in Chapter II.

### C. GENERAL CONTROLS ON CONTEXTUAL CHARACTERISTICS

In order to examine relationships designated as fundamental (Chapter III) in terms of bonds of association with contextual conditions, while holding other contextual conditions constant, and in order to uncover the apparent independence or dependence of organizational relationships established at the zero-order level of correlation, the effects of job routine and job uncertainty on the basic correlation matrix are removed separately, resulting in two series of first-order correlations, and together, resulting in a second-order correlation series. Results of this procedure appear in Exhibit 4-5.

Partial correlation coefficients between structural characteristics are insignificant when contextual characteristics are controlled. It seems that role definition and job change, which are negatively related at the zero-order level, do not have patterned associations when job routine and job uncertainty are removed from the data. Perhaps jobs can be and are perceived as changing regardless of the degree of role definition in place, when job routine and job uncertainty are held constant. To the extent that these characteristics both enter as variables, however,

**EXHIBIT 4-5 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN ORGANIZATION CHARACTERISTICS WITHOUT AND WITH CONTROLS ON CONTEXTUAL CHARACTERISTICS**

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>FUNDAMENTAL RELATIONSHIPS(1)</u>	<u>FIRST ORDER CORRELATION CONTROLLING FOR JOB ROUTINE JOB UNCERTAINTY</u>	<u>SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND JOB UNCERTAINTY</u>
---------------------------------------	-------------------------------------	----------------------------------------------------------------------------	-----------------------------------------------------------------------------

**A. CONTEXT**

1. Job Routine - Job Uncertainty      -.40      \*

**B. STRUCTURE**

2. Role Definition - Job Change      -.08  
 3. Role Definition - Group Cohesion  
 4. Job Change - Group Cohesion

**C. STRUCTURE AND CONTEXT**

5. Role Definition - Job Routine      .28  
 6. Role Definition - Job Uncertainty      -.13  
 7. Job Change - Job Routine      -.17  
 8. Job Change - Job Uncertainty      .30  
 9. Group Cohesion - Job Routine      -.12  
 10. Group Cohesion - Job Uncertainty      .12

**D. JOB SATISFACTION**

11. Job Satisfaction - Job Routine      -.29  
 12. Job Satisfaction - Job Uncertainty      .18  
 13. Job Satisfaction - Role Definition      .11  
 14. Job Satisfaction - Job Change      .12  
 15. Job Satisfaction - Group Cohesion      .22

(1) as in Exhibit 3-1 and discussed in Chapter III.

Technical Note: All coefficients significant at .05 level.  
 \* coefficient removed by control procedure



the more jobs are defined, the less likely job change appears to be. As an additional note in this relationship, a partial correlation coefficient of  $-.08$  appears between role definition and job change when group cohesion is controlled, suggesting that the structural linkage is independent of the third structural characteristic in the study. When all of job routine, job uncertainty and group cohesion are controlled, no intercorrelation between role definition and group cohesion appears, as expected.

Partial correlation coefficients between role definition and job routine while controlling job uncertainty, and between job change and job uncertainty while controlling job routine, confirm the positive associations in each of these sets of contextual and structural characteristics which lack orthogonality in the factor analysis (Chapter II). It appears that higher levels of job routine are associated with higher levels of role definition, independent of job uncertainty encountered; and higher levels of job uncertainty are associated with higher levels of job change, independent of job routine encountered. The partial correlation coefficients are marginally lower than the zero-order coefficients, but the general strength of association appears in tact.

The relationships between group cohesion and the contextual characteristics are confirmed as somewhat independent of the effects of the opposing contextual characteristic, although in both instances the strength of association is reduced. Thus, group cohesion and job routine are negatively associated, while controlling job uncertainty, and group cohesion and job uncertainty are positively associated while controlling job routine. On the other hand, negative relationships between role definition and job uncertainty and job change and job routine both disappear when the opposing contextual characteristic is controlled. These latter relationships are

therefore not independent of the effects of the other contextual characteristic. It may be, for example, that job change and job routine are not negatively related in certain levels of uncertainty, while they are in other levels of uncertainty. This notion is pursued in the next section of the chapter. Overall, it appears that both contextual characteristics bear on the relationships between structural and contextual characteristics except in the cases of role definition and job routine and job change and job uncertainty, which are both positively and independently associated with each other. The ties between group cohesion and contextual characteristics are somewhat but not totally independent of the opposing contextual condition.

The partial correlation coefficient between job satisfaction and job routine controlling job uncertainty suggests an independent negative relationship between these characteristics, although the strength of association is somewhat reduced. The partial correlation coefficient is  $-.24$  compared to the zero-order coefficient of  $-.29$ . On the other hand, the positive association between job satisfaction and job uncertainty, reflected in a correlation coefficient of  $.18$  at the zero-order level, is reduced to  $.07$  when job routine is controlled. Apparently job routine affects this relationship, and perhaps certain levels of routine are not marked by increased satisfaction with increased uncertainty. This point is pursued in the next section of the chapter.

Relationships between job satisfaction and each of the structural characteristics are positive at the zero-order level of correlation and remain positive when job routine and job uncertainty are partialled out separately. In the case of role definition and job satisfaction, the partial correlation coefficient is  $.21$  when job routine is controlled and

.14 when job uncertainty is controlled, both higher than .11 at the zero-order level. Respondents may well be favourably disposed to higher levels of role definition, particularly in increasing levels of uncertainty, when job routine is held constant. Role definition provides the incumbent to a job with a knowledge of what the job encompasses and what the incumbent's role is to perform. Apparently, persons are not adverse to role definition. Simon (1960) argues in the following way:

"Nor does creativity flourish in completely unstructured situations. The almost unanimous testimony of creative artists and scientists is that the first task is to impose limits on the situation if the limits are not already given." (p. 201).

Role definition serves as a structural measure to impose these limits. People respond favourably to some job uncertainty and some job routine (ibid.). These are contextual aspects of the job. Within the structure of the organization, people also may well respond favourably to a level of role definition. This allows them to know what is expected of them and what authority they have. Increased uncertainty may generate the need for increased role definition when routine is held constant. Persons respond favourably to this situation. It is important to recall that role definition represents a condition of general structure and not qualities of the structure.

Job satisfaction and job change are positively associated at the zero-order level and at each of the first-order levels of correlation. The partial correlation coefficients are both somewhat lower than the basic intercorrelation of .11, however, suggesting that the levels of the opposing contextual characteristic may have an impact on fundamental relationships between job satisfaction and job change while controlling for one contextual condition. The positive association between job

satisfaction and group cohesion remains at much the same level when either of job routine or job uncertainty is removed from the data. This is expected since the characteristics are not strictly orthogonal in the factor analysis, and an independent association may therefore be anticipated.

Job satisfaction is positively associated with both role definition and group cohesion when both contextual characteristics are controlled, whereas the relationship between job satisfaction and job change disappears. It appears that respondents like to know what is expected of them and to work in groups, independent of job contexts. Levels of routine and uncertainty, however, bear on the bond between job satisfaction and job change. It is appropriate to ask whether or not these associations are independent of other structural conditions. A series of third and fourth level correlation coefficients has been constructed between job satisfaction and the structural characteristics, holding specific structural aspects constant with context and thereby isolating independent associations. This series appears as Exhibit 4-6. The positive associations between job satisfaction and both role definition and group cohesion are confirmed as independent relationships. When all of context, role definition and group cohesion are controlled, a positive partial correlation coefficient of .07 is found between job satisfaction and job change (column 5). This relationship disappears when only group cohesion is controlled (column 3) with context, but remains steady when only role definition is controlled (column 1) with context. Apparently the level of group cohesion and job context experienced affects the relationship between job satisfaction and job change. This may suggest that respondents might favour group cohesion as a suitable surrogate for job change in certain instances as a structural source of job satisfaction. This tie becomes more evident later in this chapter.

EXHIBIT 4-6 HIGHER ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND STRUCTURAL CHARACTERISTICS  
WITH CONTROLS ON CONTEXTUAL CHARACTERISTICS AND  
SPECIFIED STRUCTURAL CHARACTERISTICS

A. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE, JOB  
UNCERTAINTY AND SPECIFIED STRUCTURAL CHARACTERISTICS.

	(1) Role Definition	(2) Job Change	(3) Group Cohesion
13. Job Satisfaction - Role Definition	*	.22	.22
14. Job Satisfaction - Job Change	.07	*	
15. Job Satisfaction - Group Cohesion	.19	.19	*

FOURTH ORDER CORRELATION CONTROLLING JOB ROUTINE, JOB  
UNCERTAINTY AND SPECIFIED STRUCTURAL CHARACTERISTICS.

	(4) Role Definition and Job Change	(5) Role Definition and Group Cohesion	(6) Job Change and Group Cohesion
13. Job Satisfaction - Role Definition	*	*	.22
14. Job Satisfaction - Role Definition	*	.07	*
15. Job Satisfaction - Group Cohesion	.19	*	*

Technical Note: All coefficients significant at .05 level.  
\* coefficient removed by control procedure.

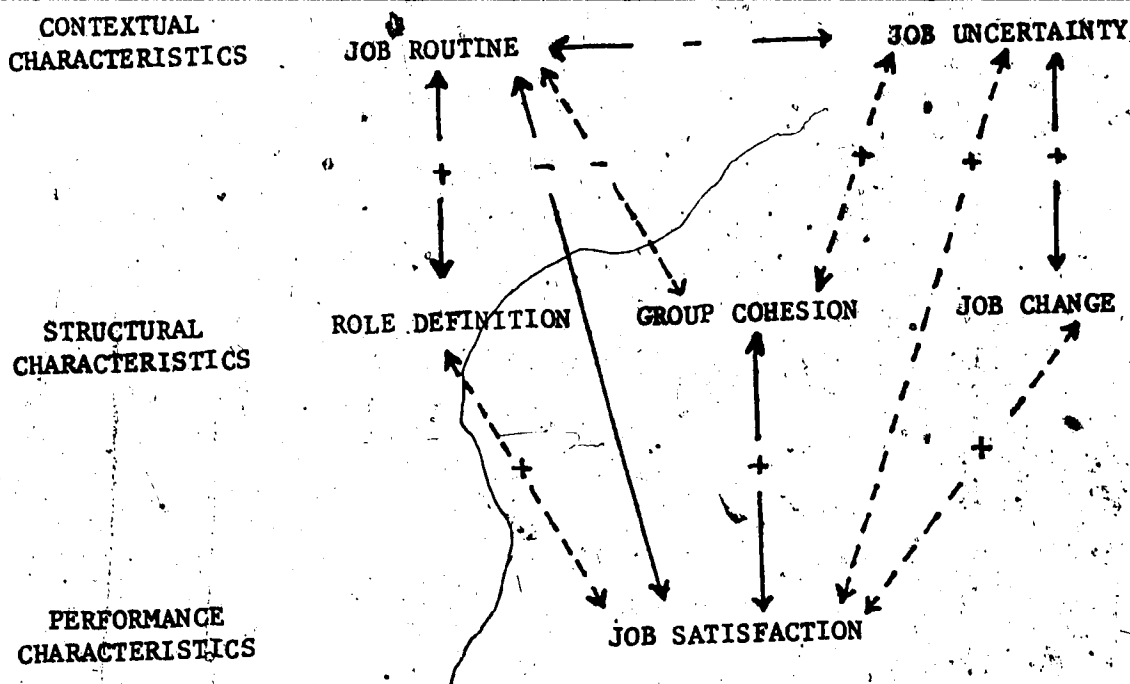
In summary, introducing controls on the contextual characteristics to the basic intercorrelations provides some information on relationships amongst organizational characteristics. The sets of characteristics which lack orthogonality in the study are confirmed as independent of context, although fundamental correlation coefficients are reduced in strength when one of the contextual characteristics is controlled. It appears that both job routine and job uncertainty bear on a number of the relationships in the organizational characteristics in general. Structural characteristics remain independent of one another when context is controlled, and all are positively and generally independently associated with job satisfaction. A chart indicating a general interpretation of these findings appears as Exhibit 4-7:

D. RELATIONSHIPS AMONGST ORGANIZATIONAL CHARACTERISTICS WITHIN LEVELS OF JOB ROUTINE AND JOB UNCERTAINTY

1. Prelude to A Priori Scale Data

The contextual characteristics of job routine and job uncertainty are not representative of a simple one-to-one contrasting relationship. Further, evidence suggests that certain of the relationships amongst contextual, structural and performance characteristics are independent of conditions in the contrasting contextual measure, while other relationships are affected by both contextual characteristics. Fundamental intercorrelations for the respondent group as a whole may vary amongst levels of job routine and job uncertainty. Univariate one-way analysis of variance procedures on a priori scales indicate that the mean values of organizational characteristics are generally significantly different

EXHIBIT 4-7 ORGANIZATIONAL CHARACTERISTICS IN TERMS OF CONTEXT, STRUCTURE AND PERFORMANCE: AN UPDATED CHART



- ↔ Sets of characteristics which lack orthogonality
- ↔ Relationships apparent in higher order relationships

Source: Exhibits 3-2 and 4-5.

in high, medium and low job routine and low, medium and high job uncertainty. Results of these procedures appear in Exhibits 4-8 and 4-9. The lone exceptions are mean values of group cohesion in the case of job routine, which are significantly different at a level of .08, and mean values of role definition in the case of job uncertainty, which are significantly different at a level of .06. Although these levels are greater than .05, they might realistically be considered significant for present purposes. Since the mean values are generally significantly different, it is appropriate to ask whether the correlation coefficients appear to vary in these levels of routine and uncertainty, and to examine the data while controlling for the contrasting contextual characteristic. Other selected characteristics can be controlled at appropriate points to uncover further information about relationships amongst characteristics in different levels of context. Results of the correlation procedures appear in Exhibits 4-10, 4-11, 4-12, 4-13, 4-14, and 4-15. These tables uncover a breadth of information concerning the importance of context in the study of organizational characteristics. The present analysis is intended to highlight certain relationships which prevail in the data, and not to encompass all intercorrelations which are compiled. Particular attention is given to ties amongst structure, context and job satisfaction.

## 2. Job Routine Levels - A Priori Scales

Relationships between organizational characteristics within levels of job routine are shown in Exhibits 4-10, 4-11 and 4-12. Analysis commences with examination of basic intercorrelations, and partial correlation coefficients which are derived by controlling for job uncertainty. These data appear in Exhibit 4-10.



SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS**EXHIBIT 4-8 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB ROUTINE**

<u>ORGANIZATION CHARACTERISTIC</u>	<u>F RATIO N<sub>1</sub> = 2 N<sub>2</sub> = 574</u>	<u>SIGNIFICANCE LEVEL</u>
<b>A. <u>CONTEXT</u></b>		
1. Job Routine	774.0	0.00
2. Job Uncertainty	43.9	0.00
<b>B. <u>STRUCTURE</u></b>		
3. Role Definition	22.6	0.00
4. Job Change	9.4	0.00
5. Group Cohesion	2.6	0.08
<b>C. <u>PERFORMANCE</u></b>		
6. Job Satisfaction	18.5	0.00

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELSEXHIBIT 4-9 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB UNCERTAINTY

<u>ORGANIZATION CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 574	<u>SIGNIFICANCE LEVEL</u>
<b>A. <u>CONTEXT</u></b>		
1. Job Routine	28.3	0.00
2. Job Uncertainty	656.7	0.00
<b>B. <u>STRUCTURE</u></b>		
3. Role Definition	2.9	0.06
4. Job Change	20.1	0.00
5. Group Cohesion	6.8	0.00
<b>C. <u>PERFORMANCE</u></b>		
6. Job Satisfaction	4.7	0.01

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

## EXHIBIT 4-10 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN ORGANIZATIONAL CHARACTERISTICS WITHIN LEVELS OF JOB ROUTINE

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>LEVEL OF JOB ROUTINE</u>		
	HIGH N=109	MEDIUM N=406	LOW N=62
<u>A. CONTEXT</u>			
1. Job Routine - Job Uncertainty	-.29	-.16	-.22
<u>B. STRUCTURE</u>			
2. Role Definition - Job Change			
3. Role Definition - Group Cohesion			.21
4. Job Change - Group Cohesion			
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine	.17	.09	
6. Role Definition - Job Uncertainty			
7. Job Change - Job Routine			
8. Job Change - Job Uncertainty	.43	.21	.24
9. Group Cohesion - Job Routine		-.09	
10. Group Cohesion - Job Uncertainty		.13	
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.33	-.15	
12. Job Satisfaction - Job Uncertainty		.12	
13. Job Satisfaction - Role Definition	.16	.21	
14. Job Satisfaction - Job Change	.23		
15. Job Satisfaction - Group Cohesion		.24	.26

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<u>B. STRUCTURE</u>			
3. Role Definition - Group Cohesion			.20*
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine	.18	.09	
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.31	-.13	
13. Job Satisfaction - Role Definition	.17	.21	
14. Job Satisfaction - Job Change	.19		
15. Job Satisfaction - Group Cohesion		.22	.25

Technical Note: All coefficients significant at .05 level except (\*) where  $p = .06$

## SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

## EXHIBIT 4-11 SECOND ORDER CORRELATION BETWEEN JOB SATISFACTION AND SELECTED CHARACTERISTICS WITHIN LEVELS OF JOB ROUTINE CONTROLLING JOB UNCERTAINTY AND SPECIFIED STRUCTURAL CHARACTERISTICS

A. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY AND ROLE DEFINITION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.35	-.15	
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	.21		
15. Job Satisfaction - Group Cohesion		.24	.22

B. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY AND JOB CHANGE

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.32	-.13	
13. Job Satisfaction - Role Definition	.19	.21	
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion		.22	.25

C. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY AND GROUP COHESION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.30	-.12	
13. Job Satisfaction - Role Definition	.16	.23	
14. Job Satisfaction - Job Change	.20		
15. Job Satisfaction - Group Cohesion	*		*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-12. THIRD ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND SELECTED CHARACTERISTICS  
WITHIN LEVELS OF JOB ROUTINE CONTROLLING FOR  
JOB UNCERTAINTY AND SPECIFIED STRUCTURAL  
CHARACTERISTICS

D. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
ROLE DEFINITION AND JOB CHANGE

		<u>LEVEL OF JOB ROUTINE</u>		
		<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11.	Job Satisfaction - Job Routine	-.36	-.15	
13.	Job Satisfaction - Role Definition	*	*	*
14.	Job Satisfaction - Job Change	*	*	*
15.	Job Satisfaction - Group Cohesion		.24	.23

E. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
ROLE DEFINITION AND GROUP COHESION

		<u>LEVEL OF JOB ROUTINE</u>		
		<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11.	Job Satisfaction - Job Routine	-.34	-.14	
13.	Job Satisfaction - Role Definition	*	*	*
14.	Job Satisfaction - Job Change	.21		*
15.	Job Satisfaction - Group Cohesion	*	*	*

F. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
JOB CHANGE AND GROUP COHESION

		<u>LEVEL OF JOB ROUTINE</u>		
		<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11.	Job Satisfaction - Job Routine	-.31	-.12	
13.	Job Satisfaction - Role Definition	.18	.23	
14.	Job Satisfaction - Job Change	*	*	*
15.	Job Satisfaction - Group Cohesion ,	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure

The general negative relationship between job routine and job uncertainty holds across levels of job routine, although it is somewhat more distinct at high levels of routine (row 1). A slight curvilinear pattern is shown in the data which move from  $-.29$  in high routine levels to  $-.16$  in medium routine levels, to  $-.22$  in low routine levels. Perhaps the element of routine is not affected as greatly in instances of increasing or decreasing uncertainty when moderate levels of routine are typically experienced. Increasing uncertainty, on the other hand, may be perceived as leading to less routine when routine is particularly high or low in the job, or that is at the extremes of the routinization scale. This has overtones of some flexibility existing within the job technology itself in the face of increasing uncertainty. Conceptually, this notion derives further meaning in the subsequent consideration of context and structure.

Within the structural set, the structural characteristics of role definition and group cohesion have a positive correlation coefficient of  $.21$  in low levels of routine, but no significant relationship at medium and high levels of routine. The partial correlation coefficient is  $.20$  at  $p = .06$  when job uncertainty is controlled, suggesting the association is independent of uncertainty in the job. It may be surmised that increasing levels of role definition are associated with increased group cohesion in the organization when routine is low in the jobs. Hickson (1966) poses the following question: "it could be asked whether there are more groups per organization if specificity is lower ... Are they more cohesive?" (p. 234). This question was addressed initially in Chapter III in a discussion of the absence of a general relationship between role definition and group cohesion in the fundamental correlation matrix. Evidence appearing here provides a new shade to the scenario.

It appears that in instances of low routine in jobs, increased role definition is associated with increased group cohesion. Perhaps part of the role definition includes a mandate to work in groups when job routine is low, and the need for more interaction leads to greater cohesiveness. This represents an application of certain traits of the organic model (cf. Burns and Stalker, 1961). The point of deviation from the model, however, is that group cohesion is linked to increased and not decreased role definition. The present study suggests that perhaps organizations involved in low levels of technological routine acknowledge the value of group cohesion as a structural measure to organizational action, and build it into their design. This technique is associated, however, not with reduced role definition, but greater role definition. The precise elements of the role are not probed in the present study, which represents role definition as a general indicator of the existence of limits to a job. One limit may be a requirement to interact with others, prevalent in instances of low routine in jobs. Qualities as actual participation in decision-making and rule observation (cf. Aiken and Hage, 1966) are not broached within this framework.

Some support to this interpretation is offered in the role definition - job routine relationship (row 5). These two characteristics are positively correlated at high levels of routine with a coefficient of .17, and positively correlated but less so at medium levels of routine with a coefficient of .09. The association disappears at low levels of routine, but in this group, role definition and group cohesion are positively connected. It may be that job routine leads to role definition when routine is high or moderate, and the need for group cohesion leads to role definition when routine is low. Stated in another manner,

the availability of routines lends itself to role definition and the designation of role structure in an organization. Thus, high and medium levels of routine are associated with role definition, and the association is strongest at high levels of routine. Low routine, however, does not lend itself to role definition, but does present the organization with the need to have persons interacting on the job. Group actions and interpersonal consultation are important when routines to guide action are unavailable. The specification of jobs involved in groups and an understanding of the person's role within the group amounts to increased role definition, and is associated with increased group cohesion. This general interpretation is independent of job uncertainty since the essential correlations hold when the effect of job uncertainty is removed from the data.

Job change and job uncertainty are positively related at each level of routine. The association is particularly strong at high levels of routine with a coefficient of .43, and appears to level out at medium and low levels of routine where the coefficients are .21 and .24 respectively. Thus, jobs which are highly routinized tend to change the most when elements of uncertainty are encountered. Job change in this sense may represent the ability of the organization to adapt to situations which jobs are not specifically designed to handle. These situations enter the organization and jobs as uncertainties, and generate the need to change routines. This need for change would be particularly marked in jobs which measure high on routine. Jobs which are medium and low in routine already have some flexibility built into them, and thus the element of job change perhaps is not as distinct.

The negative relationship between group cohesion and job routine and the positive relationship between group cohesion and job uncertainty appear



at medium levels of routine only. The negative relationship between group cohesion and job routine is not independent of job uncertainty. It appears that uncertainty leads to some group cohesion when routine is moderate in the job, but not when routine is low. Blau (1974) has reported the tendency of workers handling case work in social agencies to turn to peer groups in responding to questions that arise in their work (Chapter X). The present study indicates the general association of group cohesion and job uncertainty at medium levels of routine. Group cohesion at low levels of routine is not associated with job uncertainty, and its absence together with the positive association of role definition and group cohesion suggests that low routine engenders an organizational action to stimulate conditions of group interaction. Neither changes in job uncertainty nor routine itself to the extent there is some routine are associated with the group cohesion at this general level of routine.

Relationships between job satisfaction and contextual and structural characteristics form an interesting pattern amongst levels of job routine, and the direction and general strength of the associations in evidence are all independent of job uncertainty. Respondents experiencing high job routine relate negatively to job routine; the coefficient of correlation is  $-.33$ . Respondents experiencing medium job routine similarly relate negatively to job routine, but the coefficient drops to  $-.15$ . Respondents at low levels of routine have no significant coefficient between job satisfaction and job routine, meaning no systematic relationship is evident between these two characteristics at low levels of routine. Respondents at high levels of routine, while associating in a negative fashion to job routine, do not have any relationship with job uncertainty. They do, however, respond in a positive manner to job change, the intercorrelation

is .23, and thus, while there is no systematic tie with job uncertainty, there is a tie with one of the structural associations with job uncertainty, namely job change. The correlation between job change and job uncertainty is particularly strong at .43. These respondents also relate positively to role definition where the intercorrelation is .16. Summarizing, respondents at high levels of job routine respond negatively to job routine itself, and neither negatively nor positively to job uncertainty. They do, moreover, relate positively to a measure of role definition and to job change. Job change itself is positively related to job uncertainty, and thus respondents appear to like what job uncertainty leads to although they do not demonstrate a systematic association with job uncertainty. Job change presents a break in highly routinized settings which is positively related to job satisfaction.

Respondents at medium levels of job routine show a negative association with job routine and a positive association with job uncertainty. The coefficient of correlation between job satisfaction and job uncertainty for this group is .12. They further relate to role definition and group cohesion in the structural set; the intercorrelations are .21 and .24 respectively, and have no systematic association with job change. Jobs measuring medium in job routine have some maneuverability built into them, and perhaps the need for job change is not as prevalent when uncertainties are encountered. This was discussed in the reduction in the strength of association between job change and job uncertainty in comparing the high routine group to the medium and low routine groups. The job uncertainty, however, is responded to favourably when job routine is moderate, perhaps supporting Simon's (1960) argument that persons like some routine and some uncertainty in their jobs. The present study shows that though persons

respond negatively to routine, the only time they respond positively to uncertainty is when routine is moderate. The uncertainty continues to generate job change, but people respond in no systematic fashion to the job change at medium job routine. They do, however, relate to both role definition and group cohesion. This connotes a combination of knowing one's role in the organization and interacting with others. Group cohesion is one way of bracing job uncertainty, and the intercorrelation for these characteristics is positive at medium job routine. Role definition and job routine are less strongly related at medium routine than high routine, perhaps reflecting a measure of group composition being written into jobs, a relationship which becomes evident in instances of low job routine where role definition and group cohesion are positively correlated.

Respondents at low job routine respond neither positively nor negatively to job routine and job uncertainty, and show only a positive association with group cohesion where the correlation coefficient is .26. Job uncertainty is positively related to job change in this group, but respondents show no association with either of these characteristics. Nor do they relate to role definition. Scott and Mitchell (1976) report the probability of a curvilinear relationship between job satisfaction and job standardization and specialization:

"When the job is neither specialized nor standardized, an employee would have difficulty knowing what or how to do the job. At the other extreme are situations that are highly repetitive and boring. Although these points may differ for different types of people or jobs, it is clear that the extreme ends of these continuums are related to low morale."  
(p. 157).

The present study supports this view with careful qualification. In the case of low job routine, jobs do not lend themselves to definition in terms of routines, and there may be a requirement to build interaction and group cohesion into the role structure. Persons respond favourably to this element of group cohesion. At the other extreme, in the case of high job routine, jobs lend themselves to definition, which respondents do not oppose, but they appear to dislike the routine in the job. They respond favourably to job change which amounts to a break in the routine. In the center at medium routine, jobs lend themselves to definition, people do not oppose the element of definition, and at moderate levels of routine, they respond favourably to uncertainty. Job satisfaction in this instance represents a trade-off between job routine and job uncertainty, and the structural combination of role definition and group cohesion. The prominence of group cohesion in instances of moderate and low job routine is developed by Sayles and Strauss (1966):

"Obviously, in most cases management must take the responsibility of making specific work assignments, but there are work situations in which a cohesive group can do a better job of fitting individual personalities to the work process and making expedient job assignment changes as new problems arise. The manager's decisions, since they must encompass a longer time period, are often less flexible and timely than the group's." (pp. 86-87).

Evidence in the present study provides a dimension to this argument. It appears that when routine is low, companies perhaps build group cohesion into the role structure for the reasons offered. At moderate levels of routine, although role definition and group cohesion are not positively associated, group cohesion emerges in the job and is related to uncertainties encountered in the job. Persons, furthermore, associate favourably with this element of group cohesion. When job routine is high,

perhaps the need for group cohesion is less, provided the jobs change to fit uncertainties encountered. To the extent that short-run uncertainties cannot be coped with through existing routines, that change takes time to introduce, and that group cohesion is not fostered, the organization may experience difficulty in adjusting to uncertainty. To this end, it perhaps follows that organizations tend to "buffer" routinized jobs from uncertainties, allowing them to operate under conditions of certainty in the short-run, while changing the routines through time to handle new types of problems facing the organization (Thompson, 1967). The buffered jobs are high on routine, high on role definition and high on job change, where change is pursuant to routines newly developed to deal with uncertainties. Persons appear to respond favourably to this job change in these highly routinized jobs. At the other extreme, the need for group cohesion is particularly prevalent when routines are not in place, the need for having persons work together is prominent and it seems that persons respond favourably to this element of group interaction and cohesion.

It is appropriate to ask whether relationships apparent amongst job satisfaction, job routine and structural characteristics at different levels of routine are independent not only of job uncertainty, but also the other structural characteristics in focus. A series of second and third-order correlation coefficients has been compiled, controlling for job uncertainty and specified structural characteristics. This amounts to removing the effect of the control variables from the intercorrelation matrix. The series appears as Exhibits 4-11 and 4-12. All relationships established and discussed in terms of job satisfaction, job routine and structural characteristics at different levels of job routine appear to be independent of job uncertainty and other structural conditions in the

respondent group. The patterns of intercorrelation in Exhibits 4-11 and 4-12 are analogous to the pattern shown in Exhibit 4-10 for job satisfaction and its connections with job routine, role definition, job change and group cohesion.

### 3. Job Uncertainty Levels - A Priori Scales

Significant correlation coefficients between organizational characteristics within low, medium and high levels of job uncertainty appear in Exhibit 4-13. Data in the bottom section of the exhibit represent significant intercorrelations when job routine is partialled out of the matrix.

When job uncertainty is low, there is a strong negative correlation of  $-.44$  between job routine and job uncertainty. This is somewhat reduced to  $-.31$  at medium levels of uncertainty, and the correlation disappears at high levels of uncertainty. Jobs which are low in uncertainty are easier to routinize. Perhaps the process of routinization serves to reduce some uncertainties in the job itself. Low uncertainty may be related to more complete knowledge of cause and effect relations in the job and a clear understanding of preferred organizational outcomes (Thompson, 1967, pp. 134-135). Hall (1972) in an interpretation of Thompson suggests that "since all organizations are social units interacting with society, any involvement of humans in either the cause or the effect part of the equation introduces an element of uncertainty" (p. 264). Similarly, machine breakdowns, modifications in operations manuals, or variability in raw materials tend to introduce uncertainty to a routinized position. The present study suggests that perhaps in jobs which are typically low in uncertainty, the uncertainty encountered tends to have a negative association with job routine. Routines are possibly rendered of less value, and actually decrease in cases where uncertainty is increasing. This

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-13 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN  
ORGANIZATIONAL CHARACTERISTICS WITHIN LEVELS  
OF JOB UNCERTAINTY

ORGANIZATIONAL CHARACTERISTICS	LEVEL OF JOB ROUTINE		
	HIGH N=48	MEDIUM N=414	LOW N=115
<u>A. CONTEXT</u>			
1. Job Routine - Job Uncertainty	-.44	-.31	
<u>B. STRUCTURE</u>			
2. Role Definition - Job Change			
3. Role Definition - Group Cohesion			
4. Job Change - Group Cohesion			
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine		.29	.26
6. Role Definition - Job Uncertainty		-.10	
7. Job Change - Job Routine	-.32		-.17
8. Job Change - Job Uncertainty	.27	.15	.22
9. Group Cohesion - Job Routine		-.13	
10. Group Cohesion - Job Uncertainty			
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.45	-.28	
12. Job Satisfaction - Job Uncertainty		.12	.20
13. Job Satisfaction - Role Definition	.34		.22
14. Job Satisfaction - Job Change	.40		
15. Job Satisfaction - Group Cohesion		.22	.20

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<u>C. STRUCTURE AND CONTEXT</u>			
8. Job Change - Job Uncertainty		.15	.21
<u>D. JOB SATISFACTION</u>			
12. Job Satisfaction - Job Uncertainty			.19
13. Job Satisfaction - Role Definition	.44	.17	.27
14. Job Satisfaction - Job Change	.30		
15. Job Satisfaction - Group Cohesion		.20	.22

Technical Note: All coefficients significant at .05 level.

relationship is less strong in instances of moderate levels of uncertainty. No systematic pattern between job routine and job uncertainty is in evidence when jobs are typically associated with high uncertainty. Perhaps the routine which is a part of these jobs is specifically designed to cope with uncertainties, and this is not tempered by movement in the number of uncertainties.

