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The Ohio State University, Ph.D., 1976
Business Administration

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BOUNDARY ACTIVITY, PATTERN DISCERNIBILITY AND
PERFORMANCE PROGRAM CHARACTERISTICS
OF ORGANIZATIONAL POSITIONS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

Mitchell Bennett Shapiro, B.A., M.B.A.

* * * * *

The Ohio State University
1975

Reading Committee:
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Approved By
Adviser
Department of Business Administration
DEDICATION

To Emily Beth - who waited till the worst was over.
ACKNOWLEDGMENTS

In a project of this magnitude, one inevitably becomes indebted to many individuals who invest time and effort providing feedback and constructive criticism. First, general acknowledgments are in order—to those faculty and doctoral students who facilitated the author's learning and whose comments helped to refine and provide structure and focus for this dissertation. I have learned a great deal from Tom Mawhinney, Chet Schriesheim, Jean Bish, Jeff Ford, and others in the doctoral program. As we all mature in our profession, we shall forever build on a most functional foundation of intellectual interdependence.

If this study is to contribute anything to the literature of our field, special credit must go to four men who served on the various reading committees and who enabled the study to grow beyond initial confusion. James McNaul, who originally stimulated my interest in the area of organization boundaries, helped immeasurably by crystallizing aspects of the conceptual framework. Had his word been unheeded, the study might have perpetrated many of the inaccuracies currently found in the limited boundary literature. Robert Backoff helped us all clarify
our thinking by suggesting the need for precision in level of analysis. Richard Klimoski, with precision in thinking and high intellectual standards, has guided my development for nearly three years. Although I often failed to realize his expectations, I can neither measure nor repay his contribution to my development and this study. Randy Bobbitt agonized with me at every stage, making suggestions, helping to focus the study and diminish its ambiguities.

Two other individuals played critical roles in aiding me at various stages of the project. Robert Banasik's enthusiasm, interest and guidance helped considerably; without his support, the study might never have been done.

In some ways, I owe everything to my wife, Susan. Through the agonizing months in which this document emerged after each iteration, she continued to provide crucial personal support and minimized potential role conflicts. My repayment to her comes as I complete this work.

I am also indebted to the administrators of the hospital and agencies, whose interest in behavioral research is a testimony to open-mindedness and managerial maturity.
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PUBLICATIONS AND PRESENTATIONS


FIELDS OF STUDY

Organizational Behavior. Professors James P. McNaul and H. Randolph Bobbitt, Jr. Industrial and Organizational Psychology. Professor Richard J. Klimoski
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LIST OF SYMBOLS

B.A. Info.: Boundary Activity Informational
B.A. Int.: Boundary Activity Interactional

Unc.: Uncertainty
T.D.: Task Difficulty
Var.: Variety

Sup. Dep.: Supervisory Dependence
Form.: Formalization
Disc.: Discretion
Dev.: Developmental Activity

Key to Significance Levels

*: p < .05
**: p < .01
***: p < .005
****: p < .001
CHAPTER ONE
INTRODUCTION

Close examination of the extensive literature on organization and environment presents both considerable theory and empirical evidence establishing a link between the two. However, what the literature appears to lack is a conceptual framework for fully understanding the process whereby this relationship occurs. We are still not sure of directionality in this relationship (i.e., in which direction the causality exists and whether or not the relationship is recursive).

Only longitudinal studies of organization processes, environments and structural conditions would provide definitive answers. However, there exists an emerging, related literature with potential for explaining aspects of the process whereby environmental characteristics influence the organization. This is the literature of the organizational boundary, or the points through which the environmental-organization interface occurs. Study of these locations in the organization, and their linkage to other positions and organizational variables should prove of some utility in understanding how environmental characteristics impact on organizational structures and
processes and how organizational activity and change may influence the environment. The study below provides an initial investigation into an overlooked aspect of the boundary question. Using constructs presently available in the literature and modified but familiar operationalizations, this study begins to prepare us for studies of the type suggested above.

The concern in this study is to learn more about the characteristics of activities in organizational positions that are differentially boundary spanning. If the boundary spanning idea has any utility, it should provide us with explanation for other organizational variables, such as the degree to which organizational positions are highly predetermined or structured (or alternatively, discretionary or developmental). Since the boundary may be the point of initial uncertainty absorption, we might argue, we can expect to see differentially structured activities as a partial response to environmental conditions faced in different boundary positions. Through views of the literature and the construction of an integrated theoretical framework below, this idea is conceptualized to dovetail with the uncertainty absorption framework of March and Simon (1958). Testable propositions are developed from this framework; internally consistent scales were built to measure the constructs of interest. Use of partial correlational analysis and regression provided statistical means for testing hypothesized matrices of
intercorrelations derived from the propositions. Below is a short statement of the content in each of the five remaining chapters.