The three structural characteristics of role definition, job change and group cohesion do not assume any significant associations between one another at low, medium or high levels of job uncertainty. These characteristics appear to be independent of one another within job uncertainty groups. In this sense, the element of job change is independent of general movements in role definition at all levels of uncertainty, and similarly the element of group cohesion is independent of movements in role definition at all levels of uncertainty.

The relationships in structure and context within levels of job uncertainty are not at all clear as they relate to one another. A theoretical perspective aids in explaining at least part of the format, particularly in terms of the notion of organizational rigidity and uncertainty. Blau (1974) has reported the tendency of new members of an organization to adhere rigidly to available routines until such time as the person is adapted to the organization (pp. 172-175). This perhaps amounts to working within a framework of high uncertainty at the outset. Crozier (1965) similarly notes how rigidity builds in organizations under conditions of high and low uncertainty.

"Extreme conditions of uncertainty will tend to result in more conformity and rigidity, since trying to adjust to completely unpredictable situations will not be rewarding enough. Too little uncertainty, on the other hand, will make it feasible to prescribe in great detail all



forms of behavior, thus achieving a high degree of rigidity. There will be a tendency to escape from reality at the two extremes, when reality is too difficult to cope with and when it is no longer a challenge." (p. 253).

This can be related to the present study in the correlation matrix involving context and structure and context amongst levels of job uncertainty.

It may well be that incumbents faced with high uncertainty cling to existing routines in light of increasing uncertainty, and this tendency mitigates against flexibility and job change which is often necessitated by the uncertainty. Incumbents or managers for organizations may at the same time change routines in light of uncertainties, but existing routines temper this change in the job, perhaps because of the rigidity which may be associated with jobs encountering high uncertainty on an ongoing basis. These jobs change with increasing uncertainty, but existing routines work against the change, and increasing uncertainty is not associated with less routine but possibly is associated in part with a different form of routine resulting from the job change. This takes time to introduce, however.

At the other extreme is the group typically facing low uncertainty. As uncertainty increases in this group, job routine decreases and job change occurs. Existing job routine tempers the element of job change, or in other words, increasing job routine is connected with decreasing job change. Job uncertainty in this case does lead to decreasing job routine, however, unlike the high uncertainty group. Thus there is some flexibility shown within the job technology itself. Job change is likely associated with changes in routine overtime as well, to the extent that uncertainty increases. This group, however, does not associate with much

uncertainty by definition, and the element of rigidity perhaps is a consequence of this circumstance, at least in part. The present study, however, indicates persons typically facing low uncertainty actually demonstrate flexibility rather than rigidity in cases of increasing uncertainty. In the center is the group typically encountering moderate levels of uncertainty. As uncertainty increases in this group there is decreasing job routine and increasing job change. The job change, furthermore, is not tempered by job routine as in the other two cases. Incumbents are not perhaps as inclined or forced to cling to existing routines, and are able to incorporate some adaptation within the existing job technology itself. Above all, they are facing moderate and not high or low levels of uncertainty as an essential framework for the job. There is less likelihood of rigidities developing, in line with Crozier's argument. Further, routines do not temper the element of organizational job change.

The performance characteristic of job satisfaction has varied combinations of associations with contextual and structural characteristics within the levels of job uncertainty. For the group of respondents experiencing low job uncertainty, there is a strong negative association of  $-.45$  between job satisfaction and job routine, and positive associations of  $.34$  and  $.40$  with role definition and job change. For the group of respondents at medium job uncertainty, there is again a negative association between job satisfaction and job routine, but the intercorrelation is reduced in strength to  $-.28$ , and there appears coincidentally, a positive intercorrelation of  $.12$  between job satisfaction and job uncertainty. This positive tie, however, is contingent on job routine since the correlation coefficient disappears when job routine is controlled. This group shows a positive relationship between job satisfaction and group cohesion,

and also a positive relationship between job satisfaction and role definition when job routine is controlled. For respondents experiencing high levels of uncertainty, there is no association between job satisfaction and job routine, and there is a positive association between job satisfaction and job uncertainty. It seems that when uncertainty is typically high, respondents do not oppose job routine as they do in moderate or low levels of uncertainty, and favour increasing uncertainty. Structural associations are with role definition and group cohesion. All mentioned structural relationships are independent of other structural conditions, as is shown in Exhibits 4-14 and 4-15.

Persons at low levels of uncertainty do not like the job routine in their jobs, and, although they do not show affiliation with job uncertainty, they do like what job uncertainty leads to, namely job change. They also favour a measure of role definition. Persons at medium levels of uncertainty respond less strongly to job routine, and like role definition and group cohesion. Perhaps at certain levels of routine, they also favour job uncertainty itself. Variety in the job is often cited as a correlate of job satisfaction (Chapter I). Variety may enter the job in the form of job change when it occurs for incumbents typically facing low uncertainty, and in the form of moderate degrees of uncertainty for incumbents typically facing medium uncertainty. At high levels of uncertainty, persons show a satisfaction with job uncertainty, role definition and group cohesion, and at the same time, no opposition to job routine. On the basis of the present study, it is likely that incumbents to jobs encountering high uncertainty on an ongoing basis do not take exception to an element of routine as a part of the job technology. Indeed, they may even be inclined to adhere to what routines

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELSEXHIBIT 4-14 SECOND ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND SELECTED CHARACTERISTICS  
WITHIN LEVELS OF JOB UNCERTAINTY CONTROLLING  
JOB ROUTINE AND SPECIFIED STRUCTURAL CHARACTERISTICSA. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND  
ROLE DEFINITION

		<u>LEVEL OF JOB UNCERTAINTY</u>		
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12.	Job Satisfaction - Job Uncertainty			.19
13.	Job Satisfaction - Role Definition	*	*	*
14.	Job Satisfaction - Job Change	.31		
15.	Job Satisfaction - Group Cohesion		.20	.21

B. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND  
JOB CHANGE

		<u>LEVEL OF JOB UNCERTAINTY</u>		
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12.	Job Satisfaction - Job Uncertainty			.19
13.	Job Satisfaction - Role Definition	.44	.17	.27
14.	Job Satisfaction - Job Change	*	*	*
15.	Job Satisfaction - Group Cohesion		.20	.22

C. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND  
GROUP COHESION

		<u>LEVEL OF JOB UNCERTAINTY</u>		
		<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12.	Job Satisfaction - Job Uncertainty			.18
13.	Job Satisfaction - Role Definition	.44	.17	.26
14.	Job Satisfaction - Job Change	.30		
15.	Job Satisfaction - Group Cohesion	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure.

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-15 THIRD ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND SELECTED CHARACTERISTICS  
WITHIN LEVELS OF JOB UNCERTAINTY CONTROLLING JOB  
ROUTINE AND SPECIFIED STRUCTURAL CHARACTERISTICS

D. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE,  
ROLE DEFINITION AND JOB CHANGE

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			.19
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion		.20	.21

E. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE,  
ROLE DEFINITION AND GROUP COHESION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			.18
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	.30		
15. Job Satisfaction - Group Cohesion	*	*	*

F. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE,  
JOB CHANGE AND GROUP COHESION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			.18
13. Job Satisfaction - Role Definition	.44	.18	.26
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure

they have, although they do not indicate increasing job satisfaction with increasing job routine. Persons experiencing medium and high job uncertainty show increasing job satisfaction with increasing role definition and group cohesion. This perhaps indicates a certain favour to knowing what one's role is in the organization and to working with others, particularly prevalent in instances of more uncertainty in the job.

#### 4. Combination Sets of Job Routine and Job Uncertainty -

##### A Priori Scales

The context of the job is not comprised simply of a level of routine or of a level of uncertainty. An argument central to the thesis is that jobs include a level of routine and a level of uncertainty. Significant correlation coefficients between organizational characteristics within combined sets of job routine and job uncertainty appear in Exhibit 4-16. Data for the three modal groups are provided in Exhibit 4-17. These modal groups of medium routine - medium uncertainty, high routine - medium uncertainty and medium routine - high uncertainty account for 464 of the 577 respondents. Each of the other six combination sets represents a relatively small sample size, and thus might be viewed with some caution. All coefficients of correlation are significant at .05 level. Highlights follow.

From Exhibit 4-16, jobs measuring high on job routine and low on uncertainty (column 1) show a strong negative association of  $-.44$  between job routine and job uncertainty. This relationship disappears at medium and high levels of uncertainty within the high job routine group. This may lend support to the notion of routines being formulated to cope with increasing levels of uncertainty, and routines are perhaps rigidly adhered to in instances of increasing uncertainty. Indeed the lone significant

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-16 SIGNIFICANT COEFFICIENTS BETWEEN ORGANIZATIONAL  
CHARACTERISTICS WITHIN COMBINED SETS OF  
JOB ROUTINE AND JOB UNCERTAINTY

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>HIGH JOB ROUTINE</u>		
	<u>LEVEL OF JOB UNCERTAINTY</u>		
	1. LOW N=20	2. MEDIUM N=84	3. HIGH N=5
<u>A. CONTEXT</u>			
1. Job Routine - Job Uncertainty	-.44		
<u>B. STRUCTURE</u>			
2. Role Definition - Job Change			
3. Role Definition - Group Cohesion			
4. Job Change - Group Cohesion			
<u>C. STRUCTURE</u>			
5. Role Definition - Job Routine		.27	
6. Role Definition - Job Uncertainty			
7. Job Change - Job Routine			
8. Job Change - Job Uncertainty	.44	.31	
9. Group Cohesion - Job Routine			-.87
10. Group Cohesion - Job Uncertainty			
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.58	-.27	
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.39		
14. Job Satisfaction - Job Change			.82
15. Job Satisfaction - Group Cohesion			

Technical Note: All coefficients significant at .05 level.

## EXHIBIT 4-16 Continued

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>MEDIUM JOB ROUTINE</u>			<u>LOW JOB ROUTINE</u>		
	<u>LEVEL OF JOB UNCERTAINTY</u>			<u>LEVEL OF JOB UNCERTAINTY</u>		
	4. LOW N=26	5. MEDIUM N=300	6. HIGH N=80	7. LOW N=2	8. MEDIUM N=30	9. HIGH N=30
<u>A. CONTEXT</u>						
1.			-.24			
<u>B. STRUCTURE</u>						
2.						
3.						.48
4.						
<u>C. STRUCTURE AND CONTEXT</u>						
5.					.43	
6.						
7.						
8.		.12	.19			.28
9.			.18			
10.						
<u>D. JOB SATISFACTION</u>						
11.			-.15			
12.				.23		
13.	.41	.18	.28			.30
14.						
15.		.23	.27		.39	

Technical Note: All coefficients significant at .05 level.

... cont'd



intercorrelation in addition to the one appearing in high routine - low uncertainty is at medium routine - medium uncertainty (column 5) where the coefficient is  $-.24$ . Rigidities are perhaps less prominent in this group since it is by definition the middle of the road between the extremes of uncertainty and routine. Perhaps only in the moderate overall technology and in high routine with low uncertainty can routine be expected to decrease in light of increasing uncertainty as one measure of adaptation. To the extent that routines represent a method of coping with uncertainty, the lack of a significant negative relationship between job routine and job uncertainty in instances of increasing uncertainty is desirable. When the routines represent a rigidity to escape reality, the relationship is less desirable. In these instances, decreasing routine in unison with increasing uncertainty is attractable. Apparently at moderate levels of both routine and uncertainty in particular, some flexibility is shown within the job technology itself. Perhaps the negative correlation reflects a decrease in uncertainty in the company of any increase in routine, a favourable outcome of routinization measures.

The lone structural relationship is a positive association of  $.48$  between role definition and group cohesion which appears at low routine - high uncertainty (column 9). This suggests that group cohesion may be built into jobs not simply in low job routine circumstances as discussed previously, but in the combined technology of low routine and high uncertainty. This combination must clearly indicate the organic situation (cf. Burns and Stalker, 1961) and a measure of interaction is anticipated in this setting.

Negative relationships between job satisfaction and job routine are particularly marked in the instances of high job routine and low and medium job uncertainty (columns 1 and 2). Respondents in medium routine and medium uncertainty (column 5) also indicate negative ties between satisfaction and routine. In no case is high uncertainty related to a negative intercorrelation between job satisfaction and job routine. This substantiates the previous observation that persons experiencing high uncertainty do not oppose routine in the job. The lone case, however, where job satisfaction and job uncertainty are positively related is in moderate routine and high uncertainty (column 6). Increasing uncertainty is associated with increasing satisfaction when routine is at moderate levels and uncertainty is generally high, it appears. This combination perhaps serves to successfully mellow the negative impact of routine on satisfaction in general, and supports the view that persons like some routine and some uncertainty in their jobs (Simon, 1960).

The general relationships amongst context, structure and job satisfaction may be placed in somewhat of a balance through an examination of data in the primary contextual sets. Significant intercorrelations for these groups appear as Exhibit 4-17. These sets are primary in the sense that they represent the majority of survey respondents: out of the sample of 577, 300 fall into medium routine - medium uncertainty (column 5); 84 fall into high routine - medium uncertainty (column 2); and 80 fall into medium routine - high uncertainty (column 6). The first group at medium routine - medium uncertainty (column 5) shows a negative association between job routine and job uncertainty, and a positive association between job change and job uncertainty. It appears that increasing uncertainty is related to less job routine, indicating perhaps some flexibility within

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

**EXHIBIT 4-17 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN ORGANIZATIONAL CHARACTERISTICS FOR MODAL GROUPS OF RESPONDENTS WITHIN JOB ROUTINE AND JOB UNCERTAINTY**

ORGANIZATIONAL CHARACTERISTIC	LEVEL OF JOB ROUTINE			LEVEL OF JOB UNCERTAINTY		
	5. MEDIUM	2. HIGH	6. MEDIUM HIGH	5. MEDIUM	2. HIGH	6. MEDIUM HIGH
	300	84	80	300	84	80

**A. CONTEXT**

- 1. Job Routine - Job Uncertainty

-.24

**B. STRUCTURE**

- 2. Role Definition - Job Change
- 3. Role Definition - Group Cohesion
- 4. Job Change - Group Cohesion

**C. STRUCTURE AND CONTEXT**

- 5. Role Definition - Job Routine
- 6. Role Definition - Job Uncertainty
- 7. Job Change - Job Routine
- 8. Job Change - Job Uncertainty
- 9. Group Cohesion - Job Routine
- 10. Group Cohesion - Job Uncertainty

.27

.12

.31

.19

.18

**D. JOB SATISFACTION**

- 11. Job Satisfaction - Job Routine
- 12. Job Satisfaction - Job Uncertainty
- 13. Job Satisfaction - Role Definition
- 14. Job Satisfaction - Job Change
- 15. Job Satisfaction - Group Cohesion

-.27

-.15

.18

.23

.28

.23

.27

Technical Note: All coefficients significant at .05 level

the job technology itself; and also is related to job change for this group, a measure of structural change. Job satisfaction is associated in a negative manner with routine, and in a positive way with role definition and group cohesion. The second group represents a generally higher level of overall routine in the job context, while job uncertainty remains moderate (column 2). The negative relationship between job routine and job uncertainty is not evident, and positive associations are shown between role definition and job routine and between job change and job uncertainty. Thus, within this group, increasing job routine is associated with increasing role definition where job routine is already at high levels, and increasing uncertainty no longer is associated with less job routine, but the positive relationship between job uncertainty and job change is strengthened. The setting in this group is more routinized and structured than the first group. Perhaps one explanation for this combination rests in the development of structure and routines to encounter and deal with uncertainties. This is reflected in increasing role definition with increasing job routine, and no decrease in job routine with increasing uncertainty. The incidence of increasing job uncertainty, however, may create a need for change in the routines of the job over time, and together, increasing uncertainty and modified routines represent change in the content of the job. Thus, the positive relationship between job change and job uncertainty is stronger in this group than it is in the case of medium routine - medium uncertainty. The respondents in high routine - medium uncertainty also show a stronger negative association between job satisfaction and job routine, and no positive associations between job satisfaction and job uncertainty or structure in general. In a more routinized setting, no systematic

relationships emerge between structural characteristics and job satisfaction, and increasing uncertainty similarly is not related to job satisfaction.

The third group represents medium routine and high uncertainty (column 6). Increasing uncertainty in this group is not associated with decreasing job routine, but is associated with job change and group cohesion. These respondents typically face high uncertainty, and perhaps cling to existing routines in light of increasing uncertainty within the already high levels of uncertainty. The uncertainties also lead to job change over time, and foster a natural leaning to work in groups in order to deal with increasing uncertainty. This respondent group does not respond negatively to increasing routine, and responds positively to increasing uncertainty. They like a measure of role definition, and working in cohesive groups.

To abstract, it appears that the general context of the job bears importance in considering general relationships amongst contextual, structural and performance characteristics. When the general context of the job is moderate in terms of routine and uncertainty, increasing uncertainty is related to decreasing routine, a measure of technological flexibility in the system, and to increased job change, a measure of structural change. Increased routine is related to decreased job satisfaction in this group, and no relationship is shown between job satisfaction and job uncertainty. Job satisfaction is, however, related to role definition and group cohesion.

The picture changes when the general context holds high levels of routine and moderate levels of uncertainty. Increasing uncertainty in this instance leads to job change, as in the first group, but not to less

job routine. Increasing routine, on the other hand, is associated with increasing role definition. Flexibility in the job technology is perhaps replaced by a series of routines built into roles and formulated to deal with uncertainties. Increasing routine is associated with less job satisfaction, and no other associations are apparent between characteristics. The setting is generally more structured and routinized.

The impact of a general increase in the level of uncertainty while holding routine at moderate levels is similarly representative of an interesting change in pattern. Increasing uncertainty in this case leads to job change as in the previous groups, and not to less routine within the job technology as in the case of moderate routine - moderate uncertainty. It may be that respondents stick to available routines to deal with increasing uncertainty when uncertainty is generally high. They do not respond negatively to the routine, unlike the previous groups. Furthermore, increasing uncertainty is associated directly with group cohesion and also with job satisfaction. It may be that increasing uncertainty only leads to job satisfaction when the situation is somewhat routinized, and uncertainty levels already are reasonably high. Only in this setting does the negative tie between routine and satisfaction disappear. Job satisfaction is related to the structural characteristics of role definition and group cohesion for this group, which holds also in the case of medium routine - medium uncertainty but which disappears in the more routinized context of high routine - medium uncertainty.

##### 5. Context, Structure and Job Satisfaction - A Priori Scales

The relationship between job satisfaction and the contextual characteristics of job routine and job uncertainty vary in different contexts. Some consistency exists in the sense that job satisfaction is often

negatively correlated with job routine and often positively correlated with job uncertainty, or no associations are apparent. The inverse direction of association is not at all evident. The relationships between job satisfaction and the structural characteristics of role definition, job change and group cohesion vary in different contexts, but are always positive or no apparent association is evident. The combinations of associations provide valuable insights to the tie between job satisfaction and structure. A summary of apparent relationships amongst contextual and structural characteristics and job satisfaction within levels of context appears as Exhibit 4-18. All relationships are independent of the opposing contextual characteristic.

Respondents typically experiencing high job routine (row 1) demonstrate a negative association between job satisfaction and job routine and no association between job satisfaction and job uncertainty. Positive structural relationships are in evidence between job satisfaction and role definition and job change. High job routine represents a highly standardized technological setting within the job. Increasing routine within what is already a routinized job is associated with decreasing job satisfaction, and increasing uncertainty does not relate to job satisfaction in any systematic fashion. One of the possible results of increasing uncertainty may be job change, and respondents experiencing high job routine relate positively to role definition and job change. The hypothetical contrasting contextual condition to high job routine is low job uncertainty, although survey respondents typically encountering high job routine show more alliance with medium job uncertainty than low uncertainty (Exhibit 4-4). Within the level of low job uncertainty, the series of relationships demonstrated in the high job

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-18 APPARENT RELATIONSHIPS AMONGST CONTEXTUAL AND STRUCTURAL CHARACTERISTICS AND JOB SATISFACTION WITHIN LEVELS OF CONTEXT

Context and Level	Context and Job Satisfaction	Job Satisfaction	Job Satisfaction Relationship With Relationship With Job Routine	Job Satisfaction Relationship With Relationship With Job Uncertainty	Structure and Job Satisfaction
<b>A. LEVELS OF JOB ROUTINE</b>					
1. High Job Routine N = 109	negative association	no association			Positive Structural Relationship With Job Satisfaction
2. Medium Job Routine N = 406	less strong a negative association	positive association			role definition and job change. role definition and group cohesion
3. Low Job Routine N = 62	no association	no association			group cohesion
<b>B. LEVELS OF JOB UNCERTAINTY</b>					
4. Low Job Uncertainty N = 48	distinct negative association	no association			role definition and job change
5. Medium Job Uncertainty N = 414	negative association	positive association			role definition <sup>(1)</sup> and group cohesion
6. High Job Uncertainty N = 115	no association	positive association			role definition and group cohesion.

Source: Exhibits 4-10 and 4-13.

(1) When job routine is controlled.



routine case is duplicated (Exhibit 4-18, row 4). The negative relationship between job satisfaction and job routine is somewhat stronger, no association appears between job satisfaction and job uncertainty and respondents show positive ties with role definition and job change.

At medium job routine (row 2) and medium job uncertainty (row 5) respondents have the combination of a negative relationship between job satisfaction and job routine and a positive relationship between job satisfaction and job uncertainty. The strength of the negative correlation coefficient between satisfaction and routine is reduced from the high job routine and low job uncertainty group levels. Structural associations are with role definition and group cohesion. Respondents typically encountering medium job routine most often coincidentally relate to medium job uncertainty (Exhibit 4-4). Perhaps more importantly, however, respondents at low or high levels of one contextual condition relate to medium levels of the opposing contextual condition in a large number of instances (ibid.). It seems likely, therefore, that the general relationships between job satisfaction and contextual and structural characteristics at moderate levels of routine and uncertainty have a predominant impact on the general survey data. High job routine and low job uncertainty bear similar patterns in terms of job satisfaction and organizational characteristics, but respondents typically experiencing high job routine or low job uncertainty do not relate to the contrasting contextual level; indeed high job routine is most often associated with medium job uncertainty, and low job uncertainty is related to both medium and high job routine. Job satisfaction then becomes a composite of relationships demonstrated at different and often not directly contrasting levels in these instances. This avenue is considered in the next section of this chapter.

The situation becomes more complex in the cases of low job routine (row 3) and high job uncertainty (row 6). Unlike the former contrasting pairs of contextual levels, relationships between job satisfaction and organizational characteristics are not the same in these two divisions. At low job routine, no relationship is shown between job satisfaction and both job routine and job uncertainty, and the only structural tie is between job satisfaction and group cohesion. On the other hand, at high job uncertainty, no relationship emerges between job satisfaction and job routine, but a positive relationship is shown between job satisfaction and job uncertainty. Increasing uncertainty, therefore, is not associated with increasing job satisfaction when job routine is low, but it is associated with increasing job satisfaction when job uncertainty is high. It appears likely that some routine is necessary before positive associations emerge between satisfaction and uncertainty. Support for this position is fortified by the structural associations which vary between the low routine and high uncertainty groups. At low routine, only group cohesion is related to job satisfaction. At high uncertainty, both role definition and group cohesion are related to job satisfaction. Role definition connotes an understanding of one's job in the organization, and is not strictly orthogonal to job routine in the study. When routine is low, the notion of role definition is elusive at least in terms of portraying actual procedures connected to organizational action. This is not necessarily true when uncertainty is high, and furthermore the element of role definition is related to favourably by respondents at this level, although it is in combination with group cohesion. Routine expedites role definition, and the composite of role definition and group cohesion allows for a positive association between satisfaction and uncertainty, a condition

foregone at low job routine because of the low routine and the fact role definition in itself is probably not of great assistance in problem-solving or decision-making. Working in groups is paramount when routine is low. It is noteworthy that job routine is not associated in a positive fashion with job satisfaction, even at low routine and high uncertainty. Routine, however, permits role definition, or perhaps an aspect of role definition that assists in meeting uncertainties, and role definition is positively associated with job satisfaction except in instances of low job routine where it may be elusive as a meaningful concept.

6. Elements of the General Picture With Respect to Context,  
Structure and Job Satisfaction - A Priori Scales

The context of a job includes a level of job routine and a level of job uncertainty. These levels are each associated with a series of relationships between job satisfaction and context and job satisfaction and structure (Exhibit 4-18). Each of these series is independent of the contrasting contextual condition. Certain modal relationships exist in terms of contextual sets at each specific level of contextual characteristic (Exhibit 4-4). Intercorrelations between organizational characteristics are derived for each contextual set (Exhibit 4-16). Putting these three pieces of information together provides the elements of a general picture with respect to context, structure and job satisfaction.

The level of high job routine (n = 109) shows the following qualities in terms of relationships between job satisfaction and context and structure: a negative association with routine, no association with uncertainty, and structural ties with role definition and job change (Exhibit 4-18). Respondents with high job routine, then, relate negatively to more routine, and although they do not respond positively to uncertainty,

they like what it typically brings, namely job change. Job change may be brought about for reasons aside from increased uncertainty, but the association between these characteristics is prevalent in the study. The level of high job routine is most often connected to medium levels of job uncertainty (Exhibit 4-4). Medium job uncertainty has the following job satisfaction relationships: a negative association with routine, a positive association with uncertainty and structural ties with role definition and group cohesion (Exhibit 4-18). The combination of high job routine and medium job uncertainty ( $n = 84$ ) represents a primary contextual set in the study, but only one significant correlation coefficient appears in the job satisfaction data, a negative tie between job satisfaction and job routine (Exhibit 4-16). Thus, in terms of job satisfaction, the condition of high job routine perhaps contributes certain orientations, and the condition of medium job uncertainty contributes alternative orientations, and the combination is one negative intercorrelation between routine and job satisfaction and no association with job uncertainty or structure in general. High job routine, for example, generates a favourable response to job change, but when the high job routine is combined with medium job uncertainty, the job change may not be as necessary as a satisfier. Variety perhaps enters the job in the technology rather than the structure, and the typical technological setting includes moderate levels of uncertainty. Neither increasing job change nor increasing job uncertainty are systematically tied to job satisfaction. The jobs are routinized in this setting, and although increasing uncertainty is tied to increasing job satisfaction in the medium job uncertainty level, the absence of any association between these characteristics at high job routine apparently derives the general

picture. It is, however, evident in this group that increasing uncertainty is related to job change and increasing routine is related to role definition (Exhibit 4-16). It may be as discussed earlier that routine is generated to cope with uncertainties, leading to increased role definition, and increasing uncertainties generate the need for job change over time. The negative response to routine in general, however, dominates the pattern, and job satisfaction is linked in no systematic way within the setting as a whole to any of job uncertainty, role definition, job change or group cohesion.

The level of medium job routine ( $n = 406$ ) has the following qualities in terms of job satisfaction and context and structure: a negative association with routine, a positive association with uncertainty and structural ties with role definition and group cohesion (Exhibit 4-18). This contextual level is most often found together with medium job uncertainty (Exhibit 4-4) which coincidentally holds the same pattern of associations. The significant correlation coefficients in this setting of medium routine - medium uncertainty ( $n = 300$ ), however, do not appear for all aspects of this picture. There is a negative correlation between job satisfaction and routine, but no positive correlation between satisfaction and uncertainty. Structural ties exist for role definition and group cohesion as expected (Exhibit 4-16). Apparently increasing job uncertainty is related in a positive manner to satisfaction in both of medium job routine and medium job uncertainty in isolation, but not when the two are combined in the same setting. Increasing uncertainty is associated with less routine and more job change in this group, but only the decreasing routine is associated with job satisfaction.

Medium job routine is also associated with high job uncertainty in a large number of instances ( $n = 80$ ), and this contextual set represents the third primary group of respondents. The level of high job uncertainty has the following qualities in terms of job satisfaction and context and structure: no association with routine, a positive association with uncertainty, and structural ties with role definition and group cohesion (Exhibit 4-18). The combination of medium job routine and high job uncertainty shows a different picture from the setting of medium levels in both characteristics. In this setting, there is no significant correlation between job satisfaction and job routine, and there is a positive correlation between job satisfaction and job uncertainty. Structural ties exist for role definition and group cohesion as in the previous group and as expected (Exhibit 4-16). Thus, when the context of the job is changed to include a generally higher level of uncertainty, persons do not respond negatively to routine and respond positively to increasing uncertainty. The increasing uncertainty also leads to job change and increasing uncertainty is related to group cohesion directly. Only group cohesion, however, is directly related to job satisfaction. It seems, therefore, that for job uncertainty to increase job satisfaction in a direct fashion, the general level of uncertainty in the job must already be high, and the job cannot be highly routinized, but should contain moderate levels of routine.

Low job routine ( $n = 62$ ) has an absence of significant associations between both job routine and job uncertainty and job satisfaction, and a structural bond between group cohesion and job satisfaction (Exhibit 4-18). This group is typically connected to medium or high levels of uncertainty in forming contextual sets (Exhibit 4-4). The combination of low job

routine and medium job uncertainty (n = 30) shows only one significant job satisfaction intercorrelation: a positive relationship with group cohesion (Exhibit 4-16). Increasing routine in this setting is related to increasing role definition, but not to decreasing job satisfaction. Increasing uncertainty has no systematic relationship with the other organizational characteristics. It appears likely that persons in jobs which have little routine do not respond negatively to some increase in routine, reflected in increased role definition within the organizational structure. Nor do they respond positively to these characteristics either. Working in groups in a setting of low routine and moderate uncertainty leads to satisfaction.

The combination of low job routine and high job uncertainty (n = 30) shows a different picture. As discussed earlier, this is the organic model of organizations. The lone significant job satisfaction intercorrelation is a positive tie with role definition (Exhibit 4-16). Role definition, however, is positively correlated with group cohesion, suggesting organizational action to build group interaction into the system. Persons respond in terms of job satisfaction to neither routine nor uncertainty in any systematic way. Increasing uncertainty leads to job change, but neither affects satisfaction directly. Whereas persons with low routine indicate a relationship between job satisfaction and group cohesion, persons with high uncertainty indicate relationships between job satisfaction and both role definition and group cohesion. Role definition perhaps reflects an understanding of one's position in the organization, and is conceivable in conditions of high job uncertainty if only to indicate group compositions and elements of available routines to handle uncertainties. This latter quality is largely removed by

definition in situations of low job routine. Role definition is related to positively in settings of low routine - high uncertainty probably as a reflection of group interaction and the specification of what routines that are available. The roles change through time as uncertainties increase, indicated in the positive tie between job change and job uncertainty.

The level of low job uncertainty ( $n = 48$ ) possesses the following qualities in terms of relationships between job satisfaction and context and structure: a distinct negative association with routine, no association with job uncertainty and structural ties with role definition and job change (Exhibit 4-18). This level is most often accompanied by medium or high levels of job routine (Exhibit 4-4). The combination of low job uncertainty and medium job routine ( $n = 26$ ) brings together two contextual levels which bear rather different relationships with job satisfaction. Medium job routine is typically associated with the following relationships in terms of job satisfaction: a negative tie with routine, a positive tie with uncertainty and structural ties with role definition and group cohesion. The combination of the two levels results in only one significant intercorrelation: a positive linkage between job satisfaction and role definition (Exhibit 4-16). Apparently increasing routine does not relate negatively to job satisfaction when routine is generally moderate and uncertainty is low, even though both of these levels show negative relationships in this set. Nor does increasing uncertainty relate positively to job satisfaction. This is expected in the sense that previous discussion has shown that increasing uncertainty is associated with job satisfaction only in a setting where the general level of uncertainty is high and routine is moderate. Here the general



level of uncertainty is low, while routine is moderate, and no relationship is in evidence. Perhaps an ordered harmony prevails in the setting of moderate routine and low uncertainty.

The combination of low job uncertainty and high job routine ( $n = 20$ ) brings together two levels of context which bear similar relationships between job satisfaction and context and structure. A strong negative relationship emerges between job satisfaction and job routine which is anticipated in this highly routinized and least uncertain setting. A positive tie exists between job satisfaction and role definition, but no association is shown between job satisfaction and job change at  $p = .05$  (Exhibit 4-16). Increasing uncertainty in this setting is associated with decreasing job routine and job change. Perhaps the decreasing routine in itself serves to increase job satisfaction and persons do not respond directly to the structural effect of increasing job uncertainty as it relates to job change. The sample size in this setting is also low and a high correlation coefficient is required in order for significance to be established at  $p = .05$ . Perhaps in a larger sample job satisfaction and job change in particular would show a positive linkage.

Medium job uncertainty ( $n = 414$ ) and high job uncertainty ( $n = 115$ ) levels are each defined in terms of job satisfaction relationships earlier in this section, and their typical linkages with medium job routine levels are discussed in the medium job routine level analysis. Their consideration in detail here is superfluous.

In conclusion, the results of this general analysis indicate that it is not sufficient to examine relationships between contextual and structural characteristics and job satisfaction in terms of general movements in the data. The context of the job represents a combination of

distinct levels of job routine and job uncertainty, and these two characteristics are not bound in a simple one-to-one relationship of complete contrast (Exhibit 4-4). Further, movements in the data vary at different levels of routine and uncertainty (Exhibits 4-10 and 4-13). Particular attention in the present study is directed to job satisfaction, and relationships between job satisfaction and contextual and structural characteristics are quite different at specific levels of routine and uncertainty (Exhibit 4-18). Bringing these levels together into contextual sets in line with all possible arrangements, and examining them in terms of modal relationships provides a composite of the relationships which are significant for actual contextual settings (Exhibit 4-16). Often these settings represent a balance between two separate series of relationships connected to varying movements in the data at different levels of routine and uncertainty. In other settings, similar forms of relationships are reinforced. It appears necessary, however, to isolate the general level of routine or uncertainty before studying movements in the data in order to acquire a full appreciation of relationships amongst contextual and structural characteristics and job satisfaction. Context bears directly on role relationships.

#### 7. Prelude to A Posteriori Scale Data

Examination of relationships amongst organizational characteristics within levels of job routine and job uncertainty has hitherto centered on a priori scales. Univariate one-way analysis of variance procedures on a posteriori scales indicate that the mean values of organizational characteristics are generally significantly different at high, medium and low job routine and low, medium and high uncertainty. Results of

**MARKS ON ORIGINAL**

the analysis appear in Exhibits 4-19 and 4-20. The lone exception is the role definition characteristic in the job uncertainty data where the significance level is .055, which is considered significant for purposes of the study. Since the mean values are generally significantly different, it is appropriate to consider the comparisons of correlation matrices amongst levels of job routine and job uncertainty in the a posteriori scale data, and to consider comparisons in the conclusions reached between the a priori and a posteriori scales. A series of exhibits is presented for the a posteriori scale data. These exhibits are constructed in a similar manner to the a priori scale data, and are numbered 4-21 through 4-28. Initial information on a posteriori scales appears in Exhibits 4-1, 4-2, 4-3 and 4-4 at the outset of this chapter.

A posteriori scales are empirically based. One of the main features of these scales in terms of the present study is the redistribution of many survey respondents from medium job routine and medium job uncertainty as determined by relative scale score levels into low and high levels of each characteristic as measured in the empirical scales. This feature is an outcome of the fact that two-thirds of the respondents measured medium against the scale itself, and relatively equal groupings of low, medium and high for each characteristic is possible only by breaking into the a priori medium groups (Exhibits 4-1 and 4-2). Thus a posteriori low job routine, high job routine, low job uncertainty and high job uncertainty represent groups of respondents which measured at these levels in the a priori scales together with part of the medium a priori group in each case. A posteriori medium job routine and medium job uncertainty represent the heart of each of these groups from the a priori scale data (Exhibits 4-1 and 4-2). In fact, on the scale scores from 4 to 20 in

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 4-19 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB ROUTINE

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 574	<u>SIGNIFICANCE LEVEL</u>
<b>A. <u>CONTEXT</u></b>		
1. Job Routine	1396.1	0.00
2. Job Uncertainty	38.0	0.00
<b>B. <u>STRUCTURE</u></b>		
3. Role Definition	21.5	0.00
4. Job Change	4.6	0.01
5. Group Cohesion	3.7	0.03
<b>C. <u>PERFORMANCE</u></b>		
6. Job Satisfaction	23.3	0.00

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 4-20 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB UNCERTAINTY

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 574	<u>SIGNIFICANCE LEVEL</u>
<b>A. <u>CONTEXT</u></b>		
1. Job Routine	46.7	0.00
2. Job Uncertainty	1292.7	0.00
<b>B. <u>STRUCTURE</u></b>		
3. Role Definition	2.9	0.06*
4. Job Change	18.1	0.00
5. Group Cohesion	6.0	0.00
<b>C. <u>PERFORMANCE</u></b>		
6. Job Satisfaction	9.2	0.00

\* to three decimals p = 0.055

each characteristic, the middle group in the empirical scales is comprised of respondents at scores 12 to 14, which shows the heavy concentration of persons falling into this band (ibid.). The main point is that respondents are now judged as low, medium or high not in terms of the scale itself but in terms of their relative position to other survey respondents. Many of the respondents measuring low or high on the a posteriori scale are actually medium in terms of the survey scale score itself.

#### 8. Job Routine Levels - A Posteriori Scales

Significant correlation coefficients between organizational characteristics within levels of job routine based on a posteriori scales appear in Exhibit 4-21. Certain aspects of the table are consistent with the pattern shown for a priori scales, while a number of differences is also apparent (cf. Exhibit 4-10). The curvilinear nature of the job routine - job uncertainty relationship across levels of routine is more evident in this set of scales. Persons at high and low levels of routine demonstrate conditions of decreasing routine in instances of increasing uncertainty, and the intercorrelations are reasonably strong at  $-.34$  and  $-.29$  respectively. This relationship disappears at medium levels of routine. In the a priori scales, a negative intercorrelation appears, but its strength is lower than that of high and low levels of routine. One interpretation of this curvilinear relationship is linked to the previous analysis. Routines in general are often developed to cope with uncertainty. When the job is routinized to high level, a certain standardization is formulated for the role. It is based on historical or existing circumstances, and increasing uncertainty is associated with some flexibility in this routine. When the job is moderately routinized, some maneuverability

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 4-21 SIGNIFICANT CORRELATION BETWEEN ORGANIZATIONAL CHARACTERISTICS WITHIN LEVELS OF JOB ROUTINE

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>LEVEL OF JOB ROUTINE</u>		
	HIGH N=157	MEDIUM N=207	LOW N=213
<u>A. CONTEXT</u>			
1. Job Routine - Job Uncertainty ✓	-.34		-.29
<u>B. STRUCTURE</u>			
2. Role Definition - Job Change			
3. Role Definition - Group Cohesion			
4. Job Change - Group Cohesion			
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine	.13		.26
6. Role Definition - Job Uncertainty			
7. Job Change - Job Routine	-.23		-.11
8. Job Change - Job Uncertainty	.43	.15	.28
9. Group Cohesion - Job Routine	-.14		
10. Group Cohesion - Job Uncertainty		.14	
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.23		
12. Job Satisfaction - Job Uncertainty		.12	
13. Job Satisfaction - Role Definition	.23	.25	.14
14. Job Satisfaction - Job Change	.18	.12	
15. Job Satisfaction - Group Cohesion	.17	.25	.17
<u>CONTROLLING FOR JOB UNCERTAINTY</u>			
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine	.13		.24
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.21		
13. Job Satisfaction - Role Definition	.23	.25	.14
14. Job Satisfaction - Job Change	.15		
15. Job Satisfaction - Group Cohesion	.16	.23	.17

Technical Note: All coefficients significant at .05 level

exists in the essential job technology, and there is less standardization. Increasing uncertainty is handled through existing routines and is aided by the latitude already part of the job by virtue of only moderate and not high routinization levels. When the job is low in terms of general routine, there is little standardization for the role. Little is available on regular set procedures, and work programs do not typically adhere to a system. What routine that does exist is tempered by increasing uncertainty within this group. Increasing routine on the other hand may serve to decrease the amount of uncertainty perceived in the position at low levels of routine.

Curvilinear type patterns comparable to the job routine - job uncertainty relationship form also in the ties within role definition and job routine, job change and job routine, and job change and job uncertainty. The job change data appearing here do not arise in the a priori scale matrix. Nor are job change data independent of job uncertainty. It seems in the cases of high and low levels of routine, that increasing job routine is associated with increasing role definition; that increasing job uncertainty is associated with increasing job change, and decreasing job routine; and that increasing job routine is associated with decreasing job change. The lone significant intercorrelation at medium levels of routine is a positive relationship between job change and job uncertainty. The overall scenario perhaps shows the impact of the extremes of routinization. Increasing job routine at what are typically high or low levels of routine is associated with increasing role definition. This association is more marked at low levels of routine where role definition and job routine have an intercorrelation of .26, and differs from the a priori scales where no association appears between the two characteristics. The




inclusion of more respondents from mid-range possibly contributes to this difference which is pursued presently. The existence of routines at high and low routine mitigates against job change in both instances. Increasing uncertainty, however, is associated with less job routine in the essential technology in each group, and with increasing job change. Decreasing job routine is also related to increased job change, reflected in the negative correlation coefficients between these characteristics. The inverse of this line of reasoning is also a possibility. Increasing routine may lead to decreasing uncertainty and less job change. In this sense, any increase in routine tempers job change, or renders it unnecessary. Job change represents structural amendment in the organization, perhaps in part generated by the incidence of increasing uncertainties in the job. Flexibility in the organization can be conceived in a number of different ways in the face of increasing uncertainty: decreasing routine within the job technology itself, changes in routines introduced through job change, and forms of routine which permit member maneuverability and latitude in addressing uncertainties are at least three of them. In cases where jobs are highly routinized, the present study indicates that increasing uncertainty is related to decreasing job routine within the job technology, and the combination of increasing uncertainty and decreasing routine is related to job change. To the extent that increasing uncertainty forces changes in existing routines, the tie between job uncertainty and job change is relatively great, and the intercorrelation of .43 reflects this condition. Increasing routine, on the other hand, reduces uncertainty, leads to role definition and works against job change. Increases in routine also are negatively tied to group cohesion. In terms of organizations in action, perhaps much depends

on the source of orientation to the series. In harmonious stable settings, an orientation towards routinization may be prevalent. When uncertainties increase, the opposite is true. It seems in jobs which have a generally high level of routine to them, in the face of increasing uncertainty, flexibility is furnished in the job technology, indicated in reduced routine, and in structure, indicated in job change.

The same pattern holds for jobs with a generally low level of routine. Increases in uncertainty are associated with less routine and job change. Since the level of routine is generally low in this group, the expectation may be that the job change - job uncertainty relationship is somewhat less strong than in the case of the high routine group, and the data reflect this circumstance. Increasing routine at low levels of routine is associated with decreasing uncertainty, increasing role definition and decreasing job change. Perhaps the routines are formulated to cope with existing uncertainties. This serves to mellow the salience of these uncertainties and provides a structure to work within. Increasing uncertainty may result in less routine and job change in the job setting as well.

Only one of relationships emerges in jobs which typically experience medium job routine, a positive tie between job change and job uncertainty. Central to this absence of systematic relationships may be the moderation which exists in jobs which are somewhat but not highly routinized. Routines are developed in part to handle uncertainty. A general increase in the overall level of routine perhaps furnishes the types of approaches and procedures that are required to handle existing and increasing uncertainty. In this level of routine, increasing uncertainty is not associated with less routine, but there is a degree of job change. Increasing



routine does not lower job uncertainty, nor is routine related to role definition nor job change. Flexibility in the organization is centered on maneuverability in the application of existing routines to changing circumstances to the extent they arise, and some job change in response to increasing uncertainty. When an extensive system of routines is formulated, however, and the general level of routine moves from medium to high, then flexibility is incorporated in the form of reducing and changing routines. This condition is not mandated at medium levels of routine.

The structural tie between role definition and group cohesion which appears in the low job routine group as measured by a priori scale data does not emerge in the posteriori data set. Since the present group at low job routine includes a large number of respondents previously classified as medium, it may be that this rare structural relationship in the study is connected to extreme conditions of low job routine. Indeed, the notion of routine particularly in the low routine group has a different meaning in the empirical scales, which emphasizes the importance of careful qualification in discussing the findings, and may account for the differences in the relationships amongst job routine and other organizational characteristics in a number of instances in comparing the two scale sets. Job routine, for example, is negatively related to group cohesion within the medium job routine group in the priori scales. This shifts to the high job routine group in the present scales. The change may be explained by the reclassification of certain of the respondents from the medium priori group in the high posteriori group, and perhaps suggests that persons at medium-high and not extremely high levels of routine experience less group cohesion with increasing routine.

Increasing job uncertainty is associated with increasing group cohesion at medium levels of routine as measured on both scales. In terms of the present analysis, it appears that increasing uncertainty is not connected to less routine but does perhaps lead to increased group interaction within the medium routine group. Perhaps group cohesion is nurtured in cases where maneuverability is part of the job technology as job uncertainty increases.

Comparisons in the context, structure and job satisfaction set are also interesting. Increasing routine is associated with decreasing job satisfaction at high levels of routine within the empirical scales. Increasing uncertainty is associated with increasing satisfaction at medium job routine, whether of high nor low job routine. It appears that respondents at generally high levels of routine react negatively to increasing routine, and have no systematic pattern with increasing uncertainty. Further, they relate positively to all of role definition, job change and group cohesion. Respondents at generally medium levels of routine do not react negatively nor positively to increasing routine, but do react positively to increasing uncertainty. Similar to the high routine level, they relate positively to all of role definition, job change and group cohesion. The job change relationship, however, is not independent of levels of uncertainty. Respondents at low levels of routine show no systematic ties between job satisfaction and contextual characteristics of job routine and job uncertainty. As in the a priori scale analysis, it may be that increasing job uncertainty is favoured within the context of medium job routine and not low or high routine. Increasing job routine in jobs already low on routine is not related to decreasing satisfaction. Structural ties in low routine jobs

are with role definition and group cohesion. The differences between the general pattern shown in a posteriori scales and that in the a priori scales are minor, and likely are a result of the extension of the medium routine group into the high and low groups in the present analysis. These differences include the positive tie between job satisfaction and group cohesion at low job routine, the elimination of a negative tie between job satisfaction and job routine at medium job routine, the evidence of some bond between job satisfaction and job change at medium job routine, and the positive tie between job satisfaction and role definition at high job routine. The key relationships perhaps are the positive job satisfaction - job change linkage in instances of high job routine, and the positive ties of job satisfaction with both role definition and group cohesion at medium and low routine.

Second and third-order correlation coefficients are compiled for the job satisfaction data within levels of job routine, and represent the effect of removing not only job uncertainty from the data series, but also the structural characteristics in isolation and in pairs. These higher level correlation matrices appear as Exhibits 4-22 and 4-23. The basic pattern uncovered in the zero-order and first-order correlations is not changed when job uncertainty and job change and group cohesion, either separately or together, are removed from the data (B, C and F). When the structural characteristic role definition is considered, however, the data are affected. A negative relationship between job satisfaction and job routine appears at the low job routine level when role definition and job uncertainty are controlled, both without and with job change and group cohesion (A,D,E). It seems likely that role definition and job uncertainty together contribute to the elimination of the negative effect

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 4-22 SECOND ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND SELECTED CHARACTERISTICS  
WITHIN LEVELS OF JOB ROUTINE CONTROLLING JOB  
UNCERTAINTY AND SPECIFIED STRUCTURAL CHARACTERISTICSA. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY  
AND ROLE DEFINITION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.25		-.12
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	.18	.12	
15. Job Satisfaction - Group Cohesion	.15	.25	.17

B. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY  
AND JOB CHANGE

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.20		
13. Job Satisfaction - Role Definition	.25	.26	.14
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	.17	.23	.17

C. SECOND ORDER CORRELATION CONTROLLING JOB UNCERTAINTY  
AND GROUP COHESION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.19		
13. Job Satisfaction - Role Definition	.22	.26	.14
14. Job Satisfaction - Job Change	.16		
15. Job Satisfaction - Group Cohesion	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 4-23 THIRD ORDER CORRELATION COEFFICIENTS BETWEEN  
JOB SATISFACTION AND SELECTED CHARACTERISTICS  
WITHIN LEVELS OF JOB ROUTINE CONTROLLING FOR  
JOB UNCERTAINTY AND SPECIFIED STRUCTURAL  
CHARACTERISTICS

D. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
ROLE DEFINITION AND JOB CHANGE

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.24		-.12
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	.16	.24	.17

E. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
ROLE DEFINITION AND GROUP COHESION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.23		-.12
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	.19		
15. Job Satisfaction - Group Cohesion	*	*	*

F. THIRD ORDER CORRELATION CONTROLLING JOB UNCERTAINTY,  
JOB CHANGE AND GROUP COHESION

	<u>LEVEL OF JOB ROUTINE</u>		
	<u>HIGH</u>	<u>MEDIUM</u>	<u>LOW</u>
11. Job Satisfaction - Job Routine	-.18		
13. Job Satisfaction - Role Definition	.24	.27	.14
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	*	*	*

Technical Note:

All coefficients significant at .05 level  
\* coefficient removed by control procedure

of routine on job satisfaction when job routine is typically low. This, however, seems not to be true in cases where job routine is typically moderate. When job uncertainty and role definition are both controlled (A), a positive tie between job satisfaction and job change reappears at medium levels of routine. It disappears, however, when group cohesion, possibly a substitute for change, is controlled as well (E). At moderate levels of routine, therefore, it seems that increasing job change is related to increasing job satisfaction, but this relationship is not independent of job uncertainty. It is, however, independent of job uncertainty and role definition, but not of job uncertainty, role definition and group cohesion. The movements and level of uncertainty, role definition and group cohesion all bear on the relationship. The second and third level correlation matrices, while leaving some complexities, confirm the independence of the previously cited key relationships.

#### 9. Job Uncertainty Levels - A Posteriori Scales

Significant correlation coefficients between organizational characteristics within low, medium and high levels of job uncertainty as measured on a posteriori scale, appear as Exhibit 4-24. A cursory glance at both the a priori and a posteriori scale exhibits reveals the changes in the location and incidence of significant correlation coefficients. In the a priori data (Exhibit 4-13), the coefficients dot the map. In the present set, the coefficients are predominantly located in the low uncertainty group, and very few emerge in the medium and high uncertainty groups.

As in the a priori scales, a negative relationship between job routine and job uncertainty appears in the low uncertainty group. This relationship, however, is of reduced strength in the a posteriori set, and



SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 4-24 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN  
ORGANIZATIONAL CHARACTERISTICS WITHIN LEVELS  
OF UNCERTAINTY

ORGANIZATIONAL CHARACTERISTICS	LEVEL OF JOB UNCERTAINTY		
	LOW N=203	MEDIUM N=209	HIGH N=165
<b>A. CONTEXT</b>			
1. Job Routine - Job Uncertainty	-.23		
<b>B. STRUCTURE</b>			
2. Role Definition - Job Change	-.12		
3. Role Definition - Group Cohesion			
4. Job Change - Group Cohesion			
<b>C. STRUCTURE AND CONTEXT</b>			
5. Role Definition - Job Routine	.22	.29	.29
6. Role Definition - Job Uncertainty	-.14		
7. Job Change - Job Routine	-.15		
8. Job Change - Job Uncertainty	.29		.26
9. Group Cohesion - Job Routine	-.15		
10. Group Cohesion - Job Uncertainty			
<b>D. JOB SATISFACTION</b>			
11. Job Satisfaction - Job Routine	-.33	-.29	
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.18		.19
14. Job Satisfaction - Job Change	.14		
15. Job Satisfaction - Group Cohesion	.20	.12	.28
<b>CONTROLLING FOR JOB ROUTINE</b>			
<b>C. STRUCTURE AND CONTEXT</b>			
8. Job Change - Job Uncertainty	.27		.26
10. Group Cohesion - Job Uncertainty			.13
<b>D. JOB SATISFACTION</b>			
13. Job Satisfaction - Role Definition	.27	.14	.22
15. Job Satisfaction - Group Cohesion	.17		.29

Technical Note: All coefficients significant at .05 level

does not appear at medium or high levels. In the a priori scales, the negative relationship appears at medium job uncertainty. The composite of different relationships is important to consider in analyzing the relationship of job routine and job uncertainty. Previous discussion has established that the reduction of routine in the circumstance of increasing uncertainty represents a form of organizational flexibility built into the essential job technology. Alternatively, the negative relationship may reflect decreasing uncertainty resulting from increasing routinization. In the low uncertainty group, a number of relationships is uncovered. Two views are viable. Increasing uncertainty is associated with decreasing routine, decreasing role definition and increasing job change. Increasing routine, on the other hand, is associated with decreasing uncertainty, increasing role definition, decreasing job change and decreasing group cohesion. A negative structural relationship between role definition and job change also appears. To the extent that job uncertainty is increasing, technological flexibility is realized through less routine, and structural flexibility is generated in the form of job change, which is related to both increasing uncertainty and decreasing routine. This latter combination of contextual conditions serves to reduce role definition, which in turn expedites job change because of the negative tie between role definition and job change. Increasing uncertainty, however, may not be experiencing on an ongoing basis because the general level of uncertainty is low in this group. Without increasing uncertainty, a certain rigidity is built into the system by any increase in job routine, whose effects are cited previously.

Crozier (1965) speaks of rigidities forming at both low and high levels of uncertainty. In the high uncertainty group within the present

scales, increasing job routine is related to increasing role definition, and increasing job uncertainty is related to increasing job change. No intercorrelation occurs between job routine and job uncertainty, and unlike the a priori scales, no negative intercorrelation occurs between job routine and job change. The absence of this latter correlation coefficient is important in the application of Crozier to the present study. When uncertainty is increasing in a group where uncertainty is already high, flexibility is related to the application of existing routines which are not reduced with increasing uncertainty, and to job change. Increasing routine in the empirical scales does not temper the element of job change, whereas in the a priori scales, increasing routine is related to less job change. The empirical scale for high uncertainty includes a number of respondents from the medium a priori uncertainty group in addition to all of the high a priori uncertainty group. The negative bond between job routine and job change in the high uncertainty a priori group is interpreted as a certain rigidity which forms in the organizational system. Persons experiencing increasing uncertainty when uncertainty is high show a penchant for existing routines, and increasing routine forms a road block for organizational job change, which is generated by job uncertainty. This rigidity disappears in the empirical scales, suggesting perhaps that it is characteristic only of the uncertainty group measuring high against the scale itself, the extreme group. In the a posteriori or empirical scales, the element of job change is not encumbered by job routine, and conceivably increasing job change and increasing routine may be brought in together without routine working against change. It further appears that increasing uncertainty is related to increasing group cohesion in the high uncertainty group, a relationship which emerges when job routine is controlled.

The negative correlation coefficient of  $-.12$  between the structural characteristics of role definition and job change within the low uncertainty group bears particular attention. Basically two significant intercorrelations emerge in the study amongst structural characteristics, although all characteristics appear to be orthogonal to one another (exhibit 2-2). Firstly, a coefficient of  $-.08$  appears in the zero order correlation matrix between role definition and job change (exhibit 3-1). This is interpreted as a possible indication that roles are easier to define when jobs do not change often or alternatively that increasing job change results in less role definition. Either way, the negative correlation is explained (Chapter III). Secondly, a coefficient of  $.21$  between role definition and group cohesion appears in the low job routine group as measured by a priori scales, and in the combined setting of low job routine - high job uncertainty. This is interpreted as an organizational action to build group interaction into the organizational structure in an organic type setting, typified by low routine, and a combination of low routine and high uncertainty. Such a finding is consistent with the work of Burns and Stalker (1961), although it deviates from their reports to the extent that increased group cohesion is tied to increased role definition, and not decreased role definition. Perhaps the important qualification is that role definition is a general measure in the present study, and does not probe specific qualities of the role which may well be affected in the directions projected by these researchers.

Just as the tie between role definition and group cohesion emerged in a particular context, specifically low job routine and low routine - high uncertainty in the a priori set, so the tie between role definition

and job change occurs in one particular context, specifically low job uncertainty in the a posteriori set, although it is also evident in the fundamental relationships. Amongst others, Blau (1974) has emphasized the importance of organizational adaptability to changing circumstances (pp. 72-75). Even organizations operating in conditions of relative stability face circumstances at some point which force change in the existing patterned relationships within the organization. Lawrence and Lorsch (1969) share this view (p. 232). The natural bent of organizations is to routinize and structure their positions. This orientation, however, may temper their subsequent ability to adapt and change. Blau cites the following example which is related to Crozier's (1965) analysis of rigidity at the extremes of uncertainty:

"For instance, effective administration is contingent on uniform adherence to regulations as well as on adaptability to a variety of specific situations, but bureaucratic pressures compelling strict conformity to rules also give rise to rigidities that interfere with the adaptability needed to handle special cases" (p. 73).

One measure of adaptability to special cases, which amount to a form of increasing uncertainty, is the reduction of routine within the job technology itself. Organizational action is reflected in job change. Ideally, perhaps, job change should be free-floating and unencumbered by other structural conditions. Thus jobs may be adapted as necessary to cope with changing circumstances. The present study suggests this is true in instances where uncertainty levels are typically moderate or high. However, in cases where job uncertainty is typically low, increasing role definition is associated with decreasing job change, and increasing job change is associated with decreasing role definition. Organizational adaptability or flexibility is thus affected by existing

levels and movements in role definition. Jobs at this level lend themselves to routinization and role definition. To the extent that processes of bureaucratization occur, a rigidity is formed which tempers the ability of the organization to change the jobs. Jobs which typically face higher levels of uncertainty do not readily lend themselves to bureaucratization, and the organizational rigidity is not apparent. Alternative forms of rigidities arising out of member action do appear, however, in the cases of high job uncertainty as discussed previously in the a priori data. In the present discussion, however, it appears that the negative relationship between role definition and job change, first uncovered in the zero order correlation matrix, is a situation particularly evident in the context of low job uncertainty, and possibly represents an organizational rigidity related to bureaucratization and circumstances with low numbers of special cases, new problems and changing conditions.

The relationships amongst job satisfaction and contextual and structural characteristics are not as clear in the a posteriori job uncertainty level data as in the a priori scales. Persons at low and medium levels of uncertainty respond negatively to increases in routine in both sets, and no relationship exists between job satisfaction and job routine when job uncertainty is generally high. In no case, however, is there a positive linkage between job satisfaction and job uncertainty in the empirical scales, whereas this did occur in the a priori data, particularly in cases of high uncertainty. It may be that increasing uncertainty is related to increasing satisfaction in cases where uncertainty is already at a distinctly high level, which is true in the a priori scales. The a posteriori data include a number of respondents classified medium in the a priori set.

Structural linkages with job satisfaction at low job uncertainty are apparent for all of role definition, job change and group cohesion. The job change relationship, however, is not independent of the level of job routine. When job uncertainty is typically medium, a structural tie between job satisfaction and group cohesion is evident, but this is also not independent of job routine. Furthermore, when job routine is controlled, a tie between job satisfaction and role definition emerges. It appears therefore, that for analysing relationships between job satisfaction and structure at low and medium uncertainty levels in this set, it is necessary to consider the contextual setting of uncertainty and routine as a whole. This is done presently. At generally high levels of uncertainty, structural ties between job satisfaction and both role definition and group cohesion are found, and these relationships hold when the effect of job routine is removed from the data. Persons generally facing high uncertainty, therefore, respond neither positively nor negatively to movements in routine or uncertainty, and like an understanding of their role in the organization and working with others.

In order to discern more in-depth understanding of the relationships amongst job satisfaction and the contextual and structural characteristics particularly at low and medium levels of uncertainty, second and third level correlation coefficients are compiled for the job satisfaction section of exhibit 4-24, while controlling for job routine and selected structural characteristics. These higher level correlation matrices appear as exhibits 4-25 and 4-26. The positive relationship between job satisfaction and job change at low levels of uncertainty which disappears when job routine is controlled reappears

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 4-25 SECOND ORDER CORRELATION COEFFICIENTS BETWEEN JOB SATISFACTION AND SELECTED CHARACTERISTICS WITHIN LEVELS OF JOB UNCERTAINTY CONTROLLING JOB ROUTINE AND SPECIFIED STRUCTURAL CHARACTERISTICSA. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND ROLE DEFINITION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	.12		
15. Job Satisfaction - Group Cohesion	.15		.31

B. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND JOB CHANGE

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.28	.15	.22
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	.17		.29

C. SECOND ORDER CORRELATION CONTROLLING JOB ROUTINE AND GROUP COHESION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.26	.14	.24
14. Job Satisfaction - Job Change			
15. Job Satisfaction - Group Cohesion	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure



SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 4-26 THIRD ORDER CORRELATION COEFFICIENTS BETWEEN JOB SATISFACTION AND SELECTED CHARACTERISTICS WITHIN LEVELS OF JOB UNCERTAINTY CONTROLLING JOB ROUTINE AND SPECIFIED STRUCTURAL CHARACTERISTICS

D. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE, ROLE DEFINITION AND JOB CHANGE

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	*	*	*
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	.16		.31

E. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE, ROLE DEFINITION AND GROUP COHESION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	*	**	*
14. Job Satisfaction - Job Change	.13		
15. Job Satisfaction - Group Cohesion	*	*	*

F. THIRD ORDER CORRELATION CONTROLLING JOB ROUTINE, JOB CHANGE AND GROUP COHESION

	<u>LEVEL OF JOB UNCERTAINTY</u>		
	<u>LOW</u>	<u>MEDIUM</u>	<u>HIGH</u>
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.27	.15	.24
14. Job Satisfaction - Job Change	*	*	*
15. Job Satisfaction - Group Cohesion	*	*	*

Technical Note: All coefficients significant at .05 level  
\* coefficient removed by control procedure

when job routine and role definition are controlled (A), disappears when job routine and group cohesion are controlled (C), and reappears when all of job routine, role definition and group cohesion are controlled (E). In particular, the element of group cohesion may therefore affect the tie between job satisfaction and job change when uncertainty is low. Perhaps working with others provides the type of environment which is a suitable proxy for the form of variety that job change offers in jobs where uncertainty is low. The second point, however, is that when the effect of job routine, role definition and group cohesion is all removed from the matrix, job satisfaction and job change are positively related at the low uncertainty level.

Also in limbo are the structural associations at medium job uncertainty. The positive relationship between job satisfaction and role definition when job routine is controlled is confirmed independent of levels of job change and group cohesion (B, and F). The positive relationship between job satisfaction and group cohesion which disappears when job routine is controlled and therefore is not independent of this contextual characteristic remains insignificant when job routine and the structural characteristics of role definition and job change are controlled separately and together (A, B, and D). It seems therefore that the contextual setting as a whole is important in considering this particular relationship. The positive ties between job satisfaction and both role definition and group cohesion at high levels of uncertainty are confirmed as independent of job routine and other structural characteristics (A, B, C, D, and F). No significant correlation coefficients appear between job satisfaction and job uncertainty in any of these matrices.

## 10. Combination Sets of Job Routine and Job Uncertainty -

### A Posteriori Scales

Jobs represent a combination of a level of routine and a level of uncertainty in terms of their contextual situation. Relationships between organizational characteristics are shown to vary amongst these contextual situations in the a priori data set (exhibit 4-16). Similarly the patterns of significant correlation coefficients are different amongst the contextual combinations in the a posteriori scale data (exhibit 4-27). The numbers of respondents falling into the contextual combinations are altered rather dramatically between the two sets of scales (exhibit 4-3). As might be expected, greater balance in sample size amongst the nine contextual combinations is achieved in the empirical scales, and the designation of primary groups is not viable (cf. exhibit 4-17). No group has more than ninety-two respondents, and this group represents one contextual extreme of low job routine coupled with high job uncertainty. The concentration of respondents at medium routine and medium uncertainty which prevails in the a priori data is thus broken, but at the same time, the extremes include respondents who previously were classified as moderate. The impact of this reclassification is discussed throughout the analysis, but is perhaps most evident in the combined sets of contextual characteristics.