CHAPTER TWO: LITERATURE REVIEW

A short literature search is conducted, delineating the most significant theories and studies of the organization-environment relationship at two levels of analysis: the organization and the unit. Uncertainty in the environment is seen as the major linkage between environmental characteristics (e.g. dynamicism, heterogeneity) and organizational characteristics (structure, process). However, it is concluded that little study has been devoted to understanding the process whereby the organization monitors its environment (i.e., the designation of positions that vary in the degree to which they require boundary activity and information transmission). To supply this missing link in the literature, investigation into characteristics of the boundary position is appropriate.

Also often overlooked is the issue of internal vs. external uncertainty. Environmentally caused uncertainties are only one source of uncertainty for the organization. A full consideration of the uncertainty absorption framework is developed, suggesting that environments are only one source of uncertainty, and that boundaries to the environment need not necessarily be inherently uncertain. The uncertainty absorption framework is explored, setting the stage for a model developed below. This model helps us to more
appropriately focus on boundaries and their impacts. This chapter also ties together the current literature on boundaries and boundary activities. The definition of the organizational boundary is discussed and current interpretations outlined. A brief review of the literature includes details on the dynamics of boundary positions and the impact of boundary activity on role conflict, ambiguity, satisfaction.

In this chapter, a conceptual and empirical gap is identified in our current understanding of how closely related boundary activity is to individual performance programs. This latter issue is of great importance, for characteristics of performance programs determine what and how activities are performed by individuals. In order to function effectively in the process of uncertainty absorption and information transmission to others in the organization (recognizing bounded rationality in the organization), performance program characteristics must facilitate the information monitoring, transformation and transmission processes.

CHAPTER THREE: CONCEPTUAL FRAMEWORK

Chapter Three is the most important part of the dissertation, as it contains a model of how inter-organizational boundary spanning relates to performance program characteristics of organizational positions. This model is presented at two levels of abstraction. In this way, current constructs from the literature are integrated and
theoretically explored by relying on a smaller number of variables at a higher level of analysis. Boundary spanning, it is suggested, should bear little direct relationship to characteristics of performance programs. On the basis of the contradictory positions discussed in Chapter Two, it is suggested that boundary spanning may be linked to performance program structure only through other characteristics of stimuli faced in organizational positions. It is suggested that the discernibility in pattern of stimuli for organizational positions provide much more explanation in the dependent variable of performance program structure than boundary-spanning activity. The intention here is to show that while boundary-spanning activity may be relevant in uncertainty absorption, such activity is not inherently uncertain. In fact, depending upon organizational differentiation in focus on stimuli for organizational positions, boundary spanning may vary in the degree to which it entails discernibility in pattern. The latter is most crucial, for we recognize that uncertainty is only partially the result of environmental activity. Since uncertainty cannot be viewed as totally environmental in source, boundary spanning of the organization's environment need not include uncertainty. It is only the simultaneous interaction of uncertainty and boundary activity that is hypothesized to link directly with the need for flexibility in performance program structure. This condition is termed contingent dynamics; i.e. that a link between
boundary spanning and performance program structure is contingent upon the discernibility in pattern of stimuli for that position.

This chapter presents the model, defines and conceptualizes each of the three high-order constructs of the model (organizational position relative to boundary, pattern discernibility, and structure in evoked sets or performance programs). Later, the linkages in the model are crystalized and justified empirically by translating the model into four main propositions. Since each of the propositions represents a hypothesized relationship between higher order constructs that are to be definitionally transformed to several lower order constructs, the hypothesized correlation matrices of these lower order constructs are presented as a base from which to conduct hypothesis testing.

CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

Operationalization is the main focus of this chapter. As noted above, three main higher-order constructs are the focus of the study. Definitional transformations of each into between two and four moderate level constructs resulted in nine scales needed to test hypotheses in the framework above. The dependent variable under study (i.e., the variable for which explanation was desired) was the degree of structure in performance programs or sets of evoked responses to stimuli. This construct was translated into four constructs, analogous to those in the literature on perceptual measures of emergent unit
structure. The four are supervisory dependence, formalization, discretion and developmental activity.