In the high job routine - low job uncertainty group (column 1), a negative correlation of  $-.37$  is shown between job routine and job uncertainty. This is accompanied by a negative tie between job change and job routine and a positive tie between job change and job uncertainty. The intercorrelations are  $-.40$  and  $.45$  respectively. The structural relationship between role definition and job change which

SET B - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 4-27 SIGNIFICANT CORRELATION COEFFICIENTS BETWEEN  
ORGANIZATIONAL CHARACTERISTICS WITHIN COMBINED  
SETS OF JOB ROUTINE AND JOB UNCERTAINTY

ORGANIZATIONAL CHARACTERISTICS	HIGH JOB ROUTINE		
	LEVEL OF JOB UNCERTAINTY		
	1. LOW N=87	2. MEDIUM N=51	3. HIGH N=19
<u>A. CONTEXT</u>			
1. Job Routine - Job Uncertainty	-.37		-.38
<u>B. STRUCTURE</u>			
2. Role Definition - Job Change			
3. Role Definition - Group Cohesion			
4. Job Change - Group Cohesion			
<u>C. STRUCTURE AND CONTEXT</u>			
5. Role Definition - Job Routine			
6. Role Definition - Job Uncertainty			
7. Job Change - Job Routine	-.40	.28	
8. Job Change - Job Uncertainty	.45	.25	
9. Group Cohesion - Job Routine			
10. Group Cohesion - Job Uncertainty			.39
<u>D. JOB SATISFACTION</u>			
11. Job Satisfaction - Job Routine	-.34		
12. Job Satisfaction - Job Uncertainty			
13. Job Satisfaction - Role Definition	.33		
14. Job Satisfaction - Job Change	.22		
15. Job Satisfaction - Group Cohesion			.43

Technical Note: All coefficients significant at .05 level.

... cont'd

EXHIBIT 4-27 Continued

<u>ORGANIZATIONAL CHARACTERISTICS</u>	<u>MEDIUM JOB ROUTINE</u>			<u>LOW JOB ROUTINE</u>		
	<u>LEVEL OF JOB UNCERTAINTY</u>			<u>LEVEL OF JOB UNCERTAINTY</u>		
	4. LOW N=75	5. MEDIUM N=78	6. HIGH N=54	7. LOW N=41	8. MEDIUM N=80	9. HIGH N=92
<u>A. CONTEXT</u>						
1.						-.22
<u>B. STRUCTURE</u>						
2.						
3.						
4.						
<u>C. STRUCTURE AND CONTEXT</u>						
5.					.35	.28
6.	-.20					
7.						
8.			.23			.28
9.						
10.						
<u>D. JOB SATISFACTION</u>						
11.					-.24	
12.	.19					
13.		.40	.24	.40		.23
14.						
15.			.42	.34		

Technical Note: All coefficients significant at .05 level.

appears in the low uncertainty group (exhibit 4-24) does not surface in this or either of the other two contextual sets involving low job uncertainty. The combination of high routine and low uncertainty perhaps reflects the setting most indicative of a context which may be suited and generic to bureaucracy. The prevalence of both technological and structural flexibility in instances of increasing uncertainty may reflect an adaptive quality in the respondent's organizations.

Increasing job routine is associated with decreasing job change, which in isolation may be interpreted as a negative influence on adaptation. However, in cases of increasing uncertainty, job routine itself is decreasing, and thus job change is reinforced by this decline in job routine. Nonetheless, some measure of rigidity exists in the negative intercorrelation between job change and job routine to the extent that jobs cannot change without the level of routine declining as a central tendency. Where job routine does not decline, therefore, the job change option as a measure of flexibility may be dampened.

At the medium uncertainty level within high job routine (column 2) the picture changes. No relationship between job routine and job uncertainty is uncovered, and both job routine and job uncertainty are positively correlated with job change. The intercorrelations are .28 and .25 respectively. For highly routinized jobs, it may be that the more routines formulated when job uncertainty is moderate are derived to cope with generally uncertain situations, and no reduction in routine is generated when uncertainty increases. Any increase in routine in itself actually amounts to job change, in addition to the content modification in positions, which perhaps follows situations of increasing uncertainty. This is the only point in the study where increases in job

routine are perceived in terms of job change. It might be expected to occur in the setting of high routine as part of the job, as it does, but it seems that the high routine is accompanied by moderate and not low or high levels of uncertainty for this relationship to emerge.

When uncertainty is low, increasing routine is associated with decreasing job change, as previously discussed. When uncertainty is high, no relationship between job routine and job change emerges. At the level of high uncertainty within high job routine (column 3) the negative relationship between job routine and job uncertainty reappears, and a positive tie between group cohesion and job uncertainty is apparent. The intercorrelations are  $-.38$  and  $.39$ . Understandably very few respondents fall into this rather paradoxical combination, which holds a measure of technological flexibility and possibly a need for group cohesion in light of increasing uncertainty within jobs which already have a high level of uncertainty and are routinized. It is perhaps not unexpected that job satisfaction and group cohesion are positively related in this setting. A premium may be placed on working with others. No job satisfaction intercorrelations are significant in the high routine - medium uncertainty setting. In the extreme case of high routine - low uncertainty, job satisfaction and job routine are negatively related, and job satisfaction is positively linked to role definition and job change. The positive tie between job satisfaction and job change perhaps reflects the measure of variety that persons in highly routinized and low uncertainty are want to have. This association does not emerge in the a priori data, possibly because of sample size as previously mentioned.

At medium job routine, only two intercorrelations are apparent amongst contextual and structural characteristics. At medium job routine and low job uncertainty (column 4) a negative correlation coefficient of  $-.20$  is found between role definition and job uncertainty. Coincidentally, and again for the only time in the study, increasing uncertainty is related to decreasing job satisfaction in this setting. The balance of medium job routine and low uncertainty represents a somewhat routinized and relatively mellow job context. Persons do not respond negatively to increased routine as they do in the high job routine - low uncertainty group. Apparently, however, increasing uncertainty is associated with decreasing satisfaction and with decreasing role definition. Perhaps at moderate job routine when uncertainty is typically low, any increase in uncertainty affects structural relationships and creates uneasiness in the organizational network. At medium routine and high uncertainty (column 6) a positive correlation of  $.23$  appears between job change and job uncertainty. Thus, when job uncertainty is typically high, increases in uncertainty lead to job change. Persons in this setting respond neither negatively nor positively to changes in routine and uncertainty, and have positive ties between job satisfaction and both role definition and group cohesion. The positive tie between job satisfaction and role definition is also found in the setting of medium routine and medium uncertainty, and is the only significant intercorrelation within this setting (column 5). To abstract, moderate job routine represents the middle of the road so far as job standardization is concerned. Increasing uncertainty within these jobs does not appear to have any systematic ties with job routine itself. When



uncertainty is typically low, however, increasing uncertainty is associated with reduced role definition and reduced job satisfaction. When uncertainty is typically medium, increasing uncertainty has no associations throughout the data. When uncertainty is typically high, increasing uncertainty is related to job change. The structural effects of increasing uncertainty are therefore related to existing levels of uncertainty in general, and routines are perhaps applied consistently amongst job situations, with no decrease in routine being experienced with increases in uncertainty at any level of uncertainty.

In the combination of low job routine and low job uncertainty (column 7) no relationships amongst contextual and structural characteristics appear. Job satisfaction is tied to role definition and group cohesion. The intercorrelations are .40 and .34 respectively. At low job routine and medium job uncertainty (column 8), increasing routine is related positively to role definition and negatively to job satisfaction. It may be that when routine is typically low and uncertainty is typically low, organizational members relate to conditions of role understanding and group interaction in a positive fashion. As uncertainty acquires greater salience within the job settings and low job routine is related to medium levels of job uncertainty, there may be a penchant within organizations to increase routine. This leads to increasing role definition, but increasing routine is responded to negatively by members. In either case, job routine and job uncertainty are independent of one another. At low job routine and high job uncertainty (column 9), job routine and job uncertainty are negatively related. Furthermore in this setting, role definition and job routine are related positively and job change and job uncertainty are similarly related positively. Respondents

appear to favour a measure of role definition in this rather unsettling setting of low routine and high uncertainty. It seems that when routine is typically low, and uncertainty is low or medium, increasing uncertainty does not affect existing levels of routine. Increases in routine, however, are possibly developed by organizations as the general level of uncertainty increases, and at moderate level of uncertainty, respondents do not relate positively to this measure of routinization. When uncertainty is generally high, however, increases in uncertainty create a decrease in routine; or alternately, increases in routine create a decrease in uncertainty. The structural effects of these movements are apparent in both role definition and job change. Increasing uncertainty leads to job change and through decreasing job routine to decreasing role definition. The decrease in role definition is related in turn to decreasing satisfaction. Increasing routine leads to role definition and job satisfaction, and through decreasing job uncertainty to decreasing job change. Either interpretation may hold contingent on the point of departure. element of group cohesion which appears important in the a priori setting of low job routine and high job uncertainty does not surface in this particular group. Indeed, as in this latter case, the general flavour of the entire series of combined sets vary between a priori and a posteriori scales. Differences are attributable in large part to reclassifications of a number of respondents, and a general reduction in the magnitude of high and low groups compared to medium valuations.

#### 11. Context, Structure and Job Satisfaction - A Posteriori Scales

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A summary of the associations amongst contextual and structural

characteristics with job satisfaction at specific levels of job routine and job uncertainty appears as exhibit 4-28. The levels are discerned by a posteriori scales in this instance, and the number and nature of associations is not as prominent as in the a priori data (exhibit 4-18). Only four associations are significant in the context and job satisfaction columns, and many of the structural associations with job satisfaction are tied in part to conditions in the contrasting contextual characteristic.

In jobs which typically have high job routine (row 1) job satisfaction and job routine are negatively associated, no relationship is evident between job satisfaction and job uncertainty and job satisfaction is positively associated with all three structural characteristics of role definition, job change and group cohesion. The negative reaction to increasing routine disappears when jobs typically hold moderate levels of routine, and a positive association emerges between job satisfaction and job uncertainty (row 2). As in the a priori data, it appears likely that some routine but not too high a level of routine is required in jobs before job satisfaction and job uncertainty are positively correlated. Structural linkages with job satisfaction at moderate routine are with all three organizational characteristics, although job change is related in part to existing levels of job uncertainty and conditions in the other structural characteristics. Perhaps job change is most important where jobs are highly routinized as in the high job routine set, or in jobs at moderate levels of routine which have little interaction with others and low levels of uncertainty (cf. row 4). Some support for this proposition rests in the data at low job routine (row 3) where

EXHIBIT 4-28 APPARENT RELATIONSHIPS AMONGST CONTEXTUAL AND STRUCTURAL CHARACTERISTICS AND JOB SATISFACTION WITHIN LEVELS OF CONTEXT

Context and Level	Context and Job Satisfaction	Structure and Job Satisfaction
	Job Satisfaction Relationship With Job Routine	Positive Structural Relationship With Job Satisfaction
A. LEVELS OF JOB ROUTINE		
1. High Job Routine N = 157	negative association	role definition, job change and group cohesion
2. Medium Job Routine N = 207	no association	role definition, job change and group cohesion (2)
3. Low Job Routine N = 213	positive association (1)	role definition and group cohesion
B. LEVELS OF JOB UNCERTAINTY		
4. Low Job Uncertainty N = 203	negative association	role definition, job change and group cohesion (3)
5. Medium Job Uncertainty N = 209	negative association	role definition (4) and group cohesion
6. High Job Uncertainty N = 165	no association	role definition and group cohesion

Source: Exhibits 4-21 through 4-26

- (1) negative association where job uncertainty and role definition are controlled.
- (2) not independent of job uncertainty and role definition and group cohesion.
- (3) not independent of job routine and group cohesion, and job routine alone.
- (4) appears when job routine is controlled.

job change is no longer linked to job satisfaction, but both role definition and group cohesion are positively associated with job satisfaction. At this level, no clear associations between either job routine or job uncertainty and job satisfaction are evident, although increasing routine is related to decreasing satisfaction when both job uncertainty and role definition are controlled. Uncertainty is not related to satisfaction when routine is generally low.

The contrasting contextual characteristic to high job routine is low job uncertainty (row 4). Coincidentally the same pattern of associations amongst job satisfaction and contextual and structural characteristics forms at this level. At low job uncertainty, job change has a positive association with job satisfaction as at high job routine, but the tie is not strictly independent of job routine and group cohesion. Medium job routine and medium job uncertainty (row 5) do not have similar patterns. A negative association between job satisfaction and job routine is evident at medium job uncertainty, whereas no association is evident between job satisfaction and job routine at medium job routine. Further, the positive association between satisfaction and uncertainty which appears at moderate routine is not present at medium uncertainty. Indeed no association between job satisfaction and job uncertainty develops at any general level of uncertainty. This tends to confirm the finding that increasing uncertainty is associated with job satisfaction when routine is generally at moderate levels. Structural associations with job satisfaction at medium job uncertainty are apparent for role definition and group cohesion, although role definition emerges only when the

effect of job routine is removed from the data. Perhaps in some instances they serve as substitutes for one another. Job change bears some importance at medium job routine, but does not emerge in positive association with job satisfaction at medium job uncertainty. Perhaps the fact that uncertainty is generally moderate provides a form of variety in the job which makes job change less necessary as a satisfier. This need not be true at medium job routine levels, where perhaps job change is contingent as a satisfier upon the matching level of uncertainty realized within the total context of the job. Thus, at medium job routine where uncertainty is very low, job change may be positively related to job satisfaction, but where uncertainty is moderately low or medium, job change may have no association with job satisfaction. At high job uncertainty (row 6) job satisfaction is related to contextual and structural characteristics in the same basic way as at the low job routine level: no associations appear with routine and uncertainty, and structural associations are with role definition and group cohesion. Apparently at these two levels, persons respond neither negatively nor positively to changes in routine and uncertainty, and like to have a clearer understanding of their role in the organization within an environment of group cohesion.

## 12. Elements of the General Picture With Respect to Context,

### Structure and Job Satisfaction - A Posteriori Scales

As in the a priori scale data, it is possible and desirable to construct a framework which presents elements of the general picture with respect to context, structure and job satisfaction. The job

context represents a combination of a level of job routine and a level of job uncertainty. Each of these levels has a series of associations between job satisfaction and the contextual and structural characteristics (exhibit 4-28). Each of these levels is typically aligned with a level of the other contextual characteristic in terms of modal contextual relationships (exhibit 4-4). Intercorrelations for all pairs of organizational characteristics are compiled for combined sets of contextual characteristics including modal sets (exhibit 4-27). Information from the three sources provides the basis for a framework of elements of the general picture.

Jobs which are typically high in job routine (n=157) demonstrate the following associations in terms of job satisfaction: a negative tie with increasing routine, no systematic tie with uncertainty changes and positive ties with role definition, job change and group cohesion (exhibit 4-28). These jobs are most often found in combination with low job uncertainty (exhibit 4-28) which carries much the same pattern of job satisfaction associations (exhibit 4-28). Not unexpectedly, within the combined contextual set of high job routine and low job uncertainty (n=87), job satisfaction and job routine are negatively related, and job satisfaction is positively related with role definition and job change (exhibit 4-27). Persons in what amounts to a highly routinized setting with low job uncertainty appear to respond negatively to increases in routine, and although they do not respond positively to increasing uncertainty, they like what uncertainty generates: both falling routine and increased job change. These ties are direct within this group and reflect conditions of technological and structural flexibility within the population as uncertainty

increases. Perhaps of importance, however, is that fact that uncertainty is generally low for this group, and increasing uncertainty is not be a typical experience for these job incumbents. Although job satisfaction and group cohesion are positively related in both high job routine and low job uncertainty, apparently when the two levels are combined, no association is in evidence, and group cohesion emerges as a structural characteristic in association with job satisfaction only at high levels of uncertainty within the high job routine level (exhibit 4-27). Further, this measure of group cohesion for this group is traced directly to increasing job uncertainty, and increasing uncertainty is also associated with less routine here. At high job routine - medium uncertainty, increases in both uncertainty and routine are associated with job change, and job satisfaction is not associated with any contextual or structural characteristics in any systematic fashion (exhibit 4-27; columns 2 and 3).

Medium job routine (n=207) has the following associations in terms of job satisfaction: routine and satisfaction are not related, uncertainty and satisfaction are positively related, and all structural characteristics and satisfaction are related, although job change is affected by the measures of uncertainty, role definition and group cohesion present (exhibit 4-28). Medium job routine is most often found with either low job uncertainty or medium job uncertainty. Low job uncertainty has the following associations in terms of job satisfaction: routine and satisfaction are negatively related, uncertainty and satisfaction are not related, and all structural characteristics and satisfaction are related, although job change is not independent of the measures of routine and group cohesion present



(ibid). Thus the combination of medium job routine and low job uncertainty (n=75) brings together two contextual levels with a number of differences in their associations with organizational characteristics and job satisfaction. In fact, when the two are combined the only significant job satisfaction tie is a negative inter-correlation with job uncertainty (exhibit 4-27). Apparently even though medium job routine has a positive association between satisfaction and uncertainty, and no association between these characteristics is evident at low job uncertainty, the combination of medium routine and low uncertainty provides a setting where increasing uncertainty actually is associated with decreasing satisfaction. This disappears when the general level of uncertainty is higher at medium job routine. Part of this, unexpected relationship between uncertainty and satisfaction when routine is moderate and uncertainty is generally low may be explained in the negative relationship between role definition and job uncertainty which also emerges in this group. Perhaps increasing uncertainty destroys the relative harmonious organizational network that can be rendered in a setting typified by medium routine and low uncertainty. The impact is felt in terms of decreasing role definition, and role understandings are less clear. This leads to decreasing satisfaction. When uncertainty is generally at a higher level, role definition and job satisfaction are linked directly. When uncertainty is higher yet, job uncertainty and job change are positively related, and a premium is placed on role definition and group cohesion (exhibit 27, columns 4, 5, and 6).

Medium job uncertainty brings qualities to its contextual match with medium job routine (n=78) which vary from the associations

fostered by medium job routine. The contrasts are outlined in the previous section of the paper and represent balancing influences. At medium uncertainty, satisfaction and routine are negatively related, whereas no association appears between these two at medium routine. At medium uncertainty, satisfaction and uncertainty are not associated, whereas they are positively associated at medium routine (exhibit 4-28). As balancing influences in the intercorrelation matrix, no associations emerge within the setting of medium routine - medium uncertainty in terms of job satisfaction and context (exhibit 4-27). Further, although both levels have positive associations between job satisfaction and both role definition and group cohesion, only the positive association between satisfaction and role definition is evident in the combined set. Perhaps group cohesion is more important when uncertainty is generally higher, as noted above, when the total setting is considered.

Medium job uncertainty is also one of the modal matches for jobs typically measuring low on job routine (exhibit 4-4). Jobs low on routine demonstrate no systematic associations between job satisfaction and movements in routine and uncertainty, while structural ties are evident between job satisfaction and both role definition and group cohesion (exhibit 4-28). In the combined setting of low job routine and medium job uncertainty (n=80), only a negative tie between job satisfaction and job routine is evident in the job satisfaction data. Apparently the negative relationship of satisfaction and routine at moderate levels of uncertainty affects this setting. This might be explained in terms of organizational actions within low routine jobs. When jobs are not highly routinized and uncertainty is low, job

satisfaction is related to role definition and group cohesion. As uncertainty levels generally increase, more routines are perhaps formulated to handle the higher level of uncertainty, although routine continues to be low. This increase in routine surfaces in increased role definition and increasing routine has a negative effect on job satisfaction. No structural characteristics are connected to job satisfaction. As uncertainty reaches still a higher level, increasing routine is again reflected in increasing role definition, but persons respond favourably to role definition at this generally high level of uncertainty. Further, increasing uncertainty creates conditions of decreasing routine in jobs and generates job change at this level (exhibit 4-27, columns 7, 8 and 9). This latter situation of low routine and high uncertainty (n=92) represents the last modal ~~box~~ in the routine levels (exhibit 4-4). Although both role definition and group cohesion are positively related to job satisfaction at the two levels coupled in this setting, group cohesion does not emerge in positive association with job satisfaction in the data. Group cohesion does bear out in positive association with job satisfaction at high routine - high uncertainty, medium routine - high uncertainty and low routine - low uncertainty. It may be that some routine or lower levels of uncertainty are a prerequisite to group cohesion developing in positive association with job satisfaction. Role definition which amounts to clearer role understanding and designation of available routines is paramount in the organic setting of low routine and high uncertainty. The tie between role definition and group cohesion which appears in the a priori data for this group is not present in the a posteriori data.

The job satisfaction relationships which appear at levels of low, medium and high uncertainty are presented in the discussion of job routine levels, and are shown on exhibit 4-28. The modal contextual settings are similarly each discussed in the matches apparent from the job routine levels, and their modal relationships. It is superfluous to analyse the sets exhaustively. In terms of highlights, it appears that the job change tie with job satisfaction at low job uncertainty is evident in the combined setting of low uncertainty - high routine where the relationship is reinforced by a similar association in the high routine level. In the combined setting of low uncertainty - medium routine, this relationship disappears. The negative association between job satisfaction and job routine at medium job uncertainty appears to have its greatest impact when job routine is typically low. Possibly in this context, any increase in routine which may be generated by a general increase in uncertainty is not favoured. The positive association between job satisfaction and group cohesion at high job uncertainty is not evident at low routine, where most of the respondents experiencing high uncertainty are located. It seems that although job satisfaction and group cohesion are positively associated at high uncertainty, some measure of routine is required in jobs before it emerges in contextual sets of routine and uncertainty.

## CHAPTER V

## JOB SATISFACTION: A MORE IN-DEPTH ANALYSIS

A. PURPOSE AND INTRODUCTION TO JOB SATISFACTION GROUPS

One of the primary areas of inquiry in the present study centers on job satisfaction as a performance outcome of activity in the work organization. Attention is directed to its apparent relationships with the contextual and structural characteristics of job routine, job uncertainty, role definition, job change and group cohesion. The purpose of this chapter is to pursue these relationships in greater detail. This is accomplished by discriminating amongst low, medium and high job satisfaction groups in terms of contextual and structural characteristics, and relating these findings to the results uncovered in the previous analysis of contextual, structural and performance characteristics within particular job contexts (Chapter IV).

Respondents are split into low, medium and high levels of job satisfaction on both an a priori and a posteriori basis just as in the cases of job context in the previous chapter. The job satisfaction scales appear in Exhibit 5-1. The total score on the job satisfaction scale has a range of 6 to 30. The a priori split points occur between 13 and 14 and between 22 and 23 on this scale, and respondents are classified as low, medium or high in terms of the scale itself (set A). This results in 21 respondents at low job satisfaction, 306 respondents at medium job satisfaction and 250 respondents at high job satisfaction. The data clearly show that the vast majority of persons included in the study are at medium or high job satisfaction (cf. Chapters II, III and IV).

## EXHIBIT 5-1 JOB SATISFACTION SCALES

Job Satisfaction Characteristic	A Priori Job Satisfaction Scales - Set A. Scales Based on Relative Scale Score Levels			A Posteriori Job Satisfaction Scales - Set B. Scales Based on Relative Scale Score Levels							
	Score	Respondents		Score	Respondents		Score	Respondents			
		No.	(%) (Cum %)		No.	(%) (Cum %)		No.	(%) (Cum %)		
6	1	.2	.2								
7	0	.2	.2								
8	0	.2	.2								
9	0	.2	.2								
10	2	.3	.5	Low Job Satisfaction							
11	2	.3	.9	6-13	21	3.6	3.6				
12	5	.9	1.7								
13	11	1.9	3.6	Low Job Satisfaction							
14	11	1.9	5.5	6-19	176	30.5	30.5				
15	28	4.9	10.4								
16	22	3.8	14.2								
17	25	4.3	18.5	Medium Job Satisfaction							
18	28	4.9	23.4	14-22	306	53.1	56.7				
19	41	7.1	30.5								
20	48	8.3	38.8								
21	43	7.5	46.3	Medium Job Satisfaction							
22	60	10.4	56.7	20-23	211	36.6	67.1				
23	60	10.4	67.1								
24	65	11.3	78.3								
25	45	7.8	86.1								
26	27	4.7	90.8	High Job Satisfaction			High Job Satisfaction				
27	20	3.5	94.3	23-30	250	43.3	100.0	24-30	190	32.9	100.0
28	13	2.3	96.5								
29	10	1.7	98.3								
30	10	1.7	100.0								

The a posteriori split points occur between 19 and 20 and between 23 and 24 on the scale. These points are chosen since they represent the closest junctures to a division of respondents into equal groups. Persons measuring low on the a posteriori scale are low in the sense that they fall into the bottom third of respondents in the range of scores. The split point between 19 and 20 indicates that the group measuring low on the a posteriori scale actually includes a large number of persons who are classified as medium against the scale itself, and who indeed are above the center point of the scale at 18. The low job satisfaction group on the a posteriori scale comprises 176 respondents; and represents 30.5% of the persons in the study.

Along the same line, the medium job satisfaction group in the a posteriori scale data includes persons from the medium and high a priori job satisfaction groups; and the high job satisfaction group in the a posteriori scale data includes persons in the upper end of the high a priori job satisfaction group. This is a result of the fact that most persons in the study are at the top end of the job satisfaction scale, and well over a third of the respondents are at high job satisfaction when measured against the scale itself. The a posteriori medium job satisfaction group comprises 211 persons and 36.6% of the survey population. The a posteriori high job satisfaction group comprises 190 persons and 32.9% of the survey population (set B).

#### B. ANALYSIS OF A PRIORI JOB SATISFACTION GROUPS

Univariate one-way analysis of variance indicates that differences amongst means for groups of respondents at a priori low, medium and high

job satisfaction are significant for all contextual and structural characteristics (Exhibit 5-2). F ratios are highest for the contextual characteristic job routine and the structural characteristic group cohesion. Mean and standard deviation statistics are provided in Exhibit 5-3. Using the LSD procedure of matching pairs of ordered means, the contextual and structural characteristics are each classified as high, medium or low in accordance with their relative positions to one another (Exhibit 5-4). Job routine is high in the low job satisfaction group, medium in the medium job satisfaction group and low in the high job satisfaction group (row 1). Job uncertainty does not distinguish itself as clearly amongst groups, and is low-medium in both the low and medium job satisfaction groups and medium-high in the high job satisfaction group (row 2). Thus, persons at low job satisfaction tend to have high routine and low-medium uncertainty in their jobs. Persons at medium job satisfaction tend to have medium job routine and low-medium uncertainty. Persons at high job satisfaction tend to have low routine and medium-high uncertainty.

In the structural characteristics, the role definition characteristic does not clearly distinguish amongst groups, and is regarded as medium in all instances (row 3). Job change is low-medium in the low job satisfaction group, and medium-high in both the medium and high job satisfaction groups (row 4). Apparently a degree of job change is related to higher levels of satisfaction. Group cohesion is low in the low job satisfaction group, medium in the medium job satisfaction group and high in the high job satisfaction group (row 5). It would seem the group cohesion goes hand-in-hand with job satisfaction.



SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELSEXHIBIT 5-2 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB SATISFACTION

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 574	<u>SIGNIFICANCE LEVEL</u>
<b>A. <u>CONTEXT</u></b>		
1. Job Routine	20.9	0.000
2. Job Uncertainty	5.0	0.007
<b>B. <u>STRUCTURE</u></b>		
3. Role Definition	4.5	0.012
4. Job Change	4.6	0.010
5. Group Cohesion	15.5	0.000

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS**EXHIBIT 5-3 MEAN AND STANDARD DEVIATION VALUES FOR  
CONTEXTUAL AND STRUCTURAL CHARACTERISTICS  
WITHIN LEVELS OF JOB SATISFACTION**

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>LEVEL OF JOB SATISFACTION</u>			
	LOW N=21	MEDIUM N=306	HIGH N=250	ALL GROUPS N=577
	<u>MEANS</u>			
<b>A. <u>CONTEXT</u></b>				
1. Job Routine	15.5	12.9	11.7	12.5
2. Job Uncertainty	11.6	12.4	13.1	12.7
<b>B. <u>STRUCTURE</u></b>				
3. Role Definition	6.8	7.0	7.4	7.2
4. Job Change	4.7	5.7	6.0	5.8
5. Group Cohesion	5.5	7.0	7.2	7.0
	<u>STANDARD DEVIATIONS</u>			
<b>A. <u>CONTEXT</u></b>				
1. Job Routine	3.9	3.1	3.0	3.2
2. Job Uncertainty	3.5	2.9	3.0	3.0
<b>B. <u>STRUCTURE</u></b>				
3. Role Definition	2.2	1.6	1.7	1.7
4. Job Change	2.5	1.9	1.9	1.9
5. Group Cohesion	1.5	1.4	1.3	1.4

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

**EXHIBIT 5-4 COMPARATIVE RANKINGS OF CONTEXTUAL AND STRUCTURAL CHARACTERISTICS WITHIN LEVELS OF JOB SATISFACTION**

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>LEVEL OF JOB SATISFACTION</u>		
	<u>LOW</u> N=21	<u>MEDIUM</u> N=306	<u>HIGH</u> N=250
<b>A. <u>CONTEXT</u></b>			
1. Job Routine	H	M	L
2. Job Uncertainty	L-M	L-M	M-H
<b>B. <u>STRUCTURE</u></b>			
3. Role Definition	M	M	M
4. Job Change	L-M	M-H	M-H
5. Group Cohesion	L	M	H

**EXHIBIT 5-5 DISCRIMINANT FUNCTION COEFFICIENTS FOR DISCRIMINATING AMONGST LEVELS OF JOB SATISFACTION**

<u>FUNCTION A</u>		<u>FUNCTION B</u>	
Job Routine	.75	Role Definition	.58
Job Uncertainty	.03	Job Uncertainty	.50
Job Change	-.23	Job Routine	-.24
Group Cohesion	-.48	Job Change	-.30
Role Definition	-.53	Group Cohesion	-.71

Technical Note:

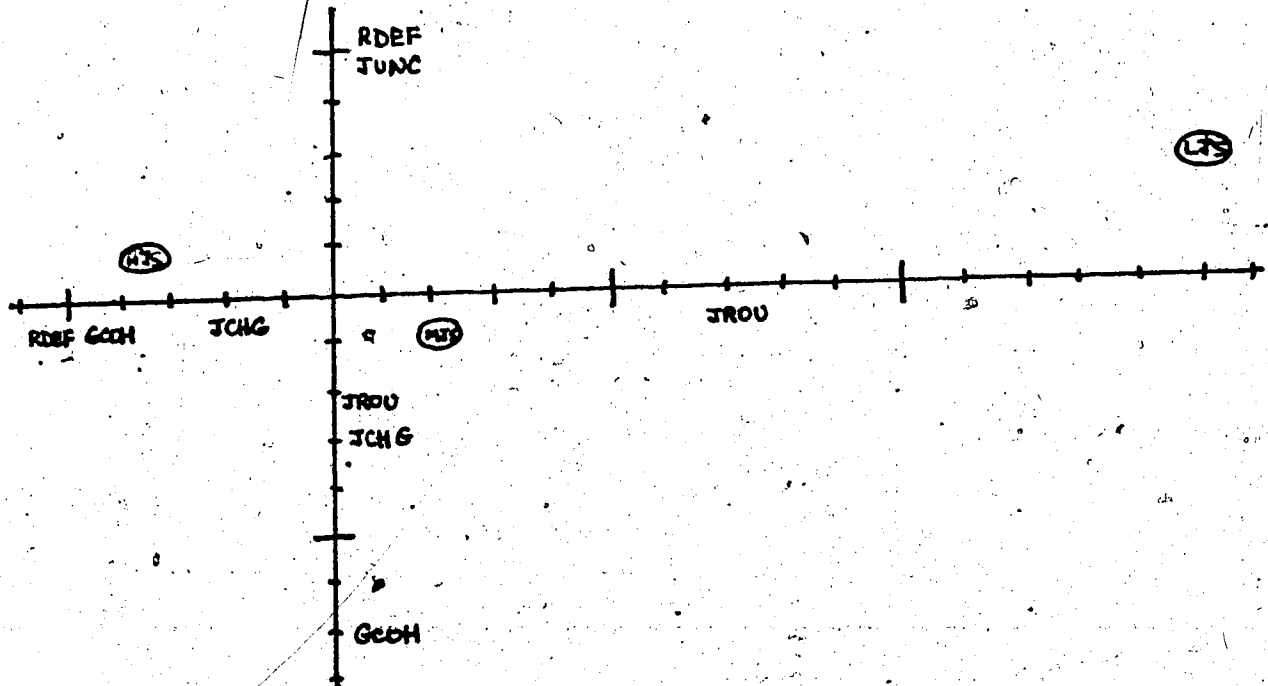
Proportion Variance	93.3	Proportion Variance	6.7
$\lambda^2$	97.12	$\lambda^2$	6.9
Significance Level	0.00	Significance Level	0.14

A discriminant analysis on the five organizational characteristics results in two discriminant functions which explain all of the variance amongst the three levels of job satisfaction (Exhibit 5-5). The first function explains 93.3% of the variance, and is significant at .00. The second function explains 6.7% of the variance, and is significant at .14. To the extent it provides some information, the function is included in the data display. A graph of the discriminant functions appears as Exhibit 5-6. The first discriminant function represents a contrast between job routine on one hand and role definition, group cohesion and job change on the other hand. The function therefore is greater in value as job routine increases relative to role definition, group cohesion and job change. The second function represents a contrast between group cohesion, job change and job routine, and role definition and job uncertainty. The major discrimination occurs within the first function which has the low job satisfaction group on the extreme of the routine side of the function, the medium job satisfaction group approximately in the center of the function and the high job satisfaction group in the role definition - group cohesion - job change side of the function. The contrast involves the contextual characteristics of job routine, and the structural set of all three structural characteristics, but particularly role definition and group cohesion. It appears in general that persons do not like job routine, and that they respond favourably to a knowledge of work roles, to working with others and to job change. The second function essentially loads on group cohesion in contrast to role definition and job uncertainty, and the medium job satisfaction group is distinguished from the low job satisfaction group in particular but also from the high job satisfaction

SET A - SCALES BASED ON RELATIVE SCALE SCORE LEVELS

EXHIBIT 5-6 CENTROIDS OF LEVELS OF JOB SATISFACTION  
IN REDUCED SPACE IN TERMS OF DISCRIMINANT  
FUNCTIONS

<u>JOB SATISFACTION LEVEL</u>	<u>CENTROIDS IN REDUCED SPACE</u>	
	<u>FUNCTION A</u>	<u>FUNCTION B</u>
1. Low Job Satisfaction	1.46	.38
2. Medium Job Satisfaction	-.18	-.09
3. High Job Satisfaction	-.34	.08



group, in an orientation towards group cohesion as distinct from role definition and job uncertainty. It should not be overlooked, however, that job change falls along side group cohesion on this second function, as well as with role definition and group cohesion on the first function.