The independent variable under study was position in the organization relative to the organization's boundary. At a more moderate level of abstraction, we suggest the efficacy of measuring the extent of boundary activity in an organizational position. The two highly oblique dimensions of boundary activity were boundary activity of an informational nature and boundary activity of an interactional nature.

Since the framework suggested the linkages between the independent and dependent variable to be unclear, it was necessary to identify a second independent variable, which we term the contingent (and eventually more important) independent variable of discernibility in pattern of stimuli found in organizational positions. Definitionally, lack of discernibility in pattern was suggested to involve high uncertainty, high difficulty in the task and greater task variety.

Pretesting was conducted to develop internally consistent, homogeneous scales for the following variables: discretion, supervisory dependence, formalization, and task variety. Scales measuring uncertainty, task difficulty and boundary activity were built by modifying previously developed scales. The uncertainty scale was developed by Sathe (1974) in revision of Duncan (1971); task difficulty is an adaptation of that used by Van de Ven and Delbecq.
(1974, 1975) in their operationalization of Perrow's concept. Boundary activity dimensions were operationalized by revising items in the Organization Research Project (Zeitz, 1974) to conform to response categories developed for optimal construction of interval scales.

This chapter includes a complete description of each of the three sites employed in the study: a pretest sample of employed students, a small sample of mostly professional employees in a collection of welfare agencies and a large sample of hospital employees. Only the latter two were included in hypotheses testing.

CHAPTER FIVE: RESULTS

This chapter provides hypotheses testing results. Zero-order correlations for observed data are compared with hypothesized correlation matrices to determine adequacy of support for hypotheses. In addition, various sets of partial correlation results are examined to reject alternative explanations. Regression analysis is used to test hypothesized interaction effects derived from the fourth proposition. Results are analyzed separately for each of the two samples, although greater emphasis is placed on the hospital sample, which did not include the range restriction as in the agencies sample.

CHAPTER SIX: DISCUSSION

The results found in Chapter Five suggest some need for reinterpretation and modification in the model. This chapter focuses on several major issues raised by the
somewhat divergent results in Chapter Five. Particular concern is given to understanding how sampling limitations (i.e. a convenient sample) entail the need to focus on variables operating in this unique setting. The issue of uncertainty and its impact on patient care is explored and used to clarify certain findings.

CHAPTER SEVEN: IMPLICATIONS AND RECOMMENDATIONS

This final chapter concludes the study by suggesting how the framework and its results may be important for future theoretical, empirical and practical activity. Suggestions for future theory, scaling and organizational design activities are contained here.
CHAPTER TWO
LITERATURE REVIEW

The explication and testing of contingency theories is presently a popular approach to contributing an understanding of the determinants and implications of different organizational configurations (Downey and Slocum, 1975). A large part of this literature focuses attention on the environment or uncertainty imperative (Burns and Stalker, 1966; Emery and Trist, 1965; Lawrence and Lorsch, 1967; Thompson, 1967; Pennings, 1974). This approach suggests organizations will differentiate themselves into substructures and arrange these pieces in a manner to monitor the environment most optimally. This allows information to be transformed and transmitted throughout the organization where it can be used for accomplishment of organizational objectives. As discussed below, a number of theoreticians have provided conceptualizations of the environment as well as frameworks for understanding the relationship between environmental conditions and organizational characteristics.

One aspect of this relationship, however, has not been dealt with quite as intensively. This is the important question of the points throughout the organization
(i.e., boundary positions) in which extra-organizational interactions occur. The majority of studies have focused on the dimensions of organization structure and process, and the interrelationships of these dimensions in the environment. These studies leave an important conceptual gap in our understanding of how information from the environment enters the organization and gets into the organizational decision-making system. We have yet to see development of a conceptual base and extensive empirical testing of the mechanisms of boundary activity or boundary spanning. This study expands on recent efforts and attempts to clarify organization-environment relationships by examining the points at which designated organizational members engage in environmental interactions for the organization. Since the boundary of the organization is a hypothetical "line" that differentiates the organization from its environment (Katz and Kahn, 1966; Aldrich, 1971), an understanding of the organization boundary idea is possible when we consider the relationship between the organization and its environment.

This study builds on the theoretical and empirical knowledge of organization boundaries and organization environment relationships and expands our knowledge in the area by testing hypotheses regarding the boundary activity found in organizational positions. The investigation into the relevance of boundaries is just one part of
the studies that emanate from the general rubric of organization-environment relationships. A full appreciation of the nature of organizational boundaries requires an understanding of the manner in which organizations interact with their environments.

The major theoretical efforts in the area of understanding how the environment can impact on the organization help set the stage for noting the importance of the boundary function. Dill (1958); Emery and Trist (1965); Thompson (1967); Lawrence and Lorsch (1967); and Weick (1969) all refer primarily to the environment as a potential and actual source of uncertainty for decision makers in the organization. These efforts presuppose an open-systems or natural-systems framework (Thompson, 1967) in which the organization is conceptualized fundamentally as an interactive system facing constraints and contingencies imposed by a variety of environmental elements. The basic idea of organization design is to differentiate and integrate optimally in order to process (i.e., monitor, choose, input, transform, transmit, and output) information from a differentially uncertain or equivocal environment (Weick, 1969).

It is from this concern that the organization differentiates itself and must insure that this segmentation is effective via the concern for integrative processes that enable individuals in these different parts to communicate effectively with one another and provide information
necessary for their mutual functioning (Lawrence and Lorsch, 1967). We shall review this literature, calling attention to how it provides a useful foundation for understanding the boundary function. First, we examine the major theoretical positions; second, we review empirical support for these theories.

Organization and Environment: Theoretical Work

The first distinctive attempt at conceptualizing the environment of an organization was Dill's (1958) discussion of the task environment. In an attempt to study the variety of organizational patterns that emerge in different organizations, Dill relied on a classification scheme designed to differentiate among the variety of environmental inputs experienced by industrial organizations. He defined (1958:410) the task environment to be "...that part of the total environment of management which was potentially relevant to goal setting and goal attainment." He suggested the four elements of the task environment to be:

1. Customers (both distributors and consumers)
2. Suppliers (of materials, labor, equipment, capital and work space)
3. Competitors (for both markets and resources)
4. Regulatory groups (including government, unions, and industry associations)
Based upon a study of two Norwegian industrial firms, Dill concluded that conditions set by members of the task environment had a substantial effect on the autonomy and structure of organizational units. His special focus was on the different degrees of autonomy observable in managers across organizations facing different environments.

Dill's other major contribution was to set the stage for later work in the area of dimensionalizing the causes of environmental turbulence and uncertainty. The six dimensions he suggested were varying degrees of unity and homogeneity, stability, disruptiveness of inputs, demands for direct personal interaction, routing of inputs and complexity of inputs.

The next major theoretical contribution emerged from a need to identify and assert the increasing dynamicism of organizations in the 1960's. Emery and Trist (1965), building upon open systems theory (von Bertalanfy, 1950), and the purposive behaviorism of Tolman and Brunswick (1935), chose to anthromorphically conceive of organizations in their environments as organisms moving through life-space. Using case study examples they demonstrate the need for organizations to perceive their environments and maintain this perception as the path to effectiveness. Although they do not make it explicit, the theory developed has implications for the monitoring function (i.e., boundary-spanning units) in the organization.
Emery and Trist conceptualize four possible environment types. Each type is differentiated with respect to the arrangements of desirable and undesirable conditions in the organization's environment. To understand this conceptualization, we can refer back to the organism analogy and assume the "organism" thrives and moves across some abstract "space" in its lifetime. In its locomotive processes (i.e., interactions), the organism will discover both desirable consequences ("goods") and undesirable consequences ("noxiants"). Similarly, we can imagine organizations, in their activities or processes of interaction with their environments, discovering both goods and noxiants in the surface over which they travel. This notion builds on the work of Simon (1957), Ashby (1960), and Schutzenberger (1954), and suggests a focus on two characteristics of stimuli distribution: stability and segmentation.

The first environmental type is the placid, randomized environment; in this environment, the organization faces goods and noxiants which are relatively unchanging and randomly distributed. To manage this type of environment, they suggest, the organization can only use trial and error or tactics, as this reflects the economist's notion of a classical market.

The second environmental type suggested is the placid, clustered environment; under these constraints, conditions are still relatively stable, but now can be
found in clusters. This corresponds to the economists' case of imperfect competition and the distinct characteristics of managing this type of environment are the deployment of strategy, not tactics, and the main organizational effort is to locate an optimal position.

The next environmental type is the disturbed-reactive; this appends to the placid clustered environment, the element of many organizations competing for scarce resources and scarce markets. Now, the main function is management of the competition. In this oligopolistic environment, Emery and Trist suggest the salience of operations where operation is understood (1965:26) as a "campaign involving a planned series of tactical initiatives, calculated reactions by others, and counteractions. The flexibility required encourages a certain decentralization and also puts a premium on quality and speed of decision at various peripheral points." Implicit in this idea is the importance of adequate mechanisms at the organizational boundaries.