Based on the scenario and previous analysis, it is possible to speculate on certain of the patterns of context and structure which result in different levels of job satisfaction within organizations' work force. High levels of routinization, for example, are associated with low job satisfaction. Routinization is an orientation of management (cf. Perrow, 1970). Group cohesion and role definition are associated with high job satisfaction. It might be asked whether an operation can counter the organizational outcome of low job satisfaction accompanying routinization by nurturing more cohesive work groups with a measure of role definition. The development of work groups is an essential feature of the human relations school, and is often a part of programs of job redesign. Hackman (1975) refers to a case of job redesign in a bank where this general situation actually occurred.

"People who held the 'good' jobs before the change also held them afterwards - and those people whose jobs had originally been routine, repetitive and virtually without feedback had essentially identical jobs after the work was redesigned. After about six months, there was even a slight derivation in worker satisfaction and motivation ... All that had actually happened was that employees had been put into small groups ... but the jobs themselves had remained virtually untouched." (pp. 265-266).

It seems that content change in the jobs themselves is required before job satisfaction can be expected to increase. The routine itself must be broken. This may amount to having an element of job uncertainty as part of the essential technology of the job, or to job change where either routines are amended periodically to introduce some variety or

the job is enlarged to include a certain diversity in its format. Having some uncertainty with some routine is perhaps indicative of built-in job enrichment. This notion is discussed extensively in Chapter II and is perhaps reflected in Hackman's (1975) description of legal clerks in the bank:

"Legal clerks, for example, had considerable autonomy in handling problems involving death inheritance taxes, testamentary letters and so on. The job required a great deal of skill, and most people who held it found the work both challenging and satisfying." (p. 265).

It appeared in this instance that persons in this type of job which held some challenge and an outlet for skill application "were more motivated, productive and satisfied and were less likely to be absent from the job" (ibid.). This case may prove contrary to those who might argue that reducing job routine may increase satisfaction, but it may have a detrimental effect on productivity. Perhaps too high a level of routinization may deter productivity as a central tendency, and a proper balance between routine and uncertainty levels is required to maximize productivity. The present study lacks a measure of organizational productivity, and thus observations in this regard cannot be offered on the basis of this empirical analysis. Further consideration of the relationships amongst routine, uncertainty and satisfaction is, however, possible and appropriate within the existing framework.

An alternative way to increase job satisfaction may be to reduce the level of job routine, and to develop a structure of relatively high role definition and high group cohesion. This alternative builds on all of the favourable aspects of the first discriminant function, and has a certain appeal. The question, however, is how far does management go with such a plan. From Chapter IV, it appears that as the context of

job technology moves from high job routine to moderate job routine, the negative relationship between routine and job satisfaction is indeed reduced. Further, when routine is typically low, the negative relationship between routine and satisfaction disappears completely. The job context, however, embraces both a level of routine and a level of uncertainty. The relationship of uncertainty and satisfaction is positive only at medium levels of routine (Exhibits 4-10 and 4-18). Only at moderate levels of routine are both role definition and group cohesion positively related to job satisfaction. This setting possibly represents a level of routine which allows persons to deal with uncertainty and thus respond favourably to it, and the measure of routine facilitates role definition which is also responded to favourably. Uncertainty is related to group cohesion which is also favoured. Too little routine, on the one hand, may make uncertainty more difficult to deal with, the job is not easy to define or set limits to, and only group cohesion is related positively to job satisfaction. Too much routine, on the other hand, has a strong negative tie between routine and satisfaction, and job change in addition to role definition are positive satisfiers. Persons like a content change in their jobs when routine is very high. As one option it thus seems desirable to reduce routine somewhat in jobs, but not beyond a certain level. Perhaps too great a reduction in routine creates stress in the job which persons do not like. To conclude the general scenario, it seems that persons respond favourably to increasing uncertainty particularly in the context of moderate routine and high uncertainty (Exhibit 4-16). Thus a reduction in routine to very low levels appears undesirable from the viewpoint of matching uncertainty and satisfaction as well. A level of routine may be required in order to effect



tively deal with uncertainty (cf. Simon, 1960) and to expedite job satisfaction.

As a second option the structural characteristic of job change appears to have some impact on distinguishing amongst low, medium and high job satisfaction groups. Job change is medium-high for the medium and high job satisfaction groups, and low-medium for the low job satisfaction group (Exhibit 5-4). Job change is included with role definition and group cohesion as a contrast to job routine in the first discriminant function (Exhibit 5-5). Jobs may be changed for at least two reasons in organizations: because the organization wants to change them or because the organization has to change them. The positive association between job uncertainty and job change suggests that perhaps jobs are changed to adapt to changes facing the organization through time. Some degree of voluntary change may, however, be in evidence (Chapter II). It appears desirable to change the content of jobs, and not simply rotate persons, for example, between routine jobs. This perhaps follows from the contrast that exists in the discriminant function between routine and structure. Etzioni (1964) discusses the ties amongst group cohesion, job routine, job rotation and job satisfaction in the following terms.

"The development of social groups on the job might make the worker's day more pleasant, but it does not make his task any the less repetitious or uncreative. Similarly rotation eases the problem of monotony but does not change its basic nature since rotation is limited by the scope of the alternative jobs available, all similar in their dull, routine and meaningless nature. Workers, it is suggested, spend much of their working day in a semi-conscious delirium, dreaming about their major source of satisfaction, the post-work day." (p. 42).

In the present study higher job satisfaction appears to be linked to reduced levels of routine, some job change, clear role understanding and group cohesion. Job change is particularly important when job routine is typically high (Exhibit 4-10). As the level of job routine is reduced, the positive relationship between job change and job satisfaction disappears. Perhaps job change is not as important when routine is moderate or low.

Role definition does not distinguish well amongst job satisfaction groups although the mean values are significantly different (Exhibits 5-2 and 5-4). At the same time, role definition has the highest loading on the structure side of the first discriminant function (Exhibit 5-5). Role definition and job routine are not strictly orthogonal in the present study, and it appears likely that a degree of routine expedites role definition conceptually and in practice. Thus, role definition perhaps reflects a degree of job routine as part of the first discriminant function throughout its span, although high job routine dominates one side of the function in discriminating amongst job satisfaction groups. This further supports the argument that moderate and not low levels of routine are associated with high job satisfaction.

### C. ANALYSIS OF A POSTERIORI JOB SATISFACTION GROUPS AND A SYNTHESIS

A series of tables similar to those compiled for a priori job satisfaction groups is developed for the a posteriori job satisfaction groups. Univariate one-way analysis of variance F test applications to the contextual and structural characteristics indicate that the mean values for all characteristics are significantly different amongst

levels of job satisfaction (Exhibit 5-7). The F ratios in this case are highest for job routine, group cohesion and job uncertainty. The job uncertainty characteristic ratio in particular is higher in the a posteriori set than in the case of the a priori data. The mean and standard deviation values for all characteristics at levels of job satisfaction appear in Exhibit 5-8. In accordance with the LSD comparative mean value procedure, the mean values are judged as low, medium or high within each characteristic following study of matching pairs of ordered means. The a posteriori data designations are precisely the same as those uncovered in the a priori data except in the case of role definition. In the a priori data, role definition is judged as medium at all of low, medium and high levels of job satisfaction, indicating that no clear division was possible following LSD procedures. In the a posteriori data, however, it appears that role definition is low-medium at low job satisfaction, medium at medium job satisfaction and medium-high at high job satisfaction. In this sense, it seems that higher values of role definition are associated with higher job satisfaction. This may further connote the importance of clear role understanding in the work place, a quality of jobs responded to favourably by respondents (cf. Stogdill, 1966).

Two discriminant functions again explain all of the variance in the data set (Exhibit 5-10). The first function, however, explains a full 96.8% of the variance and represents a contrast between job routine on one hand and all of role definition, group cohesion, job uncertainty and job change on the other. The inclusion of job uncertainty with the structural characteristics represents the major difference between this set and the findings in the a priori data. The second function explains

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 5-7 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR LEVELS OF JOB SATISFACTION

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 574	<u>SIGNIFICANCE LEVEL</u>
A. <u>CONTEXT</u>		
1. Job Routine	20.1	0.000
2. Job Uncertainty	9.1	0.000
B. <u>STRUCTURE</u>		
3. Role Definition	4.2	0.016
4. Job Change	3.3	0.036
5. Group Cohesion	9.1	0.000

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 5-8 MEAN AND STANDARD DEVIATION VALUES FOR CONTEXTUAL  
AND STRUCTURAL CHARACTERISTICS WITHIN LEVELS OF  
JOB SATISFACTION

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>LEVEL OF JOB SATISFACTION</u>			
	LOW N=176	MEDIUM N=211	HIGH N=190	ALL GROUPS N=577
	(MEANS)			
<b>A. <u>CONTEXT</u></b>				
1. Job Routine	13.7	12.4	11.6	12.5
2. Job Uncertainty	12.0	12.6	13.3	12.7
<b>B. <u>STRUCTURE</u></b>				
3. Role Definition	6.9	7.2	7.4	7.2
4. Job Change	5.5	5.9	5.9	5.8
5. Group Cohesion	6.7	7.0	7.3	7.0
(STANDARD DEVIATIONS)				
<b>A. <u>CONTEXT</u></b>				
1. Job Routine	3.3	3.0	3.0	3.2
2. Job Uncertainty	2.9	3.0	3.0	3.0
<b>B. <u>STRUCTURE</u></b>				
3. Role Definition	1.6	1.7	1.7	1.7
4. Job Change	1.9	1.9	2.0	1.9
5. Group Cohesion	1.6	1.3	1.4	1.4

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELSEXHIBIT 5-9 COMPARATIVE RANKINGS OF CONTEXTUAL AND  
STRUCTURAL CHARACTERISTICS WITHIN LEVELS  
OF JOB SATISFACTION

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>LEVEL OF JOB SATISFACTION</u>		
	LOW N=176	MEDIUM N=211	HIGH N=190
<b>A. <u>CONTEXT</u></b>			
1. Job Routine	H	M	L
2. Job Uncertainty	L-M	L-M	M-H
<b>B. <u>STRUCTURE</u></b>			
3. Role Definition	L-M	M	M-H
4. Job Change	L-M	M-H	M-H
5. Group Cohesion	L	M	H

EXHIBIT 5-10 DISCRIMINANT FUNCTION COEFFICIENTS FOR  
DISCRIMINATING AMONGST LEVELS OF JOB  
SATISFACTION

<u>FUNCTION A</u>		<u>FUNCTION B</u>	
Job Routine	.73	Job Change	.76
Job Change	-.13	Group Cohesion	-.13
Job Uncertainty	-.17	Role Definition	-.19
Group Cohesion	-.38	Job Routine	-.45
Role Definition	-.57	Job Uncertainty	-.83

Technical Note:

Proportion Variance	96.8	Proportion Variance	3.2
$\lambda^2$	83.9	$\lambda^2$	2.9
Significance Level	0.000	Significance Level	0.57

a low 3.2% of the variance and is not significant at all ( $p=.57$ ) in discriminating amongst groups. It is included in the exhibits, but omitted from the analysis. A visual representation of the discriminant functions appears as Exhibit S-11.

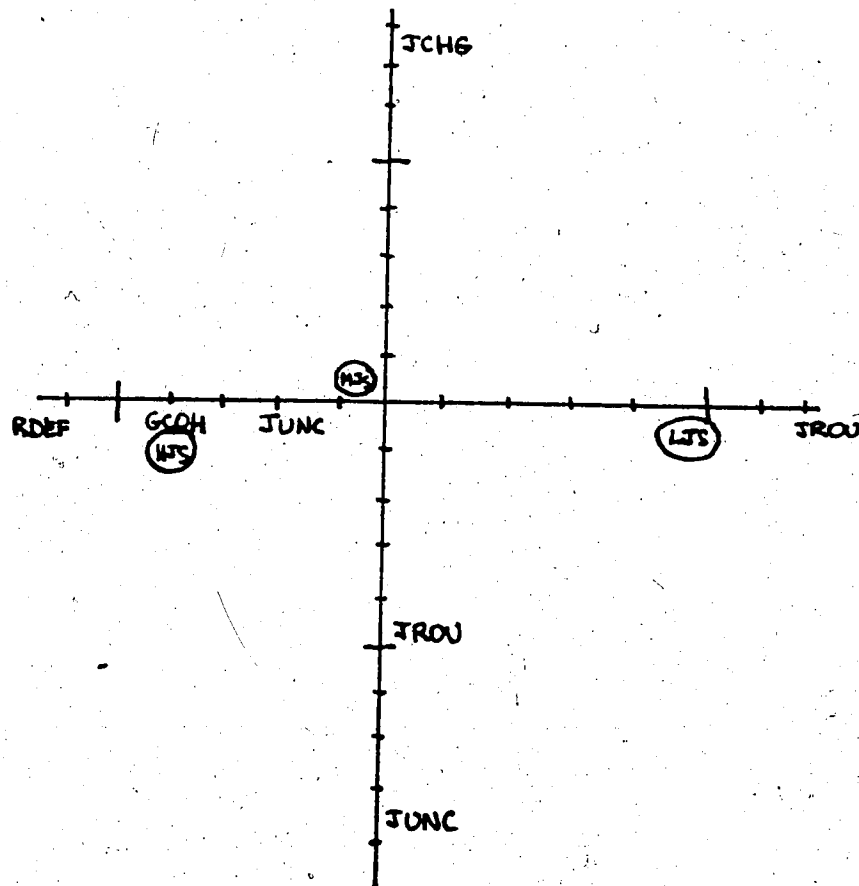
One striking observation which emerges from study of the a priori and a posteriori discriminant functions is their similarity. It seems that high job routine is associated with low job satisfaction in both cases, and the combination of role definition, group cohesion and job change, with job uncertainty in the a posteriori set, is associated with medium and high job satisfaction. The general salience of job satisfaction is greater at each level in the a posteriori levels of job satisfaction, as outlined in the development of the scales. The inclusion of job uncertainty in the major discriminant function under these conditions perhaps indicates that an element of uncertainty in the job is responded to favourably by respondents, and proves to be important in discriminating amongst groups when the respondents are classified relative to one another as distinct from a classification established in terms of the general scale itself.

There are further similarities between the sets in general. From previous analysis, it appears that increasing uncertainty is associated with increasing satisfaction at moderate levels of routine, and not high or low levels. The negative relationship between routine and satisfaction is marked at high job routine levels, although it also appears in the a priori medium routine level. Job change is most apparent in association with job satisfaction at high job routine. Group cohesion is related to job satisfaction at all levels of routine in the a posteriori set, but not at high job routine in the a priori set (Chapter IV). Many

SET B - SCALES BASED ON RELATIVE RESPONSE SCORE LEVELS

EXHIBIT 5-11 CENTROIDS OF LEVELS OF JOB SATISFACTION  
IN REDUCED SPACE IN TERMS OF DISCRIMINANT  
FUNCTIONS

<u>JOB SATISFACTION LEVEL</u>	<u>CENTROIDS IN REDUCED SPACE</u>	
	<u>FUNCTION A</u>	<u>FUNCTION B</u>
1. Low Job Satisfaction	.49	-.05
2. Medium Job Satisfaction	-.03	.09
3. High Job Satisfaction	-.42	-.06





of the discussions which fall out of the analysis of a priori job satisfaction levels are equally applicable in the present analysis. In particular, it appears that moderate levels of routine perhaps create the climate favourable to job satisfaction. A degree of uncertainty is also desirable based on the present discriminant function and on evidence that increasing uncertainty is positively related to job satisfaction at moderate job routine in both data sets. The measure of routine facilitates role definition, which is responded to favourably; and the measure of uncertainty is tied to group cohesion, which is also responded to favourably. When uncertainty is controlled, the positive tie between job change and job satisfaction at moderate job routine in the a posteriori disappears, indicating that the relationship is not independent of job uncertainty and perhaps job change is not as important at moderate routine when uncertainty is increasing (Exhibit 4-21). Indeed this relationship does not appear in the a priori job routine data at moderate routine (Exhibit 4-10).

#### D. JOB SATISFACTION IN TERMS OF CONTEXT AND STRUCTURE

##### 1. High Job Routine and Job Satisfaction

High job routine is related to low job satisfaction. This is not an unexpected finding, and falls in line with the general literature (cf. Sayles and Strauss, 1966; Katz and Kahn, 1967; amongst others). One measure to increase job satisfaction in a routinized setting appears to be the structural characteristic job change, since job change and job satisfaction are positively related at high job routine (Chapter IV). Job change essentially represents the element of organizational flexibility, and may take the form of a change in routines in jobs or perhaps an enlargement of the existing jobs (Chapter II). Job change may be

undertaken voluntarily by organizations or out of necessity. The general negative relationship between job routine and job change perhaps indicates that voluntary job change is not a prevalent practice. Alternatively, the general positive relationship between job uncertainty and job change may reflect an element of change following the incidence of uncertainties encountering the organization. Job uncertainty may or may not force job change. When existing routines can embrace the uncertainty, job change perhaps is not required. When existing routines cannot deal with the uncertainty, or when new routines are needed to embrace the changing circumstances facing a job, then job uncertainty perhaps leads to job change. At high job routine, it appears that the element of job change is particularly welcomed by respondents. It further appears that some measure of flexibility or job change is perhaps inevitable (cf. Blau, 1974; Lawrence and Lorsch, 1969). In this sense, organizations face some environmental fluctuation at some point in time, and adaptation is required in order to continue in existence. Job change might be envisaged both in those jobs which deal directly with the environment, and in those jobs which are "buffered" from the environment and operate under greater conditions of certainty (cf. Thompson, 1967). These buffered-type jobs can be more readily seen as high on routine, and organizational adaptation is reflected perhaps in a change in routine and structural job change. Although these jobs operate in a climate of greater certainty so far as the organization itself is concerned, the context of the job actually holds some uncertainty as measured in the present study. This is true in the respect that uncertainty represents the incidence of new problems, unforeseen matters and task switching which together or periodically require fresh knowledge or new skills.

A change in routines may engender a form of job uncertainty and job change. Increasing uncertainty is negatively related to job routine and positively related to job change at high job routine levels, and thus both technological and structural flexibility occur within this context of high routinization when uncertainty arises. Persons respond negatively to routine when routine is typically high, but respond favourably to job change. Perhaps the general conditions which foster job change including increasing uncertainty within the job itself also temper perceived job routine and thus contribute to increased job satisfaction.

It would appear from this discussion that job change can be used as a measure to increase satisfaction in highly routine-type jobs. It further appears that job change perhaps occurs out of necessity and not out of organizational choice. It may be that organizations concerned about increasing satisfaction for their members may choose to use job change as a vehicle for this objective. Although it is true that some job change is perhaps inevitable, perhaps a voluntary introduction of structural change involving the content of the job may be a desirable tool to management. The coincidental impact that this change might have on alternative organizational outcomes including productivity is appropriate to weigh in the process. Future research might best include measures of satisfaction and organizational productivity since the relationship between the two is not at all clear (cf. Chapter I), both are important as organizational performance outcomes, and measures affecting one in a desirable manner may affect the other in a way quite undesirable to the organization. The general impression planted in Work in America is that both worker satisfaction and organizational productivity can be enhanced in unison (Appendix A). Agreement is far from universal, however,

on this central issue in organizational theory.

## 2. Higher Levels of Job Satisfaction

The present study indicates that higher levels of job satisfaction are realized in a situation characterized by role definition, group cohesion, job uncertainty and job change (Chapter V). This situation appears to arise in the context of moderate job routine, and to a degree, medium and high job uncertainty (Chapter IV). Job change appears to be most important when job routine is typically high. Job uncertainty affects this particular relationship within the contextual and structural set, although job uncertainty and job satisfaction are not themselves related at high job routine. Indeed, the only case where job uncertainty and job satisfaction are positively related is in the context of medium job routine. More specifically, this relationship is evident in the contextual setting of moderate job routine and high job uncertainty (Chapter IV). To abstract, it appears appropriate to consider job change as one method of possibly increasing satisfaction when routine is high. This is discussed in the previous section. In general, as an alternative measure, it appears viable to develop a job situation which has all of role definition, group cohesion and job uncertainty. This situation seems to be associated with moderate job routine. Overall, this particular setting would perhaps involve the development of some routine as part of the job, and some uncertainty as well. Further, it seems desirable to create a structure which permits persons to have a clear understanding of their roles in the organization and which encourages group interaction. Perhaps job satisfaction is nurtured in a technology characterized by some routine and some uncertainty and in a structure characterized by

both role definition and group cohesion. The present study lends support to this argument.

There are certain implications of this finding. The general literature on job satisfaction suggests that job satisfaction can be enhanced by reducing the level of job routine that is a part of the job. Aside from the concern of individual differences amongst persons and the possible option of job change in routinized technologies, the present study indicates that this course of action may be effective. It would seem, however, that a dramatic drop in routine is not desirable. Indeed, a moderate level of routine appears appropriate. Routines are developed in terms of the essential job technology involving a stimulus; a (potential) problem-solving stage and a response. Complete standardization of the entire flow appears rather difficult to envisage, but near standardization does prevail in some jobs. This situation is marked by high job routine and low job uncertainty. With an eye to increasing satisfaction perhaps certain aspects of the standardization could be relaxed, or alternatively, more instances of uncertainty could be introduced to the jobs. This general format is often recommended in job redesign projects. It appears ineffectual, however, to completely eliminate routine from the job. Some standardization is required to facilitate job satisfaction according to the present study. Routines are often formulated to deal with uncertainties, and a degree of routine is required before uncertainty and job satisfaction are positively related (Chapter IV). Just as too high a level of routine is undesirable in terms of job satisfaction, so is too low a level of routine undesirable. Perhaps a proper balance of uncertainty and routine is most effective. Moderate routine allows built-in manoeuvrability within the job technology itself as uncertainty increases.

and appears to support all aspects of high job satisfaction.

Some jobs are not at all standardized within their job technology. It appears that in the context of low job routine, persons do not respond negatively to job routine, and respond favourably to role definition and group cohesion. In order to get the job done, perhaps persons wish to have a clear understanding of their roles and to work in groups. These comprise two important aspects of the higher levels of satisfaction. Uncertainty, however, is not positively associated with job satisfaction at low job routine, and it seems that a fuller job situation encompassing some routine as well as role definition and group cohesion is required before uncertainty and satisfaction are related. Thus, management may choose to develop a measure of standardization in jobs presently low on routine if they are oriented to increasing satisfaction for their members. In some instances this may not be possible. But as a goal, it may warrant resource commitment. Efforts to partially routinize jobs which have little routine in them at present and face conditions of uncertainty appear to be deserved of attention.

## CHAPTER VI

A. COMPARATIVE ANALYSIS OF ORGANIZATIONAL CHARACTERISTICS  
 AMONGST DIFFERENT TYPES OF WORK ORGANIZATIONS

A. THE COMPARATIVE ANALYSIS OF ORGANIZATIONS AND THE PRESENT STUDY

An important aspect in the study of organizations is the development of constructs which effectively differentiate amongst different types of organizations in general and work organizations in particular. Etzioni (1971) argues in the following manner:

"The comparative study of organization is a much neglected field. Its development requires 'middle range' organizational theory, falling between high-level abstractions about the characteristics of organizations in general and detailed observations about single cases." (p. xi).

Etzioni's compliance model provides a valuable perspective on differences amongst organizations in general. The essential constructs of the form of organizational power and the type of member involvements allows for a demarcation amongst organizations as churches, prisons, political parties, unions, and work organizations (ibid., Chapter I). Similarly, Blau and Scott (1964) distinguish amongst organizations in terms of the persons or groups who benefit from the operations of the organizations as societal entities. Haas et al. (1966) forward an empirically-derived typology of organizations which is based on data from seventy-five quite different organizations. Parsons (1971) discusses organizations in terms of primary functions which ultimately may be represented in four subsystems of society: the societal community, pattern maintenance, the polity and the economy (p. 11). The division of economic organizations for purposes of comparative analysis has been accomplished in at least two ways. Pugh et al. (1968) formulate a typology in line with their dimensions of structure

while classifying organizations on the basis of charter and ownership and control (cf. Pugh, 1973). Fouraker and Stopford (1968) classify organizations in terms of the government's standard industrial classification set around product lines.

The purpose of this chapter is to analyze the six organizational characteristics which are central to this paper amongst different types of work organizations. This amounts to the introduction of a third contextual characteristic into the study, specifically a measure of charter-ownership-control (cf. Pugh et al., 1968, 1969; Pugh, 1973). Respondents in the original survey were asked to provide an indication of the ownership-control characteristic of the organization in which they were employed or working. The ultimate division included seven groups: branch plants, local firms with hired management, owner-managed firms, entrepreneurs, and three levels of government; provincial, municipal and federal. The term charter complements the initial ownership-control designation to reflect a quality of public or private activity. In this sense, the three government levels operate under public charter, while the other four groups have a private charter. Charter reflects a measure of goal orientation within the groups, and blends with ownership and control to provide a composite statement of group foundation.

Univariate one-way analysis of variance  $F$  tests are compiled for the initial six organizational characteristics amongst charter-ownership-control groups. The resulting  $F$  ratios and significance levels appear in Exhibit 6-1. The  $F$  ratios themselves are quite low in all cases, and group cohesion in particular is not significantly different amongst the charter-ownership-control groups. Further, job uncertainty is significant at .05 and job change is significant at .06. Elliott (1975)



EXHIBIT 6-1 UNIVARIATE ONE-WAY ANALYSIS OF VARIANCE  
F TEST FOR CHARTER-OWNERSHIP-CONTROL GROUPS

<u>ORGANIZATIONAL CHARACTERISTIC</u>	<u>F RATIO</u> N <sub>1</sub> = 2 N <sub>2</sub> = 531	<u>SIGNIFICANCE LEVEL</u>
A. <u>CONTEXT</u>		
1. Job Routine	2.5	0.022
2. Job Uncertainty	2.1	0.054
B. <u>STRUCTURE</u>		
3. Role Definition	4.4	0.000
4. Job Change	2.1	0.057
5. Group Cohesion	.5	0.773
C. <u>PERFORMANCE</u>		
6. Job Satisfaction	4.0	0.001

using somewhat different characteristics reports much the same finding. She subjected the data to multivariate analysis and found "on the average, too many differences are declared to be significant when they are not" (p. 9). Parallel tests are not applied here, but it is likely that a comparable conclusion would result since that data bases are so similar. Following Elliott (1975) this supports usage of discriminant analysis as a method of distinguishing amongst charter-ownership-control groups in terms of the six organizational characteristics in focus. However, since some differences amongst mean values do exist, since univariate tests are significant for five of the six characteristics, and since allowances can be made for situations where mean values are not significantly different, it is appropriate to first examine the mean values for these characteristics within groups and amongst groups before turning to the discriminant analysis itself. Mean values and standard deviations are provided in Exhibit 6-2. Comparative rankings of means developed from LSD procedures for matching pairs of means appear in Exhibit 6-3. A description of comparative levels of characteristics within each charter-ownership-control group provides the framework for this discussion.

1. Branch Plants (N = 253)

Branch plants operate in a context of medium-high job routine and medium job uncertainty. Their structure is characterized by medium-high role definition, medium job change and medium group cohesion. Job satisfaction is medium (Exhibit 6-3, column 1). One of the major challenges facing any organization is ensuring that the behavior of the employees is conducive to task accomplishment or performance (Kahn et al., 1964). A premium is placed on the proper differentiation and integration of the overall work operation with an eye to goal achievement (cf. Blau, 1974;

EXHIBIT 6-2 MEAN AND STANDARD DEVIATION VALUES FOR ORGANIZATIONAL CHARACTERISTICS WITHIN CHARTER-OWNERSHIP-CONTROL GROUPS

	1. Branch Plants (BP)N=253	2. Local Firms Hired Management (LH)N=28	3. Owner Managed Firms (OW)N=85	4. Entrepreneurs (EN)N=23	5. Provincial Government (PG)N=78	6. Municipal Government (MG)N=29	7. Federal Government (FG)N=42	All Groups* N=538
<b>A. CONTEXT</b>								
1. Job Routine	12.9	13.3	11.7	11.7	11.9	12.8	12.6	12.5
2. Job Uncertainty	12.7	12.6	12.6	14.2	12.9	12.4	11.6	12.7
<b>B. STRUCTURE</b>								
3. Role Definition	7.4	7.5	6.6	6.2	7.0	7.4	7.5	7.2
4. Job Change	5.9	6.0	5.2	5.1	6.1	5.6	5.5	5.8
5. Group Cohesion	7.0	7.3	7.1	6.9	7.1	7.1	6.8	7.0
<b>C. PERFORMANCE</b>								
6. Job Satisfaction	21.5	20.7	21.2	24.3	21.6	20.2	19.6	21.3
<b>A. CONTEXT</b>								
1. Job Routine	3.3	3.0	3.0	3.6	3.0	3.1	2.9	3.2
2. Job Uncertainty	2.9	2.7	3.1	2.8	3.3	3.0	3.0	3.0
<b>B. STRUCTURE</b>								
3. Role Definition	1.6	1.5	1.9	3.1	1.5	1.5	1.5	1.7
4. Job Change	1.9	2.2	2.1	2.1	2.0	1.9	1.5	2.0
5. Group Cohesion	1.3	1.4	1.5	2.0	1.3	1.3	1.7	1.4
<b>C. PERFORMANCE</b>								
6. Job Satisfaction	4.0	4.9	3.8	3.9	3.8	4.2	4.2	4.1

\* excludes respondents not classified within a specific charter-ownership-control group. (Unclassified N=39)  
 Mun. = Municipal Fed. = Federal.