The type four environment is termed the turbulent field. Much of their thesis argues that organization environments are becoming complex and increasingly turbulent. Now, with changes in the field itself, the desirable and undesirable conditions are dynamic.
They attribute the emergence of these turbulent fields to:

(a) Substantial growth to meet the challenges of type three environments and the accompanying interdependence of organizations.

(b) The deepening interdependence between organizations and society, the economy and government.

(c) The increasing reliance on research and development to meet the challenge of competition.

It is at this point that the authors begin discussing the issue of uncertainty; they suggest that the increasing frequency and intensity of the conditions noted above serve to generate increasing uncertainty or unpredictability about organizational environment conditions. They suggest the increasing need for organizations to rely on and to recognize elements in their environments. Besides competitors, particularly salient are the growing influences of government, regulatory agencies, consumer groups, etc. on the organization and the consequential need for the organization to consider these new variables in its decision making. Thus, we can superimpose Dill's task environment typology to ascertain the possible environmental influences that may produce, or at least help to contribute to, turbulent fields.

The recognition of uncertainty management as the route to effectiveness emerges as a conclusion of their work. Although highly abstract, Emery and Trist provide a clear portrayal of the organization as a social system
confronted by environmental uncertainty--lack of knowledge, inability to predict, incompleteness of information and ambiguity about strategy, direction and plan. They clarify the increasing need for an organizational structure to facilitate the monitoring and interpreting of the environment. This foreshadows the emerging boundary roles, discussed later, and the subject of this study. Role incumbents at the boundary of the organization, interacting with elements of the task environment, are the "gatekeepers" (Utterback, 1971) whose success in monitoring enables the organization to thrive and grow.

Burns and Stalker, (1966) in their case study of Scottish firms in the late 1950's, were able to classify organizations into two types--mechanistic or organic. Mechanistic organizations can be thought of as highly bureaucratic, authoritarian, rule-oriented organizations; organic organizations, in contrast, were characterized by lack of a hierarchy, flexible organizational structure, and other minimally bureaucratic attributes. Their important discovery was the association between mechanistic organizations and stable and homogeneous environments and the fit between organic organizations and more diverse and dynamic environments.

Thompson (1967) is regarded as the classic theoretical framework in the study of the organization and its relationships with its environment. Thompson's entire
analysis of organizations as dynamic, open systems is postulated on the notion that organizational-environmental interactions in combination with the organization's core technology are the determinants of organizational success. The organization's designers must consciously seek to discover structures that will allow the organization to cope with the uncertainties in its environment within the context of its technology.

Although Thompson explicitly adopts an open systems approach (which necessitates a consideration of how organizations continually interact with their environments), he reconciles this with the usefulness of the closed system approach. He hypothesizes that organizations operate under norms of rationality; i.e., organizations seek to achieve as much closure as possible over elements of their environments in order to treat these now-controllable elements in a rational manner. Thus, organizations will seek to minimize uncertainty in their environments and uncertainties within the organizational boundaries.

Although organizations are open and subject to the constraints and contingencies in their environments, they are engaged in a continual process to minimize the amount of unknown or uncontrollable information generated by these elements.
In trying to plan for future desired states with elements of the task environment, the organization must have both adequate information and an awareness of causes/effects relationships. In this regard, Thompson borrows from March and Simon (1958) the notion of "satisficing," as an alternative to some virtually impossible comprehensive decision making approach. Thompson suggests the usefulness of satisficing as a way of understanding how organizations at the macro level cope with uncertainty in their environments. He also shows how hierarchy location relates to environmental activity and uncertainty management.

Borrowing from Parsons (1960), Thompson distinguishes among three levels of the organization: the institutional level, the managerial level and the technical level. At the institutional level, the organization interacts with and must be most responsive to the economy, government, and consumer and sociological forces. At the operative, or technical level, the greatest number of employees work and accomplish the actual goals of the organization (e.g. delivering services, manufacturing products, etc.). In between the institutional level and the operative level is the managerial level that mediates between the two. Thompson suggests that the degree of uncertainty faced by the organization increases as the institutional level is approached. In this view, the
institutional level can be expected to experience the greatest uncertainty and the operative level the least uncertainty. He also points out the interdependencies and differentiation between levels in organizational decision making. At the operative level, the need for technical rationality demands a computational decision making strategy. For this, both outcome preferences and cause/effect relationships must be understood. The institutional level provides the former for the technical (operative) level, while the managerial level provides the latter. In this way, higher organization levels buffer the technical core.

Thompson also discusses how the organization can control the level of outputs and inputs. When organizations cannot achieve complete closure over certain elements, Thompson hypothesizes, they will attempt to regulate the input/output transactions that occur. One mechanism organizations can employ is buffering, or creating ways in which the amount or intensity of input or output transactions can be regulated (e.g., inventories). Similarly, organizations, he suggests, will seek to smooth out or level input and output transactions.

Thompson also suggests the need for organizations to manage internal uncertainty (i.e., lack of understanding of cause/effect relationships) by appropriate structural arrangements. If organizations, he argues,
are open-systems confronted with the need for determinateness in the face of an often poorly understood environment, organizations will seek to manage, understand, or ameliorate the uncertainties in parts of the environment. They would especially desire to extend their boundaries to include those constraints and contingencies most crucial to the organization. One way of accomplishing this goal is to differentiate the organization into smaller pieces, each of which may monitor specified parts of the environment more easily. This notion is crucial, for it suggests organizational differentiation as a major response to environmental uncertainty; this differentiation, as seen below, is the stimulus for much of this study. He also recognizes the dominance of organizational technology in dealing with uncertainties and appropriate structural response.

The basic distinction Thompson suggests is the organization's separation of various units into the technical core (where most uncertainties can be minimized and in which major operations can be carried out unhampered), and into boundary-spanning units which buffer the technical core in order for it to operate unencumbered by the need to manage uncertainty. If appropriate structures can be developed for each of these different types of units, the organization can still apply a bounded form of rationality; i.e., one in which a closed-system, fully understood core can operate while
boundary-spanning units manage the organization's interface with the environment. Thompson suggested four different types of conditions faced by boundary-spanning units as discussed below. He builds the discussion of boundary-spanning unit structure on a conceptual view of the organization's environment.

In discussing organizational environments, Thompson borrows Dill's (1958) typology of continua upon which we can theoretically depict elements of the task environment.

The first dimension upon which he suggests we can differentiate organizational environments is the degree of homogeneity or heterogeneity in the environment.

Similarly, organizational environments can be characterized as being to some degree stable or shifting. A stable environment would be one that experiences little change over time while a shifting environment would be dynamic. In his final formulation, Thompson dichotomizes each of these dimensions as shown in Table 2-1.

This table differentiates among environments, while theoretically suggesting appropriate structures to cope with conditions in each of these different environmental types.

Although a depiction of "pure types," it may also be understood as simplifying the combination of continuous values on each of the two basic dimensions.
<table>
<thead>
<tr>
<th>STABLE</th>
<th>SHIFTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CELL I</td>
<td>CELL II</td>
</tr>
<tr>
<td>Simple Boundary</td>
<td>Variety of Boundary</td>
</tr>
<tr>
<td>Spanning Units</td>
<td>Spanning Units</td>
</tr>
<tr>
<td>Few Functional Divisions</td>
<td>Decentralization</td>
</tr>
<tr>
<td>Reliance on Rules</td>
<td>Adapting/Not Rule-Applying</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>HOMOGENEOUS</th>
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<tr>
<th>HETEROGENEOUS</th>
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</table>

| CELL III               | CELL IV                  |
| Variety of Functional Divisions | Variety of Functional Divisions |
| Each Monitors a Homogeneous Segment | Each Monitors a Homogeneous Segment |
| Rule Reliant           | Adapting                 |

**FIGURE 2-1**

**THOMPSON'S TYPOLOGY OF TASK ENVIRONMENT TYPES***

In Cell I, we have the case of a homogeneous, stable environment. Here, demands from the environment are relatively similar and at the same time, exhibit little variation over time. Thus, no major need exists to differentiate among elements of the organization's environment. The boundary-spanning units of the organization are capable of handling these similar environmental elements. Since they are relatively similar and unchanging, the use of rules and standardization are appropriate. This would correspond to the situation under which highly bureaucratic (Hall, 1962; Duncan, 1971) structures would be most applicable.

The dynamicism induced by environments in Cell II, however, requires greater effort by the boundary spanning units to monitor changes in the environment, regardless of the similarity in environmental elements. Because of this dynamicism, these units cannot be rule-applying, but must be adaptive. Decentralization provides a mechanism for such behavior.

In Cell III, the environment faced by boundary-spanning units is relatively stable. The elements of the environment are not unified or similar, however, and this mandates the need for a subdivision to deal with each homogeneous segment of this diverse environment. Thus, we may find rules applied, but they will be applied differentially by different boundary-spanning units to different parts of the task environment.
Cell IV is most difficult for effective operation of boundary-spanning units. This diverse, dynamic environment is analogous to the turbulent fields suggested by Emery and Trist. In this case, there is a need for both differentiation and adaptation.