EXHIBIT 6-3 COMPARATIVE RANKINGS OF ORGANIZATIONAL CHARACTERISTICS  
WITHIN CHARTER-OWNERSHIP-CONTROL GROUPS

	1. Branch Plant (BP)N=253	2. Local Firms Hired Management (LH)N=28	3. Owner Managed Firms (OW)N=85	4. Entrepreneurs (EN)N=23	5. Prov. Government (PG)N=78	6. Mun. Government (MG)N=29	7. Fed. Government (FG)N=42
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A. CONTEXT

1. Job Routine	M-H	M-H	L-M	M	M	M	M
2. Job Uncertainty	M	M	M	H	M-H	L-M	L

B. STRUCTURE

3. Role Definition	M-H	M-H	L-M	L-M	M	M-H	M-H
4. Job Change	M	M	L-M	M	M-H	M	M
5. Group Cohesion	M	M	M	M	M	M	M

C. PERFORMANCE

6. Job Satisfaction	M	L-M	M	H	M	L-M	L
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Prov. = Provincial  
Mun. = Municipal  
Fed. = Federal

Lawrence and Lorsch, 1969). The ability to adapt to changing circumstances is similarly vital to ongoing viability (Lawrence and Lorsch, 1969; Georgopoulos and Tannenbaum, 1957). Owners in particular have a vested interest in performance. Branch plants by definition are local operations of large national or multinational companies, and ownership resides primarily outside the local economy. Professional managers govern the local operations, and strategic decision-making is probably made with the concerns of the company as a whole in mind. Much of the local activity is restricted to the production-sales function, which coincidentally tend to be the most bureaucratic areas of industrial operation (cf. Perrow, 1970). The present study indicates that job routine and role definition in branch plants are typically medium-high, and that job routine in particular is higher for branch plants and local firms with hired management than for any other group. There is, however, a medium level of job uncertainty and job change, which perhaps contributes towards job satisfaction (cf. Chapter IV) and overall, job satisfaction is medium in the branch plants. Job change perhaps reflects an ability to adapt routines as necessary to fit changing circumstances. Jobs are therefore routine in the short-term and have some change in routine over time.

## 2. Local Firms - Hired Management (N = 28)

Local firms with hired management have essentially the same position as branch plants in terms of contextual characteristics, but the overall level of job satisfaction is somewhat less than in branch plants and is classified as low-medium (Exhibit 6-3, column 2). The branch plant operations and local firms with hired management have at least one important idiosyncrasy in common. Both are run by professional

managers. It might be argued, for example, that one characteristic of professionally-managed firms is a higher level of routinization in the operation. This may be traced to owners or owners' representatives developing a specific system of structure and routine for professional managers to administer, or alternatively to professional managers demonstrating a penchant to routinize everything beneath them in the operation to ensure planned, deliberate and predictable activity. Perhaps structure and routine provide a framework for continuity of activity over time between management teams. Conceptually, this scenario in professionally-managed firms acquires a ready contrast when compared to the relationships evident in owner-managed firms and entrepreneurships discussed below.

### 3. Owner-Managed Firms (N = 85)

Owner-managed firms show low-medium job routine and medium job uncertainty. Structure has low-medium role definition, low-medium job change and medium group cohesion. The overall level of job satisfaction is medium (Exhibit 6-3, column 3). It may well be that owner-managers are prone to manage on a rather ad hoc basis. Routines are not formulated, roles are not clearly defined and job change is not as meaningful a concept in this unstructured setting. The owner-manager may be in a position to work with his staff on an ongoing basis, and group cohesion is as significant in this group as in any other group. Perhaps the moderate level of uncertainty in part reflects the general absence of routine in addition to possible environmental conditions of change. Alternatively, a certain degree of custom may guide actions in the operation, although role definition and job routine are judged to be at a generally low level (cf. Pugh, 1973, pp. 199-200).

#### 4. Entrepreneurs (N = 23)

Entrepreneurs are unique as a group in the study in the respect that they are not employees of others but are self-employed persons. They are characterized as medium in job routine, high in uncertainty, low-medium in role definition, medium in job change, medium in group cohesion and high in job satisfaction. Entrepreneurs encounter the environment directly, and are not in a position to buffer themselves from environmental uncertainty or fluctuation. Typically, they do not have ready access to ongoing information systems, operations manuals and boards of directors for advice or direction. The general level of uncertainty might be expected to have a greater salience than other groups, and indeed the entrepreneurs are the only group at high job uncertainty. Evidence of some routine in the job perhaps indicates that some standardization is prevalent in order to cope with the high level of uncertainty. Since these persons are self-employed, the notion of role definition perhaps is of less relevance than in other groups, accounting for its low-medium rating. Moderate job change over time may reflect the adoption of new routines to handle new circumstances emerging in the environment. The fact that these persons are accountable to themselves is perhaps indicated in the combination of moderate routine and moderate job change in association with low-medium role definition. The general network is rather implicit rather than explicit (cf. Pugh, *ibid.*). Although the characteristics are measured differently, and rated differently, it is predictable from previous analysis that the combined context of medium routine and high uncertainty would be associated with a high level of satisfaction, and indeed entrepreneurs enjoy the highest level of satisfaction in the study.

### 5. Provincial Government (N = 78)

Employees of the provincial government indicate medium job routine, medium-high job uncertainty, medium role definition, medium-high job change, medium group cohesion and medium job satisfaction. Government positions are typically depicted as bureaucratic in nature, marked by high job routine, restrictive role definition and work in isolation (cf. Weber, 1946). This scenario, however, assumes a relatively stable environment and an ability for organizational designers to foresee all types of situations that an incumbent in office will encounter and to provide rules adequate to handle these types of situations. When the environment is unstable or when all types of situations facing an official cannot be foreseen, it is difficult to routinize the job technology or define jobs completely. In effect this amounts to the introduction of uncertainties to the job. In the case of the provincial government, the general level of uncertainty is medium-high. This is greater than any group other than entrepreneurs. This higher level of uncertainty may be explained in part in the fact that the majority of respondents in the study come from Edmonton, Alberta which also is the seat of the provincial government. It could be expected that the majority of uncertainties facing the provincial government would be attended to in Edmonton, and middle managers play a major role in formulating strategic alternatives and plans of action with respect to these environmental requisites for policy and program decisions. Further, the scope of the provincial mandate has expanded in the last ten years, giving rise to additional sources of uncertainty, and structural job change which also is medium-high. The amount of routine in the jobs, however, is generally medium and similarly role definition



is also medium. The level of job satisfaction has the same salience as that recorded in branch plants and owner-managed firms, although the general alignment of contextual and structural characteristics is quite different in all three cases. Further comparisons are pursued presently.

#### 6. Municipal Government (N = 29)

The municipal government group is characterized as medium job routine, low-medium job uncertainty, medium-high role definition, medium job change, medium group cohesion and low-medium job satisfaction (Exhibit 6-3, column 6). This situation is more in line with the conventional view of governmental bureaucracy. Although job uncertainty is low-medium, the element of job change is medium. Perhaps some measure of change is adopted in light of the medium-high role definition and the medium job routine. It seems, however, that even with medium job change, job satisfaction is at a low-medium level in this rather structured and relatively certain environment. Perhaps more than job change is required to raise the level of satisfaction in this contextual and structural situation. The mandate of municipal government is not nearly as expansive as that of the provincial government, and the areas of uncertainty are perhaps less prominent.

#### 7. Federal Government (N = 42)

The federal government group is much the same as the municipal government group except the level of job uncertainty is judged as low and job satisfaction is also low. Alberta essentially represents regional offices of federal government departments which might be associated with the more bureaucratic functions. Cases are possibly channelled to appropriate offices for action in a routine manner, Uncertainty is low

and routine is moderate. The jobs are well known to incumbents, and laid out for them. There is moderate job change, perhaps because routine is moderate and not high. Job satisfaction is low in this setting which has little uncertainty and a certain blandness to it. From Chapter IV, evidence suggests that high levels of role definition, job change, group cohesion and job uncertainty are related to job satisfaction. Evidence in the cases of the municipal and federal government underscores the importance of job uncertainty as a component in this set. It appears that some uncertainty is necessary in jobs before job satisfaction is relatively high-based on a comparative analysis of firm types.

B. ORGANIZATIONAL CHARACTERISTICS: A HIGHER LEVEL OF ABSTRACTION

The preceding discussion of the seven charter-ownership-control groups provides evidence that differences in five of the six organizational characteristics result in varying combinations of the characteristics when viewed across groups. Only group cohesion fails to differ at all amongst groups. Discriminant analysis is employed to refine the study of organizational characteristics amongst groups. Two discriminant functions emerge, and together explain 90.9% of the total variation in the data. The coefficients appear in Exhibit 6-4. A graphic presentation of the two functions and the positions of the charter-ownership-control groups appear in Exhibit 6-5.

The first discriminant function represents a contrast between the three structural characteristics and the two contextual characteristics with job satisfaction. This function explains 56.8% of the variance, and is heavily loaded on role definition within the structural set and on job satisfaction in the contrasting set which includes both job routine

EXHIBIT 6-4 DISCRIMINANT FUNCTION COEFFICIENTS FOR DISCRIMINATION AMONGST CHARTER-OWNERSHIP-CONTROL GROUPS

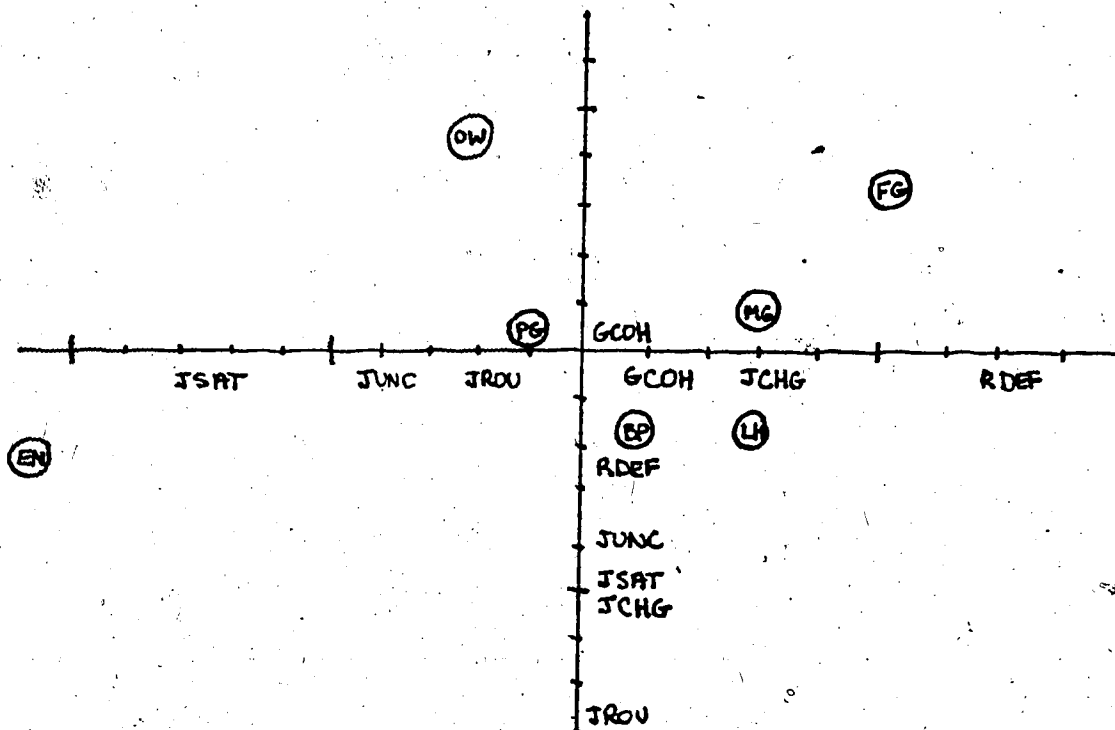
<u>FUNCTION A</u>		<u>FUNCTION B</u>	
Role Definition	.71	Job Routine	-.75
Job Change	.30	Job Change	-.49
Group Cohesion	.17	Job Satisfaction	-.47
		Job Uncertainty	-.37
Job Routine	-.15	Role Definition	-.23
Job Uncertainty	-.37	Group Cohesion	.07
Job Satisfaction	-.73		

Technical Note:

Proportion Variance	56.8	Proportion Variance	34.1
$R^2$	93.4	$R^2$	40.9
Significance Level	00.00	Significance Level	0.02

EXHIBIT 6-5 CENTROIDS OF CHARTER-OWNERSHIP-CONTROL  
GROUPS IN REDUCED SPACE

CHARTER-OWNERSHIP-CONTROL GROUP	ABBREVIATED DESIGNATION	CENTROIDS IN REDUCED SPACE	
		FUNCTION A	FUNCTION B
1. Branch Plants	BP	.07	-.18
2. Local Firms - Hired Management	LH	.29	-.18
3. Owner Managed Firms	OW	-.24	.44
4. Entrepreneurs	EN	-1.11	-.22
5. Provincial Government	PG	-.10	.01
6. Municipal Government	MG	.29	.10
7. Federal Government	FG	.49	.34



and job uncertainty. The simultaneous combination of job satisfaction, job routine and job uncertainty as one component of the discriminant function is not unexpected in light of previous findings. It appears that persons respond favourably to some routine and some uncertainty as ingredients to the jobs they occupy. Simon (1960) drawing in part from March and Simon (1958) argues along this line.

"A completely unstructured situation, to which one can apply only the most general problem-solving skills, without specific rules or direction, is if prolonged, painful for most people. Routine is a welcome refuge from the trackless forests of unfamiliar problem spaces ... People (and rats) find the most interest in situations that are neither completely strange nor entirely known - where there is novelty to be explored, but where similarities and programs remembered from past experience help guide the exploration." (p. 201).

Thus routine and the routinization of jobs can be envisaged as going arm-in-arm with satisfaction provided an element of uncertainty also exists as part of the jobs. Too much routine, however, may have a deleterious effect on the balance. Within Simon's description there is a certain implicit relationship between routine and structure. In the present study, the characteristics job routine and role definition are not orthogonal and are positively correlated. The contrast to job satisfaction, job uncertainty and job routine within the first discriminant function is the structural set in the study, with the heaviest loading on role definition. It appears likely that a high score on this side of the function represents a more structured, routinized-type situation which perhaps tempers any positive benefits that some job routine engenders in tandem with job uncertainty. The overall discriminant function bears out as an indication of essential role structure within the organization, and this title is lent to the function (cf.

Elliott, 1975). Organizations high on role structure tend to be highly routinized within a structured situation. Four types of organizations fit here: branch plants, local firms with hired management, and the municipal and federal governments. Organizations low on role structure tend to be less routinized and less structured within a framework which includes job uncertainty and job satisfaction. Three types of organizations are included here: entrepreneurs, owner-managed firms and the provincial government.

The second discriminant function represents a weighted average of five organizational characteristics: specifically job routine, job change, job satisfaction, job uncertainty and role definition. The inclusion of both job routine and role definition represents an element of routine and structure to the situation. The inclusion of both job change and job uncertainty represents an element of variety and change within the existing structure. The combination of these features is associated with job satisfaction. Overall, the function reflects routine task variety, and following Elliott (1975) this name is attached to the combination of these five organizational characteristics. Organizations scoring high on routine task variety tend to have jobs which are routinized and somewhat defined, but also hold some uncertainty and a degree of job change over time. Persons respond favourably to this situation which perhaps represents a suitable balance between routinization, structure, task uncertainty and personal dispositions. It is argued that organizations develop a system of differentiation and integration in order to properly cope with their environment and the task at hand. Blau (1974), for example, makes the following point:

"Organizations accomplish jobs of staggering complexity, as well as magnitude, jobs far too complex for an individual or any number of individuals who are not organized, because the subdivision of work facilitates that of every individual and that of every subunit by making their tasks more homogeneous ... By reducing the range and enhancing the homogeneity of the tasks in any given position, the division of labour promotes specialized expertness as well as routinization." (p. 338).

Thus, organizations adjust to complexities by developing role structures and routines, and jobs are specialized to deal with the complexities which are designated within their jurisdiction within the overall structure. Job uncertainty is an essential feature of complexity. Persons holding jobs are often and for the most part anxious to occupy the positions which have uncertainties in them. Simon (1960) believes that "one of (man's) deepest needs is to apply his skills, whatever they be, to challenging tasks - to feel the exhilaration of the well-struck ball or the well-solved problem" (p. 211). Blauner (1964) similarly reports increased satisfaction in positions which have some uncertainty and some routine (p. 118). Routines and structure appear to be important to effectively brace uncertainties, but uncertainties are required within a framework of routine and structure to generate job satisfaction for individual job holders. This meaning perhaps underlies the second discriminant function. Routine task variety then offers a contrast between jobs which are routine and somewhat structured but also possess uncertainty and change, and jobs which are less routine, less structured and have reduced levels of uncertainty and change. Organizations scoring high on routine task variety include local firms with hired management, branch plants and entrepreneurs. Organizations scoring low on routine task variety include the three governmental groups and owner-managed firms.

The two discriminant functions of role structure and routine task variety provide a framework for studying differences amongst the seven charter-ownership-control groups (Exhibit 6-5). Branch plants and local firms with hired management measure high on role structure and high on routine task variety (quadrant 2). The municipal and federal governments measure high on role structure and low on routine task variety (quadrant 1). Owner-managed firms and the provincial government measure low on role structure and low on routine task variety (quadrant 4). Entrepreneurs measure low on role structure and high on routine task variety (quadrant 3). It is appropriate to consider information at this new level of abstraction with previous information in a development of elements of the general picture.

C. ELEMENTS OF THE GENERAL PICTURE WITH RESPECT TO ORGANIZATIONAL CHARACTERISTICS AMONGST CHARTER-OWNERSHIP-CONTROL GROUPS

Branch plants and local firms with hired management are high on role structure and high on routine task variety (Exhibit 6-5). Jobs in these types of operations, relatively speaking, are the highest in terms of job routine, and with the municipal and federal governments, are the highest in terms of role definition (Exhibit 6-3). This amounts to a routinized, structured situation. Within this routinized technological setting, however, job uncertainty and job change both are moderate when compared to other groups, and these characteristics contribute to variety in the work place and job satisfaction. The fact that job routine and role definition are somewhat greater in local firms with hired management and that job uncertainty is somewhat greater in branch plants perhaps



accounts for the slightly lower level of job satisfaction in local firms with hired management than in branch plants (Exhibit 6-2). The general level of satisfaction in branch plants is judged as medium and in local firms with hired management as low-medium, with the latter group scoring higher on role structure (Exhibits 6-3 and 6-5).

The chief difference between branch plants and local firms with hired management and the municipal and federal governments lies in the second discriminant function, routine task variety. It appears that although groups in both quadrants measure medium-high on role definition, the general level of routine is lower in the two government groups, and possibly more importantly, the general level of uncertainty is lower in these groups as well (Exhibit 6-3). The fact that routine is higher in branch plants and local firms with hired management than it is in the municipal and federal governments together with the general negative relationship between routine and satisfaction would lead to an expectation that job satisfaction would be higher in the government groups. This does not hold, however, and the explanation seems to lie in the notion of routine task variety. Apparently when job uncertainty has a certain salience within a routinized structured environment, then job satisfaction is nurtured. The municipal and federal governments are respectively low-medium and low on job uncertainty relative to other groups in the study. The critical combination of routine and uncertainty which offers a degree of task variety within the confines of a structured routine distinguishes the two groups from one another. Nor is job change itself as important. In all four types of organizations, job change is judged as medium (Exhibit 6-3). Differences on this structural characteristic are thus not significant. Previous evidence points to job change as a source of satisfaction when

routine is high in jobs (Chapters IV and V). In general, the characteristics of job uncertainty and job change are not strictly orthogonal and are positively correlated in the study. It appears that in discriminating between types of organizations, the job change characteristic represents a major component of routine task variety (Exhibit 6-4) but that the differences in the area of high role structure and the routine task variety function occur in job uncertainty and to a lesser extent job routine, the contextual aspects of the job. Job change therefore contributes to job satisfaction, but in developing task variety, an element of uncertainty within the job technology appears to be important. Routine task variety in short represents a combination of all of job routine, job change, job uncertainty and role definition. Relatively low rankings in job uncertainty represent a major departure from this combination, and is associated with a relative decline in this dimension. Job change in routine positions is not sufficient to create routine task variety when role structure is high.

Three types of organizations measure low on role structure, the first discriminant function, and in all three cases, the relative position of job uncertainty compared to all groups in the study is higher than the relative position of job routine is. Similarly, the four groups measuring high on role structure demonstrate a relatively lower position on job uncertainty than on job routine when compared to all groups in the study (Exhibit 6-3). The absolute pattern bears out the same sort of relationship (Exhibit 6-2). Perhaps the notion of role structure is related to the essential relationship between job routine and job uncertainty. Routine must be greater than uncertainty in terms of relative and absolute levels for the development of structure within the role. Alternatively, when job routine is at lower levels than job uncertainty both in relative

and absolute terms, by force of circumstance or by virtue of choice, then role structure is low. Further, when role structure is at a lower level, it is not associated with structural characteristics as much as with the combination of contextual characteristics and job satisfaction. This contrast exists within the first discriminant function. Job routine itself is lowest in the three organizations which are low in role structure, and role definition follows the same pattern.

The major difference between the municipal and federal government groups and the provincial government group rests in the first discriminant function, role structure (Exhibit 6-5). All three groups are medium on job routine, but the provincial government measures significantly higher on job uncertainty where indeed it is judged as medium-high relative to all groups in the study, and only entrepreneurs face a higher level of uncertainty (Exhibits 6-2 and 6-3). Role definition is somewhat lower in the provincial government than in the other two government groups. This high level of uncertainty together with moderate job routine and role definition contribute to low role structure.

Owner-managed firms also rate low on role structure, but for somewhat different reasons than in the case of the provincial government. It appears that owner-managed firms rate low-medium relative to the seven groups in the study on all of job routine, role definition and job change, and in each case there is no group judged below the owner-managed firms on relative comparisons of ordered means. There appears to be an absence of structure within this group. Thus unlike the provincial government which measures low on role structure because of inordinately high uncertainty probably emanating from the environment, the owner-managed firms measure low on role structure because of inordinately low job routine,

role definition and job change. Perhaps owner-managers are not oriented towards the development of routines and structure in the work place.

Owner-managed firms are distinguished from branch plants and local firms with hired management on the basis of both discriminant functions. In this sense, owner-managed firms are lower on both role structure and routine task variety when compared to these other two groups which coincidentally are both professionally managed. Etzioni (1964) has discussed the extension of differentiation in organizations into the area of ownership and control, noting that increasingly there is a separation between those who own organizations and those who manage organizations (Chapter 9). Galbraith (1968) places central importance on the role of the organization's technostructure, the band of professional middle managers in industry, in the decision-making process. Galbraith maintains that it is the technostructure which defines the alternatives and recommends policies for the organization which in turn are most often rubber-stamped by boards of directors acting as representatives of owners. Perrow (1970) argues that there may be no fundamental difference between owner-managed firms and professionally-managed firms in terms of goal structure, but it seems that distinctions between the two are offered by prominent observers with respect to issues as trends, profits, growth and security (pp. 143-144). The fact that owner-managed firms and professionally-managed firms differ on both discriminant functions in the present study may be explained on the basis of Pondy's (1969) examination of administrative principles amongst ownership groups in manufacturing firms. Pondy shows that managerial discretion appears to be an important factor in explaining administrative ratios between owner-managed and professionally-managed firms.

"The owner-manager may actually attach a negative preference to administrative staff, thus sacrificing some profitability in return for avoiding dilution of control ... The data, seem to suggest that 'expense preference' (Williamson, 1964) for administrative staff shifts from a negative to a positive preference as one moves from owner-managed to professionally-managed organizations." (pp. 425-426).

Owner-managers may well be more concerned with maintaining effective control of their operation than with maximizing profit by hiring professional administrators to manage part of the business. Professional managers on the other hand may hire administrators with a view not so much to maximizing profit but to maximizing overall utility. The difference in the end may result in the professional manager actually working towards a point equaling "the minimum profit acceptable to the stockholders" (p. 425) where the difference between maximum and minimum profit represents "excess" expenditure on administration. The present study perhaps provides a dimension to this difference in orientations between owner-managers and professional managers. It appears likely that professional managers are more inclined to routinize and structure their operation as compared to owner-managers. Perhaps as more administrators are brought into the organization and control is distributed amongst the organizational position, the need for some routine and structure becomes more in evidence. Predictability and continuity of activity may be desirable, and are developed in a routinized, structured setting. Owner-managers perhaps operate more on the basis of direction from the owner-manager on a project to project schedule and on custom (cf. Pugh, 1973). Furthermore, to owner-managers the notion of routine task variety is not as important because routine itself is relatively low. Thus, branch plants and local firms with hired management are high on job routine and role structure, but also have an element of routine task variety which serves to break the routine. Owner-managers

are distinctly lower on job routine and role structure and are low routine task variety in part because the routine is low. Control rests with the owner-manager, and an extensive, structured administrative network is not his choosing.

Entrepreneurs are low on role structure and high on routine task variety, in a quadrant by themselves (Exhibit 6-5). As a group, entrepreneurs measure low-medium on role definition (Exhibit 6-3), and the generally low level of role structure can be anticipated. The amount of uncertainty facing entrepreneurs is very high, and perhaps a measure of routine is required to cope with this high degree of uncertainty. Although routine is not reflected in role definition, the uncertainty perhaps generates job change, and the rhythmic combination of job routine, job change and job uncertainty leads to routine task variety. Perhaps the primary difference between the entrepreneurial group and the branch plants and local firms with hired management is the element of role definition or more generally the notion of role structure. In this sense, it may be that as entrepreneurships grow, hire on more administrators, and experience greater separation of ownership and management, they develop a more rigorous structure and are able to temper the general magnitude of uncertainty by distributing it through the organizational position. On the other hand, the primary difference between the entrepreneurial group and owner-managed firms is the notion of routine task variety. Perhaps as entrepreneurships grow in the direction of owner-managed firms, minimum hiring of administrators occurs, ownership and management remain fused, and the matter of control is held closely by the owner-manager. The organizational framework is not significantly more or less structured nor routine than the entrepreneurship, but uncertainty and job change are less in evidence. Thus,

routine task variety is lower for employees in owner-managed firms than for entrepreneurs by virtue of this difference in uncertainty and job change. It is important to recall that the element of routine is low in the first instance in both of these cases, and the power of routine task variety may be reduced because of this fact. Perhaps it is equally important to note that the entrepreneurial group includes self-employed individuals while the owner-managed firms, branch plants and local firms, with hired management include employees of these operations as supply agents in the study.

The dimensions of role structure and routine task variety provide a perspective on job satisfaction as a performance outcome of activity in different types of work organizations. Within the discriminant functions themselves, job satisfaction is a component of the contrast to structural characteristics within the role structure function, and is a component of routine task variety function. The federal government is high on role structure and low on routine task variety (Exhibit 6-5) and not unexpectedly, it is judged low on job satisfaction relative to other groups in the study (Exhibit 6-3). The municipal government rests in the same quadrant as the federal government, but it has tempered magnitudes on both dimensions compared to the federal government, and has low-medium job satisfaction. Local firms with hired management are as structured as the municipal government, but have positive routine task variety. Apparently the routine task variety is not sufficient to make job satisfaction significantly higher in local firms with hired management than in the municipal government (Exhibits 6-2 and 6-3). Branch plants, on the other hand, occupy a spot in the same quadrant as local firms with hired management, have the same degree of routine task variety as the latter, but are lower in terms of role structure. Job

satisfaction is medium in this particular situation (Exhibits 6-3 and 6-5). Coincidentally, job satisfaction is medium in the cases of both the provincial government and owner-managed firms which both occupy positions in a quadrant marked by low role structure and low routine task variety (Exhibits 6-3 and 6-5). The high degree of uncertainty in each case relative to structure and routine appears to contribute to this circumstance in both instances, and owner-managed firms are particularly low on both dimensions of role structure and routine task variety. Entrepreneurs occupy a quadrant on their own, measuring low on role structure and high on routine task variety. This combination is associated with high job satisfaction and tends to support the general proposition that persons are most satisfied in a work situation characterized by some uncertainty and some routine, while some change in routine is welcomed as represented in routine task variety.

To abstract, the dimensions of role structure and routine task variety provide a means of comparing work organizations. Focusing on job characteristics as job routine, job uncertainty, role definition, job change and job satisfaction, it is possible to develop measures of both dimensions in work organizations. Role structure essentially represents a contrast between role definition on one hand and job satisfaction, job uncertainty and job routine on the other. Routine task variety represents a combination of all five characteristics. Organizations measuring high on role structure and low on routine task variety perhaps can expect relatively low levels of satisfaction (cf. the federal government). Role structure, however, is not necessarily associated with low job satisfaction. Where it is combined with routine task variety which includes a degree of job uncertainty and job change, then



higher levels of job satisfaction are a viable proposition (cf. branch plants). When role structure is low, job satisfaction is in evidence in all cases. The combination of low role structure and high routine task variety represents the most desirable situation in terms of maximizing job satisfaction (cf. entrepreneurs). Job routine in itself may be negatively related to job satisfaction, but in the overall work situation which includes a degree of job uncertainty, job routine appears to be important as an ingredient of job satisfaction. Change in routine is equally important as a refinement to the general proposition.

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## APPENDIX A

WORK IN AMERICA AND THE PRESENT STUDY: A PERSPECTIVE

The focus of the present study is organizational research involving structural, contextual and performance characteristics of work organizations, with special attention accorded job satisfaction as a performance characteristic. The relevance of this subject acquires a valuable perspective when it is considered within the scope of the document entitled Work in America, a report of a special task force to the Secretary of Health, Education and Welfare, United States Government, and tabled in 1973. The purpose of this appendix is to offer an interpretation of this report and to discuss certain of its conceptual positions and essential recommendations in light of present findings connected to the current paper. All references are from the government document itself.

Work is "an activity that produces something of value for other people" (p. 3) and has economic, social and personal importance. Participation in work organizations is central to life in America, and the results of this participation have a major impact on job holders. In this sense, work has an "unparalleled psychological role in the formation of self-esteem, identity and a sense of order" (p. 4) for individual persons. Jobs affect persons, but the predictiveness of the equation is not always clear. "Jobs affect personality, and certain kinds of jobs affect certain kinds of personalities differently." (p. 80). One of the main problems facing work organizations and society at large is rising job dissatisfaction. This is problematic for work organizations because it is a drag on their efficiency and effectiveness. Perhaps redesign of jobs with the aim of increasing worker dissatisfaction might "lower such



business costs as absenteeism, tardiness, turnover, labour disputes, sabotage and poor quality, all of which is to the advantage of employers and consumers" (p. 27). Job dissatisfaction is problematic for society at large because of its direct impact on health including physical and mental health, community delinquency, and crime (Chapter 3). It is therefore important to consider both the quantity and quality of jobs in policy formulation involving manpower and the work place.

Improvements in the quality of work lead to improvements in the quality of life in general, and will assist in rectifying many of the difficulties confronting industry and the worker. Perhaps one of the critical issue areas across many occupational groups is the mounting evidence that higher education and training in the population are not being met with a rising incidence of higher level jobs in the economy, resulting in distinct underemployment of human resources and personal frustration amongst workers. In this sense it appears that the economic system is lagging the education system and the level of expectation attached to higher learning. The argument suggests that many employees are disappointed that they are unable to play any type of decision-making role in their jobs, work atmospheres are not conducive to participation, persons in authority are poor listeners or unavailable, standards and schedules are imposed, prejudices continue to plague the work site and freedom on the job is a vague concept. These conditions are notable in whole or part amongst blue-collar workers, minority groups, junior white collar workers, women and older workers (Chapter 2). Clearly they relate to the quality of work. Further, a distinction can be drawn between the work ethic and authority in coming to grips with the problem. Certain research amongst young persons points to a retention of the traditional

work ethic but a rejection of traditional authority relationships. "It does not appear that young workers have a lower commitment to work than their elders. The problem lies in the interaction between work itself and the changing social character of today's generation." (pp. 49-50). In addressing quality of work concerns, it appears necessary to consider two "major sources of dissatisfaction: the anachronism of Taylorism and the diminishing opportunities to be one's own boss" (p. 17).

Work also has economic importance. The notion of productivity is inescapable in discussions of the work place. Recommendations geared to improving job satisfaction cannot be offered in a vacuum. This is important in weighing the contribution of the human relations movement in organization theory.

"The 'human relations' school attempts to offset Taylor's primacy of the machine with 'tender, loving care' for workers. This school ... ignores the technological and production factors involved in a business. This approach concentrates on the enterprise as a social system - the workers are to be treated better, but their jobs remain the same. Neither the satisfaction of workers nor their productivity is likely to improve greatly from the human relations approach." (p. 18).

The mandate then appears to involve updating the work place to move beyond industrial engineering and traditional authority relationships, within a system that does not reduce productivity and preferably enhances it. The point of attention is the environment immediate to the worker, the nature of the job and its outcomes. Job redesign provides one avenue through which job satisfaction can be enhanced and productivity improvement might also be realized. "The main conclusion is that the very high personal and social costs of unsatisfying work should be avoided through the redesign of work ... Not only can work be redesigned

to make it more satisfying but [ ] significant increases in productivity can also be obtained." (p. 94).