A similar framework for understanding organizational-environment interactions is that of Weick (1969), who asserts, as does Thompson, that the major function of organizations is minimization of environmental uncertainty. For Weick, all organizational functions are interactive, cyclical processes in which the organization seeks to remove equivocality (i.e., uncertainty) in the inputs from its environment. However, Weick adds to this by positing the existence of an "enacted" environment; i.e., he defines the organizational environment as those elements which are perceived as salient in decision making by members of the organization. Thus, if major organizational members do not perceive a particular part of the task environment as relevant, it does not exist. This framework appends a perceptual component to both conceptualization and operationalization of organizational environment.

The Weick approach is also significant for its possible usefulness in approaching the idea of boundary roles. Weick sees all organization-environment interactions as enactive, in which an individual perceiver visualizes the interface with elements of the environment. Thus,
his ideas of cyclical processes of equivocality reduction may be an alternate way of visualizing the relationships between the boundary-spanners who enact with the environment and the processes of their own removal of equivocality as well as those of transmission of less equivocal information to different parts of the organizational configuration.

Weick's notion of equivocality or the current term "uncertainty" both refer to the lack of knowledge about, inability to predict, and inability to control elements, many of which may be external to the organization, and thus no longer subject to the rational-legal bases of authority which hold the organization together.

This need for uncertainty management (or possibly, reduction), is critical for the long-term maintenance of the system; an organization's ability to adjust to environmental conditions is a critical determinant of success and may even definitionally represent the basic function of the organization. Weick (1969) has strongly suggested the basic process of "organizing" is to enable the system to use interlocked behaviors in order to remove equivocality from the environment.

Organizations need to differentiate themselves in order to best monitor the environment, perceive it accurately, deal with homogeneous parts of the environment, and design appropriate structures for these processes as well as processes of information transmission. Not
only must the organization monitor the environment when it cannot be controlled, but it must also adequately provide means for which information can be regularly deployed to those areas within the organizational configuration where it is needed (Galbraith, 1972). Both the relationships of the differentiated units must be designed appropriately (Galbraith, 1972) as well as the processes within these differentiated units for removing equivocality before passing information on (Cyert and March, 1963; Weick, 1969).

At this point, we should clarify one important perspective. Above, we have used the term "organization," somewhat loosely--but we must be clear that we will not be reifying the organization. In fact, when the term organization was used above, we were actually referring to individuals in the organization. As an example, when we speak of "the organization" differentiating itself, this is a shorthand notation (Thompson, 1967) for saying that over time, individuals (especially those in the dominant coalition) in the context of their personal perceptual filters (O'Connell et al., 1974), their interactions and conscious actions, have perceived the need for and taken action to subdivide the organization.
These theoretical statements all suggest how organization characteristics may be closely linked to environmental characteristics. Below, we review some major empirical studies which support these frameworks. We will conclude with a need to study the process whereby these linkages occur. Our study of empirical efforts focuses on the unit as level of analysis. This reflects the theoretical arguments above which emphasize organizational differentiation as a design strategy for environmental monitoring.

Organization and Environment: Empirical Studies

Although the focus on organizational units is quite recent, a number of important empirical studies have been concluded that illustrate the links between organization and environment characteristics at this level.

Lawrence and Lorsch (1967) noted their work was intended to be an early empirical step in the direction of macro-contingency theories of organization. Lawrence and Lorsch dealt with the degree of what they called "differentiation" and "integration" found in different organizational structures, hypothesized to be dependent upon the nature of the environment faced by the organizational subunit.
Differentiation refers to the degree to which organizational unit decision makers had different cognitive and emotional orientations; differentiation among units was both functional and provided a means to monitor different environmental segments. The organizational environment was divided into three sectors: market (sales environment), techno-economic (production environment), and scientific (R & D environment).

They assessed organizational differentiation in terms of the difference in scores between units on an index composed of four components. The components included: the degree to which different departments had a specific goal orientation, the degree to which departments were constrained in time-orientation, the degree of different interpersonal orientation between departments, and the degree to which structure was viewed as formalized.

The degree of integration was the second major dependent variable in the study and consisted of chief executive enumerations of cross-department contacts.