Job satisfaction can be traced to a number of factors. These include a reasonably high occupation and status, a challenging job content, democratic supervision, functional work groups, equitable wages, vertical mobility, pleasant surroundings and job security (pp. 94-96). Under conditions of participative management, many of these favourable circumstances are realized. Workers become involved in settling "their own production methods, the internal distribution of tasks, questions of recruitment, questions regarding internal leadership, what additional tasks to take on and when they will work" (p. 103). In this framework which has been successful in a number of applications "workers are enabled to control the aspects of work intimately affecting their lives" (p. 104). Senior management continues to operate all other aspects of the company. Profit-sharing plans are firmly recommended as a second thrust in the organizational reform package, and specific traits of the plan are spelt out (pp. 109-110). The overall redesign of jobs is summarized in the following manner:

2 "Both human goals (autonomy and interdependence) and economic goals (increased productivity) can be achieved through the sharing by workers in both the responsibilities of production and the profits earned through production. Most workers will willingly assume responsibility for a wider range of decisions (and by so doing to increase productivity and profits) if they are also allowed to share in the results." (p. 110).

The impact and complementary policies associated with job redesign as enunciated in the report are noteworthy. Increased productivity in the economy will serve to temper inflation by bringing more produce to the market place from standard inputs, since greater supply is most often related to lower prices, demand being constant. By tying wages

to productivity, conditions of artificial demand are reduced. Value and expectations from education and training programs are more likely to be realized (p. 122). With a support program of worker "self-renewal" plans and industrial sabbaticals, employees can be allowed to upgrade and improve their skills in order to avail themselves of better positions in the labour market and to meet the changing requirements of jobs (Chapter 5). Improved job information and career planning information coupled with portable pension plans and mobility programs will allow for labour market movements to occur in a fluid, expeditious manner, ensuring a better utilization of human resources and an orderly shift of personnel from non-growth to growth industries (Chapters 5 and 6). Effective job creation programs for the unemployed and persons interested in entering the labour force are also recommended as part of an embracing employment strategy geared to the quantity and quality of jobs in the country (Chapter 6).

In terms of organization theory, the recommendations offered emphasize a structuralist view of organizational change and development. Importance is attached to the relationships between structure and outcomes of the work place, and one of the major concerns in terms of outcomes is job satisfaction. Context is broached in terms of matters of job content and working conditions. Thus, the study appears to lend support to organizational research involving structural, contextual and performance (outcome) characteristics. Certain of the findings in the present paper are consistent with positions assumed in the document. Routine, repetitive, monotonous jobs are linked to job dissatisfaction (p. 83); and workers like group cohesion (pp. 94-95) and variety (p. 94). The matter of job content is perhaps the area most significant in terms

of the present project. The following argument is furnished in the government report:

"Intrinsic factors such as challenge appear to affect satisfaction and dissatisfaction most substantially. The aspects of job content that appear most consistent in their negative effects are fractionation, repetition, and lack of control, or, in positive terms, variety and autonomy. Workers in all occupations rate self-determination highest among the elements that define an ideal job. Content of work is generally more important than being promoted." (pp. 94-95).

Perhaps the present study provides a valuable perspective on job content. According to the present project, jobs may be viewed in terms of both routine and uncertainty. It is true that high routine is associated with dissatisfaction but low routine is not associated with satisfaction. In other words, it does not appear viable to necessarily decrease routine (completely) with an eye to increasing satisfaction. What appears to be workable is the introduction of uncertainty to match with moderate routine as a measure to general job satisfaction. Moreover, the introduction of routines into highly uncertain situations appears to also be effective in this regard. Workers appear to like some routine and some uncertainty as part of the job in which they are performing. The construct of routine task variety as formulated in the present paper is based on this notion, and proves to be a valuable means of discriminating amongst organizations. Participative management is not inconsistent with this view. Workers might be given perogatives to choose their essential work patterns within the scope of company programs. Nor are organizational efforts to routinize their technologies necessarily discouraged. In uncertain settings, this is a desirable action. When routinization is high and uncertainty is low, some measure of job change may be desirable as a means of increasing satisfaction. This amounts to a form of variety,

and may comprise changing routines as one method of content modification. Job satisfaction, then, is an important outcome of the work place and has systematic ties with structure and context. Eliminating routine from jobs doesn't necessarily lead to increased satisfaction. Some variety in the jobs, however, is associated with job satisfaction, and may be found in a proper balance of routine and uncertainty within the essential technology of the jobs or in structural job change in highly routinized settings.

## APPENDIX B

## A NOTE ON RESEARCH STRATEGIES IN ORGANIZATIONAL ANALYSIS

The purpose of this note is to offer a framework representing certain of the bases and directions of research strategies in organizational analysis. This framework in turn is utilized to acquire a perspective on the essential research design of the present study. As a starting point, a distinction is made between two centers of attention and classification in the study of organizations. The first area is the objective nature of the organizations in focus, the actual state of conditions as they are institutionalized in the real world of fact and figure. Research centered on the objective nature of organizations is typified by the work of the Aston group in England wherein hard, concrete, non-attitudinal data on organizations were studied within a framework of organizational structure and the context in which structure is established (Pugh *et al.*, 1968, 1969). The objective nature of organizations to the human actors who are a part of the organizations represents the objective environment (Kahn *et al.*, 1964) of these actors, the way the surroundings in the organizations are as a forum for activity. It deals with what "should be done, and what is in practice allowed to be done" (Pugh *et al.*, 1968, p. 444). To an extent, it includes objective records of actual behavior (cf. Dill, 1958). Care must be taken to distinguish between expected and actual behavior as a direction of the research model (cf. Levinson, 1959).

The second area of classification is the normative-subjective nature of organizations in focus, the state of conditions as perceived by organizational participants and tends to address what is actually going on or expected as expressed through the views of organizational members. Since judgments and perceptions are involved, the normative-subjective nature

of organizations has a psychological basis, and, to its human actors, it is their psychological environment (Kahn et al., 1964), the way the surroundings of the organization appear to them. Much of the research of Aiken and Hage is based on attitudinal measures of organizational qualities (Aiken and Hage, 1966, 1968). General statements on the nature of organizations derived from an attitudinal data base involve subjectivity, and it is appropriate to distinguish this research from the objective measures of organizational form. Perceptions may vary from fact, but the consequences of perceptions are as real as the consequences of objective reality. Thus one classification orientation is not necessarily more appropriate or desirable for organizational research in general. Both provide valuable, complementary contributions to the knowledge of organizational dimensions and organizational administration:

The distinction between an objective and a normative-subjective measure of an organizational characteristic is revealed in comparing the notion of "centralization" between Pugh et al. (1968) and Aiken and Hage (1966, 1968). The term connotes the same quality in both studies, specifically the locus of authority (Pugh) or hierarchy of authority and participation in decision-making in the organization (Aiken and Hage). In the Pugh study, a list of thirty-seven types of basic decision inherent or organizations in general was used in direct interviews with department heads in participating firms. In each decision area, the organizational level at which the actual decision was made was discerned. Comparable levels were established between types of organizations in accordance with workflow activity. Direct evidence was used wherever possible. Measures of organizational centralization and organizational



unit autonomy were constructed from this information. Aiken and Hage, on the other hand, used a list of questions which they asked of a cross-section of members of organizations in their study. A sample of their questions in their hierarchy of authority measure includes the following: "I have to ask my boss before I do almost anything" and "A person who wants to make his own decisions would be quickly discouraged here". Respondents replied to five questions in all on a four-point scale from definitely false (1) to definitely true (4). Combining the scores from the five questions provided a measure of centralization as it related to hierarchy of authority. On the "participation in decision-making" measure, four questions were asked, including "How frequently do you usually participate in the decision to hire new staff?" and "How frequently do you participate in decisions on the adoption of new policies?". The scale in this case was five-point from never (1), through seldom (2), sometimes (3), and often (4), to always (5). The combined score on the four questions measured participation in decision-making, from low (4) to high (20). It is evident from this example that the two research strategies vary. Both, however, are born out of sound theoretical foundation, and both measure centralization of authority in their own way.

Examination of organizational behavior is directed at least at three levels of attention: the individual person as a participant in the organization, groups of persons in the organization, and organization as a whole (Pugh, 1966, p. 248). Blau (1974) similarly relates to these three levels in his discourse on the comparative study of organizations:

"The focus of analysis [in organizational research] can be (1) the individual in his specific role as a member of the organization who occupies a certain position in it; (2) the structure of social relations among individuals in the various groups within the organization; or (3) the system of interrelated elements that characterizes the organization as a whole." (pp. 112-113).

It is evident that knowledge and insight relating to organizations cuts a swath across disciplines in the social sciences and engineering. Pugh (1966) contends that organizational theory is properly regarded as interdisciplinary in its nature and scope, involving such fields as sociology, psychology, economics and production engineering (p. 235). To these might be added the contributions of political science and cultural anthropology. It is significant to note that administrative and research strategies developed within one discipline may well conflict in assumption or direction with the perspectives of another discipline. This may be demonstrated in administrative strategies in considering the two schools of scientific management and human relations. Taylor's (1911) principles of industrial engineering assist companies in improving the relationship between their capital and their workers, through measures like improved material handling techniques for example, with an eye to internal efficiency. In isolation, these principles hold certain appeal. What is overlooked, however, is the impact of workers working not only with capital but also with other workers and as persons with all of the orientations of persons. Thus, an improvement in illumination may logically improve efficiency according to industrial engineering principles; and in the telephone equipment room experiment as part of the Hawthorne studies, this was proven to be true. However, decreases in illumination also improved efficiency (Etzioni, 1964, p. 33). It was surmized that persons respond differently when they are treated differently. Thus, a

psychological dimension enters as a consideration in the understanding of organizations in action. The term "Hawthorne effect" was dubbed as a result of this major finding, and refers to the inclination of persons "working extra hard because of the feeling of participating in something new and special" (Schein, 1965, p. 27). Industrial engineering, which has a modern day counterpart in time and motion studies is important to organizational analysis, but organizational psychology is equally important. Administrative strategies might best represent a "synthesis" born out of the numerous schools of knowledge and appropriate disciplines (cf. Etzioni, 1964, Chapter 4; Thompson, 1967, p. 8). The synthetic model suggests a merging of disciplines.

Similarly, research strategies rooted in one particular discipline may conflict with the perspectives of other disciplines and potentially lose value in the broad scheme of organizational analysis. Differences between a sociological and a psychological approach are worthy of note. Fundamentally, the sociologist tends to stress organizational structure and context, with individual behavior viewed as contingent on these constructs. The psychologist, on the other hand, stresses personality and behavior, and is reluctant to accept any level of abstraction that does not have a behavioral basis. Structure, then, is viewed by the psychologist "with suspicion as being unreal since it cannot be reduced to behavior" (Pugh, 1966, p. 248). Sociology may be interpreted as a study of central tendencies in society with an awareness of the context in which tendencies develop. Psychology relates to individual behavior. Blau (1974) approaches his research on differentiation in organizations as a sociologist might, and compares his orientation to that of Parsons and Homans in the following way:

"The objective is to organize generalizations supported by extensive empirical data into a deductive system ... Concern is with the structure of differentiated positions in and components of organizations, not with goals or values, as it is in Parsons' theories, nor with psychological motives and individual behavior, as it is in Homans'." (p. 220).

Pugh (1966) suggests there must be a merging of disciplines and the elimination of "artificial boundaries" (p. 247) in the evolution of organizational theory. He is concerned that much of the available research is grounded in traditional disciplinary biases, although he is encouraged by certain interdisciplinary studies which may point the way in the future. Pugh includes Argyris (1957) amongst the interdisciplinaries. Lichtman and Hunt (1971), in a review article on personality and organization theory, distinguish between four "varieties of theory": the traditional structuralists, modern structuralists, the personalistic school and the integrators. These writers view Argyris as a modern structuralist who treats personality as a constant and explains individual differences "in terms of differential positional incumbency" (pp. 241-242) as a sociologist might (cf. Perrow, 1970, p. 2). Pugh (1966) calls for researchers to simultaneously consider the organization, groups and the individual in a holistic approach to organizational study. In this way, organizational research may then parallel Pugh's definition of organizational theory: "the study of the structure and functioning of organizations, and the behavior of groups and individuals within them" (p. 235). Open system theory (cf. Katz and Kahn, 1967) advances research in this direction (Lichtman and Hunt, 1971). Presumably both the individual (cf. Allport, 1968) and the organization are treated as open systems in this orientation, with the organization representing part of the environment to any individual and

with the individual constituting part of the organization's environment, even as members of the organization. Groups of persons may be seen as part of the environment of both the individual and the organization in this approach to analysis.

The data base for organizational analysis may be compiled from at least two avenues. The first involves gleashing objective data from the organization, utilizing the appropriate organizational supply agent as the accountant, personnel officer, department head, or organizational members in specific positions, whichever is the most appropriate. Operational records are typically used as the source of these data, and special forms of records may be developed where necessary to reflect the objective qualities of the organization to fit a research frame. In this way, analysis is centered on the characteristics of the organization which Lazarsfeld and Menzel (1961) term "global" or representative of "properties which are not based on information about the properties of individual members" (p. 505). Hall (1972) notes that in the particular case of objective characteristics of the organization "the informants may be organizational members, but they relate characteristics of the organization and not of themselves" (p. 14,f). A second avenue for data base development is the survey of organizational members which involves questions directed at specific qualities of their membership in the organization including their relationship with other members of the organization as respondents view this situation. This avenue has a normative-subjective or perceptual basis and is related to the analytical and structural properties of the organization since reference is directed at individual members or relationships amongst members, following Lazarsfeld and Menzel (1961, pp. 503-505). Averages of responses can be used

to reflect organizational characteristics (cf. Hall, 1972, pp. 13-14, f). It appears that these two avenues can be generalized in the sense that "expert informants or organizational documents are used to construct what Lazarsfeld and Menzel (1961) would label 'global' measures, and survey data are collected from rank and file participants to construct 'analytical' measures" (Scott, 1975, pp. 15-16). In this present paper, the terms employed are objective and normative-subjective, respectively. Perhaps an appropriate term for normative-subjective is perceptual measures since perception is the basis of this approach.

Pugh (1966) argues for organization research involving all of the organization as a whole, groups within the organization and the individual as a member of the organization. It is apparent that objective and normative-subjective measures of these three levels of research can and have been used. For organizations, the development of measures of centralization of authority by Pugh et al. (1968, 1969), Aiken and Hage (1966, 1968), as outlined previously represents the objective and the normative-subjective respectively. For groups, Dill (1958) determined group qualities of members of two Norwegian manufacturing firms by examining group composition from the ranks of top management in high level and operating groups in the companies, and by discerning the extent of involvement by the managers as it relates to line activity. Objective measures such as the frequency and type of contact between members were used amongst other indicators to reflect group qualities like perceived autonomy of group members. Observational data on formal behavior in group settings included objective measures like attendance and the number of topics raised at meetings. The use of an objective measure, as the number of contacts made by an official with others, to indicate a

psychological quality of the official, specifically perceived autonomy, suggests the internal dynamics of the research methodology. Seashore (1954) employed a normative-subjective approach to developing an index of group cohesiveness. Questions were asked like the following: "Do you feel that you are really a part of your work group?" and "If you had a chance to do the same kind of work for the same pay, in another work group, how would you feel about moving?". For these two queries, respondents were provided with five optional replies indicative of a degree of group cohesiveness, and with a sixth choice, "not ascertained", to which they may reply rather than being forced to choose from the index listing. Both approaches are thus possible in establishing group characteristics.

At the level of the individual in the organization, job satisfaction is perhaps one of the most widely studied phenomenon. Paulson (1974) used the objective indicator of the organization's annual turnover rate (inverted) as a measure of job satisfaction. Aiken and Hager (1966) in their work on alienation chose a normative-subjective avenue, asking questions like "How satisfied are you with your present job in light of career expectations?" to measure job satisfaction. These contrary approaches can be pursued within the framework of Pugh's (1966) call for interdisciplinary studies in organizational research. As part of his survey design rationale, Paulson (1974) notes that one of the criticisms of using turnover as reflective of job satisfaction is that turnover is a structural characteristic of the organization whereas satisfaction may be social-psychological and involuntary in origin. He argues that, in his sample, turnover was essentially voluntary and that "the concept of satisfaction was considered to be an organizational property, that is,

its effect and source are structural" (p. 335). Hulin and Blood (1968) point to job dissatisfaction as an affective response to certain perceptions of a job, and to turnover as a behavioral response which follows from the affective response (cf. Porter and Lawler, 1965). Other behavioral responses are envisaged, however, including absenteeism and lower productivity (Hulin and Blood, 1968, p. 204). The extent to which one of the behavioral responses, namely turnover, serves as a representative surrogate of an affective condition; namely dissatisfaction, is properly raised as a question. The labour economist conceivably relates turnover to labour market conditions which are beyond the bounds of social psychology. This scenario broadens Pugh's (1966) concern with respect to divisions between disciplines on underlying assumptions and research directions. Often for the sake of matters like research economy and internal consistency, certain types of measures are required for the research model. A discussion of the assumptions inherent to a model are, however, quite separate from the development of measures used for the sake of economy or consistency. The problem in the broad scheme of organizational analysis is the validity of a model based on assumptions which may be confining to one branch of the social sciences. This discussion is not offered as a criticism of one particular methodology, but suggests the value and importance of Pugh's commentary on an interdisciplinary approach to organizational research.

A more general discussion of measures of organizational characteristics is appropriate at this juncture. Objective data provide a ready source of many organizational qualities such as size of the operation and its geographical dispersion (cf. Pugh et al., 1969). For some characteristics, however, objective data are either not (easily) accessible



or are perhaps not as desirable as normative-subjective data. Building up normative-subjective or perceptual data to reflect organizational qualities may be done in two ways. The first involves asking individuals questions about their respective roles, and then developing averages of responses to provide a measure of the organizational qualities. For example, Aiken and Hage (1966) used two questions to probe alienation from expressive relations in their sample of health and welfare agencies: "How satisfied are you with your supervisor?" and "How satisfied are you with your fellow workers?". These questions are directed at the individual about the individual. An average of all individual responses provides a measure of organizational alienation from expressive relations. The second method involves asking individuals questions about the organization as a whole, and then averaging responses to reflect organizational qualities. The formalization-specificity of the job measure used by Aiken and Hage (1968) provides an example of this approach. Questions like the following are asked of respondents: "Whatever situation arises, we have procedures to follow in dealing with it." and "Everyone has a specific job to do.". Often the two approaches are combined, as in the technology-index of routinization measure of Aiken and Hage (1968), where a question of the individual about his own job was phrased the following way: "Would you describe your job as being highly routine, somewhat routine, somewhat non-routine or highly non-routine?"; and a question of the individual about jobs in the agency in general was put as follows: "Most jobs have something new happening everyday.". The key point is that two strategies are available for compiling organizational indicators from individual responses: ask individuals questions about their roles and generalize from the average replies, or ask individuals questions about organizational properties, and

generalize from the average replies. A combination of the two methods may also be undertaken as a third approach.

This distinction between objective and normative-subjective data and the position of records or the individual as a supply agent opens certain interesting questions with reference to organizational research. The size of the organization, for example, is typically an objective characteristic. Sub-unit size is treated in a similar fashion. Size as it relates to job satisfaction is discussed in the following manner by Porter (1963) as cited in Porter and Lawler (1965):

"An increase in the total size of an organization - with the consequent technological advantages of large-scale operation - will not necessarily reduce the morale and job satisfaction of employees as long as intraorganization work units are kept small." (p. 319).

Carrying this further, perhaps an employee's perception of the total size of the organization varies under different organizational contexts, which in turn affect the employee's attitude and behavior. Certain employees in an organization judged largely by objective data may perceive the organization as comparatively small so far as their view is concerned; while others may perceive it to be as large as it is in fact.

A general proposition relating to the use of objective and normative-subjective indicators and to the objective and normative-subjective nature of organizations is not apparent. Possibly one form of reliability check in a research model would include objective data (where available) to substantiate or qualify normative-subjective or perceptual data (where available); and vice-versa (cf. Hackman and Lawler, 1971). The issues of individuals reporting on the organizational qualities and organizational agents reporting on individuals are subject to close scrutiny. Similarly, the comparability of data and conclusions emerging from

different strategic models is also an issue. In a commentary on variable measurement, Triandis (1966) cites research conducted by Argyle, Gardner and Cioffi (1958) in which four methods were employed to measure each of five attitudinal variables. The correlation coefficients between the four methods were between .04 and .21. Triandis attributes these low levels of consistency between methods to the normative structure of some of the methods as distinct from actual behavioral outcomes in others, to the matter of perceptual differences, to one method involving anonymity whereas others were open, and in general to "conceptual unclarity" (p. 91) in the project as a whole. Scott (1975) summarizes the experience of Pennings (1973) in a like way. Using a series of generally accepted measures of centralization and formalization, some of a global or objective root and some of an analytical or normative-subjective root, Pennings is reported to have often found little convergence between global and analytical measures. In one instance 8 of the 12 correlations between the survey measures and global measures of centralization are negative and two of these are large enough to be statistically significant! None of the positive correlations is large enough to be statistically significant." (Scott, 1975, p. 16).

Research strategies vary between projects often, and warrant attention in their own right within the study of organizations and the development of organizational theory. Ideally the strategy in any integrated organizational study should be interdisciplinary and involve data for the organization, its groups and its individual members. The data base may be objective or normative-subjective; ideally perhaps both. Normative-subjective data may be based on individual's perceptual reports about their own roles, or about characteristics concerning the organization and organizational roles in general. Both perhaps bear attention.

Against this framework, the research design in the present study centers on normative-subjective measures of organizational activity. Twenty-six role perception variables form the basis of the six organizational characteristics of job satisfaction, group cohesion, job change, job uncertainty, role definition and job routine. With the exception of group cohesion, all of the variables in these characteristics concern the individual and that person's role in the organization. No variables relate to organizational roles in general. One variable, omitted from the final scores, directs attention to a potential incumbent to the role presently performed by the respondent (Exhibit 2-9). The group cohesion characteristic contains variables which ask the respondent to report his perception of the way the men in his work unit get along, stick together and help each other compared to other work units. To this extent, it measures a perception of others in the organization in addition to the respondent himself as a member of the work unit. No objective data were gathered from the organizations themselves to supplement or validate the perceptual data. The information relating to organizational charter, ownership, and control were asked of the respondent as supply agent. Alternative questions within the survey questionnaire were used to confirm the accuracy of certain of these characteristics. The present study, therefore, represents an exploration of organizational activity based on information reported by a number of persons working as entrepreneurs in their own organization or holding jobs in Alberta industrial and governmental organizations. All data are gathered from the individual respondent as supply agent, and relate to the respondent's role and work unit as he perceives them in the work organization, and to objective characteristics of the firm as charter, ownership and control.

## APPENDIX C

SELECTION OF A TERMINAL SOLUTION IN THE APPLICATION OF  
FACTOR ANALYSIS TO ROLE PERCEPTION VARIABLES

There are numerous techniques available in factor analysis, and the application of these techniques to a set of data need not lead to the same results. The outcome of 18 applications of factor analysis to the 26 role perception variables appears in Exhibit C-1. This exhibit is constructed to show highlights of each application. Technical details of the application head each column. The common factors are boxed in under the application and include the number of each variable and its respective loading in each case. The variables themselves are numbered 1-26, which compares to questionnaire variables 24-49 inclusive (cf. Appendix D). All loadings represent the highest loading on the variable amongst common factors. No loading of less than .5 is accepted. This limit is placed on the data in line with the argument that a factor should explain a distinctive amount of the variance in a variable if it is to be considered a significant component of the variable. A correlation of .5 is reasonable in this respect, and is chosen as an arbitrary cut-off point. Something less than all variables are often ultimately a part of the common factors because of this decision.

Before discussing the various techniques and applications and before entering into a selection of a terminal solution, it is appropriate to relate to the variance explained by common factors in the factor solutions. One benchmark for variance explained is to make the sum of eigenvalues greater than 1 in the factor solution and use the total variance explained by these common factors as the measure of ability of the factor application. For example, seven factors in the initial solution have

eigen values greater than 1 and 57.8% of the variance is explained by these seven factors. The larger this percentage is, the more distinct is the factor analysis in relating to the movement in the data. Further information on eigen values is included in Chapter II of the present report.

Lawson (1971) used six factors based on a varimax rotation (column 1). Data from her thesis indicate that 22 of the 26 role perception variables are included in the six factors. There appear to be two particular difficulties with this solution. A seventh factor which fell out of the analysis and loaded high on one variable, number 12, was not used; and variable number 7, which was included in the job routine factor with other variables numbered 2, 3, 4 and 11 had a loading of .45, the only loading below .5 and it appears that this variable has a higher loading of .47 with another factor, namely role definition (p. 315). Running PAL varimax rotation with a missing values card (8, 9) results in a factor solution comparable to Lawson. An eigen value equal 1 criterion is chosen as a cut-off for common factors (column 3). The number of cases equals 463, well below the population of 621, because of missing values in some variables. Later it becomes evident that all missing values (8, 9) are in the job satisfaction and group cohesion variables, numbers 15-26 inclusive. The following summary chart represents a synthesis of the selected solution. Factor names are from Lawson.

<u>Common Factor</u>	<u>Major Variables</u>
1. Job satisfaction	15,16,17,18,19,21
2. Group cohesion	24,25,26
3. Job change	5,6
4. Job uncertainty	8,9,10
5. Role definition	13,14
6. Job routine	2,3,4,7,11
7. No name	12

Variable 7 is placed in italics and is omitted from the factor in subsequent discussion of job routine within the varimax rotation, eigen value equal 1 criterion. Quartimax rotation results in a similar solution (column 1). Equimax, however, shows some shifts within the routinization scale variable factors (column 5). The oblique rotation suggests that variable 7 may be best positioned with role definition rather than with job routine, consistent with one reinterpretation of Lawson (column 6).

Two sample runs on the full file are compiled in an attempt to find a common solution. These runs appear as columns 7 and 8. The results are not encouraging. Changes occur in a number of instances. For example, in varimax sample, variable 11 falls into job change and not job routine, as in equimax but not varimax full. In both varimax sample and oblique sample, variables 12 and 23 link together, hitherto two unrelated variables. In oblique sample, variable 1 links negatively with job satisfaction. It seems that the factor analysis is not particularly neat and tidy.

To put the general analysis in a perspective, the data in the original study are drawn from three sources: the routinization scale from Hickson (undated) which comprises variables 1-14, the job satisfaction scale, modified from Kahn et al. (1964) which comprises variables 15-21 and the group cohesion scale from Seashore (1954) as seen in Miller (1964) which comprises variables 22-26. The variables in the routinization scale are subjected to factor analysis using varimax rotation, eigen value equal 1 criterion (column 9) and using oblique rotation (columns 10 and 11). Four factors emerge, as shown below, and they explain 56.5% of the variance.

<u>Common Factor</u>	<u>Variables</u>
job routine	1,2,4,7
job change	5,6
job uncertainty	8,9,10,12
role definition	13

Comparing these findings to Lawson, the following might be said:

job routine - add variable 1, drop 3 and 11  
- retain 7 but on the basis of a high factor loading

job change - same

job uncertainty - add variable 12

role definition - same

Overall, the same number of variables, 12 out of 14, are included.

Lawson excludes variables 1 and 12; the present excludes variables 3 and 11, and improves on the condition of variable 7. Further, when only the job satisfaction and group cohesion scales are run, the same common factors fall out as in the original Lawson and present varimax (columns 12 and 13). A missing values (8) card is used in all runs, and results in an N value of 609 out of a possible 621 within the routinization scale, and an N value of 463 out of a possible 621 in the job satisfaction and group cohesion scales. It appears then that all missing values (8, 9) occur in the latter scales. Relaxation of the 5 variable loading criterion within oblique rotation solutions provides support to the orthogonal solution. Further, if the objective is to include all variables in the common factors, this is possible by having a cut-off at .4 in the oblique solution as shown in columns 11 and 14. The results of PA2 varimax is not readily interpretable and is foregone as a viable alternative (column 15).

On the crest of this new development within the individual scales, factor analysis is applied to the full file and six factors are forced



in the varimax rotation (column 16) and oblique rotation (column 17). This procedure appears to follow Sims, et al. (1975) in their work on job characteristics. The varimax rotation, force 6 factor criterion results in a slate of factors whose composition parallels the separate runs on routinization and job satisfaction/group cohesion. The sample run, however, does not confirm these factors (column 18) and the oblique rotation force 6 criterion leads to new problems including a merger between job routine and role definition (column 17). Perhaps the important outcome, however, is the similarity between varimax, force 6 factors and the separate scale factor analyses.

In filling out the information base for decision-making, an additional exhibit is constructed. Exhibit C-2 shows average communalities for selected factor solutions in variables included in the factor compositions. Average communality data are important in the sense that the amount of variance accounted for by common factors provides an indication of the general strength of the factor analysis. Significant, for example, that PA2 varimax has an average communality of .54, well below PA1 varimax which has an average communality of .60 (Exhibit C-1, columns 15 and 3). This is a second reason for outright rejection of the PA2 method of factor analysis in the present study. Turning to Exhibit C-2, the Lawson data and varimax full are different by virtue of the inclusion of variable 7 in Lawson and its exclusion in varimax full, eigen value equal 1 criterion. Note that with movement from varimax full, eigen value equal 1 criterion to varimax full, force 6 factors, there is a loss of .01 in average communality but a gain of 1 variable within a modified factor structure (columns 3 and 16). Movement from varimax full, force 6 to oblique full force 6, there is a gain of .01

in average communality, but a loss of 1 variable in a modified factor structure. Overall it would appear that communality doesn't provide a great deal of information in choosing amongst alternatives..

It would appear that two alternatives are viable in selecting a terminal solution. The first alternative is to accept the Lawson factor analysis, perhaps in a modified form or at least in a qualified form, as supported by varimax full, eigen value equal 1 criterion. The second alternative is to modify the factor structure in line with varimax full, force 6 factors, which is supported by the separate factor analyses of the routinization scale and job satisfaction/group cohesion scales using varimax full, eigen value equal 1 criterion and oblique rotation. A grid summarizing the information with respect to these alternatives appears as Exhibit C-3. The two factors in limbo are job routine and job uncertainty, both central to the paper. Only their factor structures change between the two methods. Neither method has any difference in terms of numbers of variables included in the final factors, although variable 7 is problematic in the Lawson set because of its low loading and the fact it may more properly be placed with role definition if it is to be included at all. Average communality is .01 higher in Lawson. Sample runs support neither method, but separate runs on the routinization scale and job satisfaction/group cohesion scale support the force 6 factor solution. This latter point perhaps tips the scale toward the force 6 factor solution. In choosing this solution, problems with variable 7 are lost and all variable loadings are .5 or greater. Little communality is sacrificed. The conclusion is to adopt the varimax full, force 6 factor solution. The results of this decision appear in Chapter II of the project. Two-dimensional plots of the factors

are provided as Appendix E, and a summary of the relationships between characteristics derived from factors as depicted in these plots appears as Exhibit 2-2.

EXHIBIT C-1

Factor Analysis: Various Methods

	1. Lawson Original	2. Lawson Modified	3. Varimax Pull
Technique			PAI
Rotation	Varimax		Varimax
N value			463
No. of factors	7/6 used		7/6 used
Eigen value criterion			1.0
Loading minimum	.47	.5	.5
Average communality			.60
1			
2	2 .64		2 .64
3	3 .59		3 .59
4	4 .53		4 .54
5		5 .83	5 .83
6		6 .82	6 .82
7	7 .45*	Omit 7	
8		8 .71	8 .72
9		9 .78	9 .78
10		10 .71	10 .73
11	11 .51		11 .50
12			12 .75
13	13 .76		13 .77
14	14 .80		14 .80
15	15 .80		15 .80
16	16 .63		16 .63
17	17 .71		17 .72
18	18 .73		18 .74
19	19 .63		19 .63
20			
21	21 .64		21 .65
22			
23			
24	24 .81		24 .81
25	25 .83		25 .83
26	26 .78		26 .78

L-40-48/315

\* - higher loading with 13+14

EXHIBIT C-1 (cont'd)

4.

5.

6.

1  
2  
3  
4  
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7  
8  
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10  
11  
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14  
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21  
22  
23  
24  
25  
26

FAL  
Quartimax  
463  
7/6 used  
1.0  
.5  
.60

FAL  
Equimax  
463  
7/6 used  
1.0  
.5  
.60

FAL  
Oblique  
463  
7/6 used  
1.0  
.5  
.60

2 .64  
3 .60  
4 .54  
  
  
  
  
  
  
  
  
11 .50

5 .83  
6 .82

8 .73  
9 .78  
10 .73

12 .75  
13 .76  
14 .80

15 .81  
16 .64  
17 .72  
18 .73  
19 .65  
  
21 .65

24 .80  
25 .82  
26 .77

2 .65  
3 .59  
4 .55

8 .71  
9 .78  
10 .71

12 .78  
13 .77  
14 .81

15 .77  
16 .61  
17 .69  
18 .73  
19 .59  
  
21 .63

24 .81  
25 .85  
26 .77

5 .83  
6 .83  
  
  
  
  
  
  
11 .50

2 .65  
3 .59  
4 .59

11 .51

15 .82  
16 .64  
17 .73  
18 .73  
19 .66  
  
21 .66

24 .81  
25 .85  
26 .78

5-.84  
6-.83

8 .75  
9 .78  
10 .75

12-.73

7 .55  
  
  
  
  
13 .78  
14 .81

EXHIBIT C-1 (cont'd)

7.	8.
----	----

	Sample PAI Varimax 234 7 1.0 .5 .61		Sample PAI Oblique 234 7 1.0 .5 .61
1			1-.50
2	2 .56		2 .56
3	3 .64		3 .64
4	4 .62		4 .62
5	5 .86		
6	6 .81		5-.86
7		7 .58	6-.83
8			
9		8 .75	8 .78
10		9 .76	9 .78
11	11 .51	10 .78	10 .80
12			
13		12-.66	11-.53
14			12-.65
15		13 .76	
16		14 .81	13 .78
17	15 .79		14 .81
18	16 .67		
19	17 .71		15 .81
20	18 .71		16 .68
21	19 .70		17 .74
22			18 .71
23			19 .73
24	21 .61		20 .50
25			21 .63
26		23 .57	23 .56
	24 .83		
	25 .83		24 .83
	26 .78		25 .85
			26 .80

EXHIBIT C-1 (cont'd)

	9.	10.	11.
	Rout Scale PAI Varimax 621 4 1.0 .5 .62	Rout Scale PAI Oblique 621 4 1.0 .5 .62	Oblique 621 4 1.0 .5 .62
1	1 .70	1 .71	1 .71
2	2 .62	2 .61	2 .61
3			3 .42
4	4 .66	4 .69	4 .69
5	5 .84	5 .85	
6	6 .83	6 .84	
7	7 .69	7 .72	7 .72
8	8 .72	8 .76	
9	9 .63	9 .67	
10	10 .78	10 .81	
11			11 .41
12	12 .60	12 .59	
13	13 .82	13 .84	
14	14 .84	14 .85	

## EXHIBIT C-1 (cont'd)

	12.	13.	14.
	JSAT/GCOH	JSAT/GCOH	JSAT/GCOH
	PAL	PAL	PAL
	Varimax	Oblique	Oblique
	463	463	463
	2	2	2
	1.0	1.0	1.0
	.5	.5	.4
	.57	.57	.49
15	15 .81	15 .82	15 .82
16	16 .64	16 .65	16 .63
17	17 .74	17 .73	17 .73
18	18 .74	18 .73	18 .73
19	19 .64	19 .68	19 .68
20			
21	21 .64	21 .66	21 .66
22			22 .43
23			23 .41
24	24 .81	24 .81	24 .81
25	25 .84	25 .85	25 .85
26	26 .78	26 .78	26 .78
			20 .47



EXHIBIT C-1 (cont'd)

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15.	16.
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- 1
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- 25
- 26

PA2  
Varimax

Force 6-V  
PA1

Varimax  
463

1	.59
4	.57
7	.65
8	.60
10	.67

5	.79
6	.78

9	.76
---	-----

13	.60
14	.72

15	.80
16	.55
17	.65
18	.66
19	.62
21	.57

24	.71
25	.80
26	.65

1	.63
2	.58
4	.57
7	.69

5	.81
6	.84

8	.69
9	.52
10	.74

12	.66
13	.68
14	.71

15	.80
16	.63
17	.71
18	.74
19	.64
21	.64

24	.81
25	.83
26	.77

EXHIBIT C-1 (cont'd)

17.	18.
-----	-----

	Force 6-0 PA1 Oblique-0 463 6 - .5 .60		Force 6-V-8 PA1 Varimax 217 6 - .5 .61
1	1 .59		
2			
3			3 .74
4	4 .58		
5		5-.82	5 .83
6		6-.84	6 .83
7	7 .73		7 .54
8		8 .75	8 .76
9		9 .67	9 .60
10		10 .81	10 .79
11			
12		12-.56	
13	13 .59		13 .74
14	14 .60		14 .78
15	15 .82		15 .81
16	16 .63		16 .57
17	17 .73		17 .73
18	18 .73		18 .72
19	19 .67		19 .58
20			
21	21 .66		21 .66
22			
23			23 .55
24	24 .81		24 .79
25	25 .85		25 .85
26	26 .78		26 .76

## EXHIBIT C-2

## Average Communalities for Selected Factor Solutions

Factor Solution Column Exhibit C-1	Name	Qualification	Average Communality	Number of Variables Used
1	Lawson	as calculated from varimax 3	.60	21
3	varimax full	variables 1-14 used all variables used	.61 .60	11 20
6	oblique full	variables 1-14 used all variables used	.60 .61	12 23
7	varimax sample	variables 1-14 used all variables used	.61 .61	13 23
8	oblique sample	variables 1-14 used all variables used	.61 .61	14 25
9-10	varimax/oblique	routinization scale	.62	12
12-13	varimax/oblique	job satisfaction and group cohesion scales	.57	9
16	varimax force 6	variables 1-14 used variables 15-26 used all variables used	.59 .59 .59	12 9 21
17	oblique force 6	variables 1-14 used variables 15-26 used all variables used	.61 .59 .60	11 9 20

## EXHIBIT C-3

## Summary Information Grid - Main Factor Structure Alternatives

	Lawson, varimax full eigen value equal 1 criterion	Varimax full force 6 factors
1. factor structure:		
- job routine	2,3,4, 7*,11	1,2,4,7
- job change	5,6	5,6
- job uncertainty	8,9,10	8,9,10,12
- role definition	13,14	13,14
- job satisfaction	15,16,17,18,19,21	15,16,17,18,19,21
- group cohesion	24,25,26	24,25,26
2. variables omitted	1,12,20,22,23	3,11,20,22,23
3. variable 7 as part of job routine factor	loading of .45, long variable below .5 has higher loading of .47 with role definition	loading of .69 within a modified job routine factor
4. loadings	one (variable 7) below .5	all .5 or above
5. number of variables included	21	21
6. number of factors	7/6 used	6
7. average communality;		
- variables 1-14 used	.61	.59
- variables 15-26 used	.60	.59
- all variables used	.60	.59

EXHIBIT C-3 (cont'd)

Lawson - varimax full  
eigen value equal 1 criterion      Varimax full force 6 factors

8. sample confirmation of factors  
sample = .5

not upheld. significant shifts  
in variables between factors,  
specifically involving  
variables 7, 11 and 23

not upheld. job routine variable  
breaks up completely

9. variables 1-14: original routinization  
scale from Hickson; variable alignment  
different in Lawson-varimax full and  
varimax-force 6

4 factors

4 factors. The full file when run  
with a missing value card (8,9)  
reduces the routinization scale  
and job satisfaction/group cohesion  
scale from N=621 to N=463. When  
only routinization scale is run  
N=621 and confirms varimax-force 6  
alignment of variables in factors.  
Confirmed by oblique rotation also.

variables 15-26: job satisfaction and  
group cohesion. variable alignment  
similar

2 factors

2 factors. Confirmed by separate  
run on job satisfaction-group cohesion  
data alone as above.

Respondent No. \_\_\_\_\_ Date \_\_\_\_\_  
 Location \_\_\_\_\_ Company \_\_\_\_\_

ORGANIZATIONAL BEHAVIOUR RESEARCH UNIT  
 UNIVERSITY OF ALBERTA

CANADIAN ATTITUDE STUDY

GENERAL INSTRUCTIONS

This questionnaire is part of a national study of Canadian workers, their attitudes, and their work organizations. The study is completely confidential, and no names are taken. Do not write your name on the questionnaire.

Please circle or check off the appropriate number for each question.

DEMOGRAPHIC DATA

1. SEX: M \_\_\_\_\_ F \_\_\_\_\_
2. AGE at last birthday
3. Are you married, widowed, divorced, separated, or never married?  

Married .....	1	Separated .....	4
Widowed .....	2	Never married ....	5
Divorced .....	3		
4. What is the last year of school completed?  

Grade 1 - 6 .....	1	College Graduate .....	5
Junior High or some High School .	2	Post Graduate .....	6
Completed High School .....	3	Technical School .....	7
Some College .....	4	No Schooling .....	8
		Don't know .....	9
5. What is your approximate present annual income from all sources?  

Under \$5,000 .....	1	\$12,500 - \$15,000 ...	5
\$5,001 - \$7,500 ....	2	\$15,000 - \$20,000 ...	6
\$7,501 - \$10,000 ...	3	Over \$20,000 .....	7
\$10,001 - \$12,500 ..	4		
6. During the first 15 years of your life, did you live mostly on a farm, mostly in a small town, mostly in a small city, or mostly in a big city or its suburbs?  

Mostly on a farm .....	1
Mostly in a small town .....	2
Mostly in a small city .....	3
Mostly in a big city or suburbs ..	4
7. A. What is your religion or church preference?  

Protestant (Answer B) ..	1	Other .....	5
Catholic .....	2	None .....	6
Jewish .....	3	Don't know .....	9
Greek Orthodox .....	4		

B. If protestant, please specify:  

Presbyterian .....	1	Anglican .....	5
Lutheran .....	2	Methodist .....	6
Baptist .....	3	Other .....	7
United Church .....	4	Don't know .....	9

C. Would you say you go to church regularly, often, seldom, never?  

Regularly .....	1	Seldom .....	3
Often .....	2	Never .....	4

8. A. Where were you born (if in Canada, which province)? In Canada:

British Columbia	1	New Brunswick	7
Alberta	2	Nova Scotia	8
Saskatchewan	3	Newfoundland	9
Manitoba	4	P.E.I.	10
Ontario	5	Yukon	11
Quebec	6	North West Territories	12

If not in Canada, in which country were you born (write in name of country)?  
(Answer B).

B. If you were not born in Canada, how long have you lived in Canada? \_\_\_\_\_

9. During the first 15 years of your life, which province of Canada did you grow up in?

British Columbia	1	New Brunswick	7
Alberta	2	Nova Scotia	8
Saskatchewan	3	Newfoundland	9
Manitoba	4	P.E.I.	10
Ontario	5	Yukon	11
Quebec	6	North West Territories	12

If not in Canada, in which country? \_\_\_\_\_

10. What kind of work did your father do for a living while you were growing up?  
Please specify - \_\_\_\_\_

11. What was the last year of school your father completed?

Grades 1--6	1	College Graduate	5
Junior High or Some High School	2	Post Graduate	6
Completed High School	3	Technical School	7
Some College	4	No Schooling	8
		Don't know	9

12. Where did your family (father) originally come from? (If other, please specify)

Great Britain	1	Germany	5
Ireland	2	Italy	6
United States	3	Hungary	7
France	4	Other	8
		Ukraine	9

13. What is your father's ethnic origin? (If other, please specify)

English	1	Italian	5
Hungarian	2	German	6
American	3	Ukrainian	7
French	4	Other	8
		Irish	9

14. Generally speaking do you usually think of yourself as a Conservative, Liberal, New Democrat, Social Credit or Independent, or what?

Conservative (Ask A)	1	Social Credit (Ask A)	4
Liberal (Ask A)	2	Independent (Ask B)	8
New Democrat (Ask A)	3	Don't know (Ask B)	9

A. If Conservative, Liberal, New Democrat or Social Credit, would you call yourself a strong Conservative, Liberal, New Democrat, or Social Credit?

Strong (C, L, ND, SC)	1	Weak (C, L, ND, SC)	2
-----------------------	---	---------------------	---

B. If "Independent" or don't know do you think of yourself as closer to the Conservative Party, the Liberal Party, the New Democratic Party, or the Social Credit Party?

Conservative	1	Social Credit	4
Liberal	2	Don't know	9
New Democratic	3		

ORGANIZATIONAL ROLE

15. Do you belong to a union? Yes 1  
No 2


16. How long have you been working with your company or organization?

17. How long have you been working on your present job?

18. A. Do you do shift work? Yes 1 (Ask B)  
No 2

B. If yes, what shift do you usually work?

8 - 5 1  
5 - 2 2  
12 - 8 3  
Other 0

19. At what level is your position in the organization?

Chief Executive 1  
Department Head 2  
Foreman 3  
Clerical Supervisor 4  
Worker 5  
Staff position (please specify for  
example, accounting or purchas-  
ing) 6

To what level in the organization do you report?

20. In what specialized functional area do you do most of your work?

Production 1  
Marketing 2  
Accounting and Finance 3  
Research and Development 4  
Purchasing 5  
Other (please specify) 6

Could you give me some description of your job, that is, what do you do in your organization?

21. What is the technology of your company or organization?

Unit or small batch production ..... 1  
Large batch or mass production ..... 2  
Continuous flow or process production ..... 3  
Service technology (be specific) ..... 4  
Multitechnology organization (be specific) . 5

22. How many promotions - in the sense of more authority and moving up the ladder - have you had with this company?

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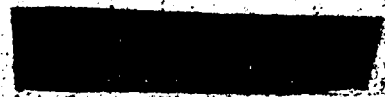
23. A. Was your first job with this company a management position? Yes 1  
No 2

B. What was the level of this job? \_\_\_\_\_



Please circle the number which you feel is the most appropriate.

	<u>Most</u>	<u>Quite A Lot</u>	<u>Some</u>	<u>A Little</u>	<u>Almost None</u>
24. How much of your work do you think of as routine?	1	2	3	4	5
25. When you begin a working week, how much of what you will actually do during the week can you foresee?	1	2	3	4	5
26. If someone completely new to your job had to take it on at short notice, how much of it would he be able to find out from a job-description and/or a record of previous work?	1	2	3	4	5
27. How many of your working days follow a similar pattern to one another?	1	2	3	4	5
28. How much of the content of the job you are now in has changed in the past year?	5	4	3	2	1
29. How much of the content of the job you are in now do you anticipate will have changed in a year's time?	5	4	3	2	1
30. How often does your work involve following regular set procedures?	1	2	3	4	5
31. How often do major problems occur in your job which have never occurred before?	5	4	3	2	1
32. How often does something come up in your work which necessitates acquiring fresh knowledge or new skills?	5	4	3	2	1
33. How often do completely unforeseen things happen in your job?	5	4	3	2	1
34. Considering the various problems that arise in your work, how often is the solution clear?	1	2	3	4	5
35. How often do you have to switch from one thing to another?	5	4	3	2	1
	<u>Very Precisely</u>	<u>Fairly Precisely</u>	<u>Not Very Precisely</u>	<u>Very Imprecisely</u>	<u>Not Laid Down At All</u>
36. How precisely are your responsibilities laid down?	1	2	3	4	5
37. How precisely is it laid down which decisions you take yourself?	1	2	3	4	5



	Completely Satisfied	Well Satisfied	Neither Satisfied Nor Dissatisfied	A Little Dissatisfied	Very Dissatisfied
33. On the whole, how satisfied are you with the company where you work?	1	2	3	4	5 9
39. How satisfied are you with your present salary?	1	2	3	4	5 9
40. How satisfied are you with the kind of work (or task) you do?	1	2	3	4	5 9
41. How satisfied are you with the progress you have made in this company?	1	2	3	4	5 9
42. How satisfied are you with your present supervisors?	1	2	3	4	5 9
43. How satisfied are you with your fellow workers?	1	2	3	4	5 9
	No Chance At all	Very Little Chance	Some Chance	Fairly Good Chance	Very Good Chance
44. How much does your job give you a chance to do the things you are best at?	5	4	3	2	1
45. Do you feel that you are really a part of your work group?					
Included in all aspects of my work group			1		
Included in most ways			2		
Included in some ways, but not in others			3		
Don't feel I really belong			4		
Don't work with any one group of people			5		
Don't know			9		
46. If you had a chance to do the same kind of work for the same pay, in another work group in this company, how would you feel about moving?					
Would want very much to move			5		
Would rather move than stay where I am			4		
Would make no difference to me			3		
Would rather stay where I am than move			2		
Would want very much to stay where I am			1		
D.N.A. (No similar work group)			8		
Don't know			9		
How does your work group compare with other work groups in the company on each of the following points?					
47. The way the men get along together:					
Better than most			1		
About the same as most			2		
Not as good as most			3		
Don't know			9		
48. The way the men stick together:					
Better than most			1		
About the same as most			2		
Not as good as most			3		
Don't know			9		

-6-

	Agree <u>Strongly</u>	Agree <u>Slightly</u>	Don't <u>Know</u>	Disagree <u>Slightly</u>	Disagree <u>Strongly</u>
49. The way the men help each other on the job:					
			Better than most	1	
			About the same as most	2	
			Not as good as most	3	
			Don't know	9	
50. Do you agree or disagree that the way they are run now, labor unions do this country more harm than good?	1	2	3	4	5
51. The government should leave things like electric power and housing for private businessmen to handle.	1	2	3	4	5
52. We need more government controls over business practices and profits.	5	4	3	2	1
53. Canada would be better off without any labor unions at all.	1	2	3	4	5
54. Big companies control too much of Canadian business.	1	2	3	4	5
55. The government ought to help people get doctors and hospital care at low cost.	5	4	3	2	1
56. The government in Ottawa ought to see to it that everybody who wants to work can find a job.	5	4	3	2	1
57. The government ought to have special programs so that children from poor families receive help to get as much education as possible.	5	4	3	2	1
58. The government ought to see that the poor get good housing at low cost.	5	4	3	2	1
59. If a person wanted to make a speech in your community against churches and religion, should he be allowed to speak?	5	4	3	2	1
60. Should such a person be allowed to teach in a Canadian university?	5	4	3	2	1
61. If a person wanted to make a speech in your community favoring government ownership of all the railroads and big industries, should he be allowed to speak?	5	4	3	2	1
62. Should such a person be allowed to teach in a Canadian university?	5	4	3	2	1
63. If a Communist wanted to make a speech in your community, should he be allowed to speak?	5	4	3	2	1
64. Should such a person be allowed to teach in a Canadian university?	5	4	3	2	1
65. Do you feel that the federal government is doing too much for Quebec in relation to other provinces?	1	2	3	4	5

-7-

	<u>Agree</u> <u>Strongly</u>	<u>Agree</u> <u>Slightly</u>	<u>Don't</u> <u>Know</u>	<u>Disagree</u> <u>Slightly</u>	<u>Disagree</u> <u>Strongly</u>
66. Do you think French Canadians are making unreasonable demands?	1	2	3	4	5
67. It doesn't matter which party wins the elections, the interests of the little man don't count.	1	2	3	4	5
68. Do you agree with the policy of the federal government to make both French and English the official languages of Canada?	5	4	3	2	1
69. Elected officials become tools of special interests, no matter what.	1	2	3	4	5
70. Local officials lose touch with the people who elected them.	1	2	3	4	5
71. If people knew what was really going on in high places, it would blow the lid off things.	1	2	3	4	5
72. People who go into public office are usually out for all they can get.	1	2	3	4	5
	<u>Always</u>	<u>Usually</u>	<u>Sometimes</u>	<u>Rarely</u>	<u>Never</u>
73. How frequently do you vote in local municipal elections?	1	2	3	4	5
74. How frequently do you vote in federal elections?	1	2	3	4	5
		<u>Frequently</u>	<u>Occasionally</u>		<u>Never</u>
75. When you get together with your friends would you say that you discuss public issues like government regulation of business, labor unions, taxes, and farm programs?		1	2	3	
76. Have you ever written, phoned or talked to your member on city council, in the provincial legislature, or the House of Commons, or any other public official about some issue or problem?		1	2	3	
77. Have you ever gone to any political meetings, speeches, rallies, dinners, or things like that in connection with an election?		1	2	3	
78. Would you say that you are:					
a person who contributes to community decisions					1
a person who is active, but not one of the decision-makers					2
just an ordinary person in the community					3
not really a part of the community at all					4

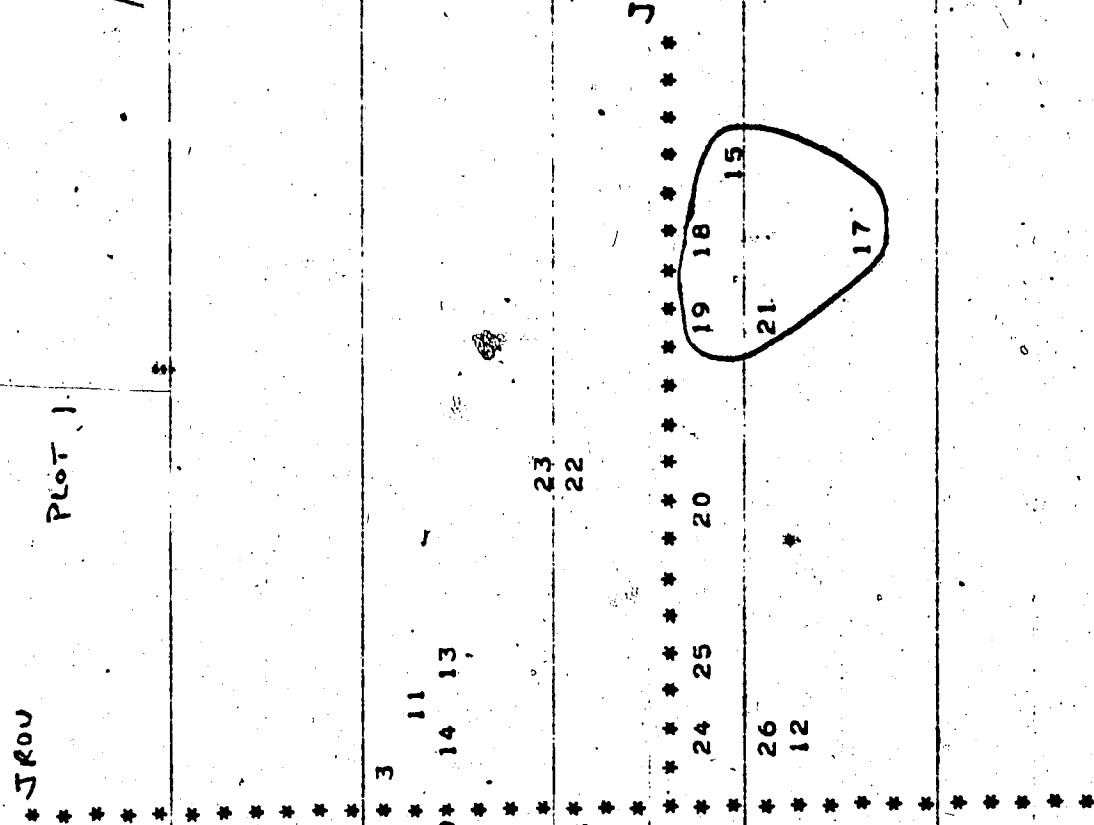


## APPENDIX E. - PLOTS OF ORGANIZATIONAL CHARACTERISTICS

Exhibit P1	Plot of Job Satisfaction and Job Routine
Exhibit P2	Plot of Job Satisfaction and Group Cohesion
Exhibit P3	Plot of Job Satisfaction and Job Uncertainty
Exhibit P4	Plot of Job Satisfaction and Job Change
Exhibit P5	Plot of Job Satisfaction and Role Definition
Exhibit P6	Plot of Job Routine and Group Cohesion
Exhibit P7	Plot of Job Routine and Job Uncertainty
Exhibit P8	Plot of Job Routine and Job Change
Exhibit P9	Plot of Job Routine and Role Definition
Exhibit P10	Plot of Group Cohesion and Job Uncertainty
Exhibit P11	Plot of Group Cohesion and Job Change
Exhibit P12	Plot of Group Cohesion and Role Definition
Exhibit P13	Plot of Job Uncertainty and Job Change
Exhibit P14	Plot of Job Uncertainty and Role Definition
Exhibit P15	Plot of Job Change and Role Definition

HORIZONTAL FACIOR 1      VERTICAL FACIOR 2

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26



HORIZONTAL FACTOR 1 VERTICAL FACTOR 3

GCON

PLOT 2

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

24 25  
26

20

23  
22

19 15  
21 17 18

312

14

6

13

11

10

JSAT



HORIZONTAL FACIOR 1 VERTICAL FACIOR 4

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

JUNC  
Plot 3

10  
8 12  
9\*

16  
15  
19 18  
21

20  
13  
3261125  
22  
24  
23

JSAT

HORIZONTAL FACTOR 1 VERTICAL FACTOR 5

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

JCH6.

Plot 4.

5 6

21 17 JSAT

19 18 15

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HORIZONTAL FACTOR 1 VERTICAL FACTOR 6

RDEF.

PLOT 5

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

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 21 18

JSAT

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 1 26  
 8 2 24  
 10

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HORIZONTAL FACTOR 2 VERTICAL FACTOR 5

\* JUNG

Plot 8

5 6

- 1 = VAR01
- 3 = VAR03
- 5 = VAR05
- 7 = VAR07
- 9 = VAR09
- 11 = VAR11
- 13 = VAR13
- 15 = VAR15
- 17 = VAR17
- 19 = VAR19
- 21 = VAR21
- 23 = VAR23
- 25 = VAR25
- 2 = VAR02
- 4 = VAR04
- 6 = VAR06
- 8 = VAR08
- 10 = VAR10
- 12 = VAR12
- 14 = VAR14
- 16 = VAR16
- 18 = VAR18
- 20 = VAR20
- 22 = VAR22
- 24 = VAR24
- 26 = VAR26

11

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17 21 25 22 1014 13

JR0U



12 24 261520 3

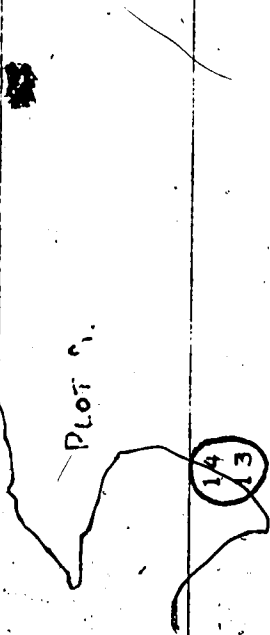
16

HORIZONTAL FACIOR 2      VERTICAL FACIOR 6

RDEF

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

Plot 5.



17	5	19	7
1520*	22	11	3
26	6*	0	1
21	25*	*	*
24*	8	*	*
	10	*	*
	9	*	*
	23	*	*

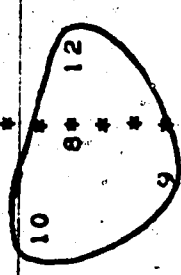
JRow

HORIZONTAL FACTOR 3 VERTICAL FACTOR 4

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

JVNC

LOT 10



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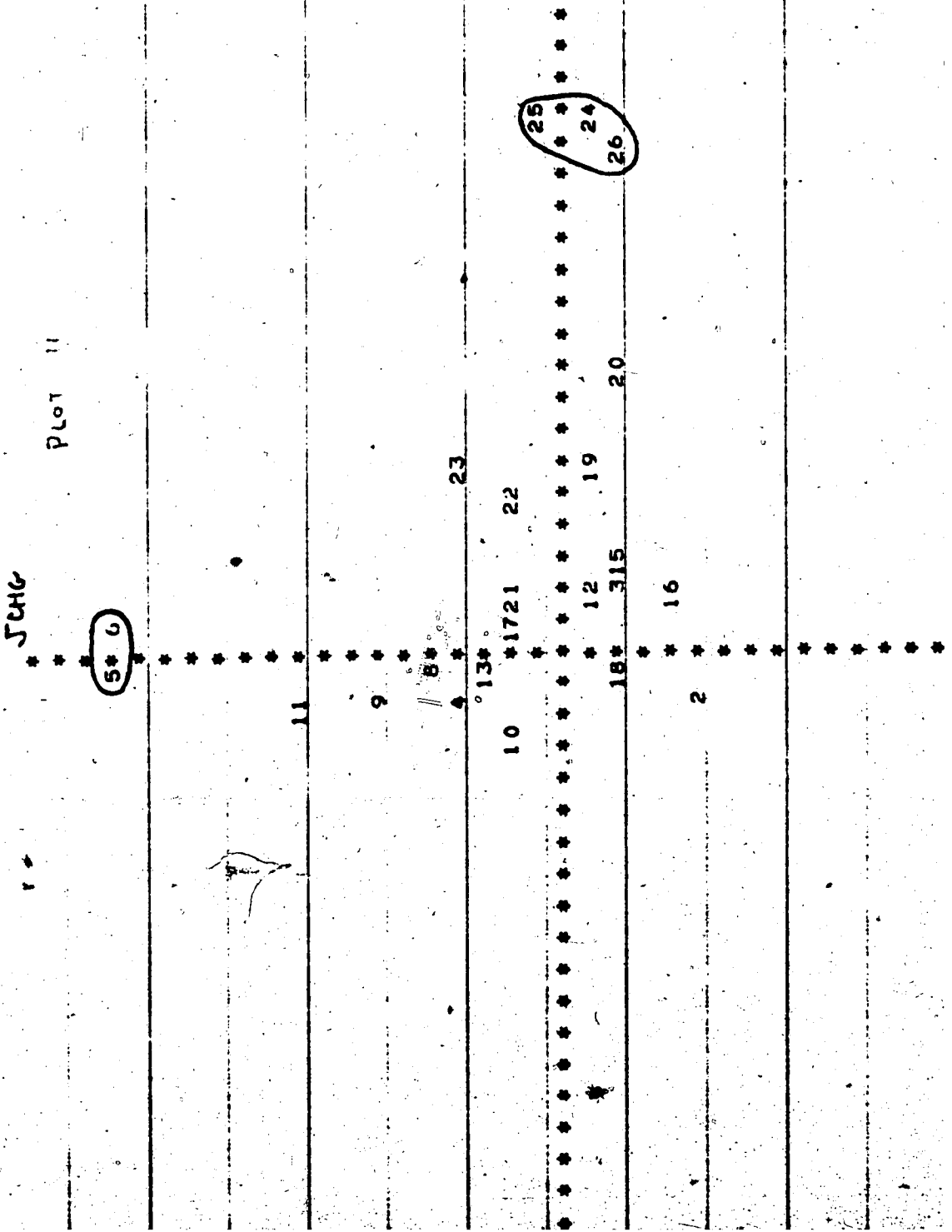
21

2625  
24



HORIZONTAL FACTOR 3      VERTICAL FACTOR 5

- 1 = VAR01
  - 3 = VAR03
  - 5 = VAR05
  - 7 = VAR07
  - 9 = VAR09
  - 11 = VAR11
  - 13 = VAR13
  - 15 = VAR15
  - 17 = VAR17
  - 19 = VAR19
  - 21 = VAR21
  - 23 = VAR23
  - 25 = VAR25
- 2 = VAR02
  - 4 = VAR04
  - 6 = VAR06
  - 8 = VAR08
  - 10 = VAR10
  - 12 = VAR12
  - 14 = VAR14
  - 16 = VAR16
  - 18 = VAR18
  - 20 = VAR20
  - 22 = VAR22
  - 24 = VAR24
  - 26 = VAR26









HORIZONTAL FACIOR 5 VERTICAL FACIOR 6

RDEF

Plot 15

- 1 = VAR01
- 2 = VAR02
- 3 = VAR03
- 4 = VAR04
- 5 = VAR05
- 6 = VAR06
- 7 = VAR07
- 8 = VAR08
- 9 = VAR09
- 10 = VAR10
- 11 = VAR11
- 12 = VAR12
- 13 = VAR13
- 14 = VAR14
- 15 = VAR15
- 16 = VAR16
- 17 = VAR17
- 18 = VAR18
- 19 = VAR19
- 20 = VAR20
- 21 = VAR21
- 22 = VAR22
- 23 = VAR23
- 24 = VAR24
- 25 = VAR25
- 26 = VAR26

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JCHG