The major independent variable was the degree of uncertainty in each subenvironment faced by each of the three subunits of the organization. First, a qualitative assessment of environmental demands was developed in extensive interviews with each chief executive. They
were asked questions that pertained to the nature of their product, innovation, and the market place, and essentially sought to determine the dominant competitive issue for each industry. They developed an "environmental uncertainty" questionnaire which was composed of three elements: job requirement specificity or clarity, degree of difficulty in achieving function, and time span of definitive feedback.

The limited evidence from the Lawrence and Lorsch study appears to support the position that it is the environmental demands and the level of uncertainty faced by organizations and different organizational units that determine the differences in structure, or in this case, differences in the required degree of differentiation among departments and integration of departments. This later conclusion bears some relationship to the notions of Thompson (1967) about interdependence among units in different types of environmental conditions and units facing different technologies. It also substantiates Thompson's propositions about structures appropriate for managing different levels of uncertainty.

Duncan's (1971; 1972; 1973) study of twenty-two decision units in three organizations provided important empirical substantiation for the idea of intraorganizational structural variance. Beyond this, he found strong evidence for an association between environmental conditions and uncertainty as well as definite associations
between each of these variables and structural profiles of decision units. The decision unit was understood to be that collection of individuals under the leadership of a single supervisor, and charged with a collective responsibility, which contributes to the goals of the organization.

The major variables under study included complexity and dynamics of the environment (environmental condition), perceived environmental uncertainty, perceived influence over the environment, degree of bureaucratization (along five dimensions: hierarchy of authority, degree of impersonality, participation in decision making, rules and procedures implemented, and division of labor), and decision unit effectiveness.

Duncan suggests the environment faced by organizational decision units should not be conceptualized in terms of unit or organizational boundaries as is typically done. Rather, he much more broadly defines the organizational environment as all relevant social and physical factors that the organization members consider in their decision making. To do this, he suggests two aspects of the organizational environment: internal and external. Among the internal set of factors are educational and technical background of employees, interdependence among units, conflict, and organizational objectives. Among the external factors are characteristics of demands made by task environments. Each list is a quite
exhaustive, though general, list of subjects often included in organizational decision making. No later distinction in data or controls reflected the difference between internal and external environmental elements. Thus, no mention was made of the differential impact of these factors and no controls were established to measure the different impacts.

Reflecting the conceptualization that Thompson borrowed from Dill and analogous to that suggested by Emery and Trist (1965), Duncan suggested two dimensions of the organizational subunit environment: the simple-complex dimension and the static-dynamic dimension. The simple-complex dimension measures the degree to which the decision unit takes either a small or large number of factors and components into consideration in decision making. For each decision unit, each interview with individual respondents was reviewed by the researcher to assess which components and factors were perceived as having relevance in decision making. A median split was employed to distinguish high scoring from low scoring units.

The second dimension of environmental condition was the static-dynamic dimension, designed to measure the degree to which the elements of an organization's environment are stable or variable over time. This variable was composed of two subdimensions: the first
had respondents assess, for each element of the environment, how often the demands from this element changed over time, and the second dimension measured how often the individual respondents felt they took new and different factors into consideration in decision making. These two dimensions were added and pooled for each decision unit to arrive at an index which, when split at the median, delineated decision units facing static environments from decision units facing dynamic environments.

The next variable operationalized was environmental uncertainty faced by the decision unit, as measured by the pooled perceptions of members of each decision unit. In early research, Duncan concluded the following three elements could be identified as uncertainties in decision making:

1. The lack of information regarding the environmental factors associated with a given decision making situation.
2. Not knowing the outcome of a specific decision in terms of how much the organization would lose if the decision was incorrect.
3. Not being able to assign probabilities with regard to how environmental factors are going to affect the success or failure of the decision unit performing its function.

Thus, the instrument used by Duncan measured these three components of uncertainty in terms of factors identified by each respondent as relevant in his decision making.
Duncan's first major thesis was a test of the theoretical prediction of Thompson (1967) and Emery and Trist (1965), that organizations that face complex-dynamic environments face most uncertainty, while organizations which face simple-static environments experience least uncertainty. These conclusions are borne out by Duncan's data analysis. His assertion that the static-dynamic dimension accounted for more variance in the perceived uncertainty than the simple-complex dimension was moderately supported by his results.

These conclusions support the contentions of the early theoreticians, especially Thompson (1967) and Emery and Trist (1965). Duncan, however, goes much further and makes a case for the need to consider the perceived influence the unit has over its environment and the different structures employed by units in the face of routine and nonroutine decision making.

Measures of the perceived environmental influence and routine/nonroutine decision making were arrived at by simple questioning of respondents. Relying on earlier work by Hall (1961), Duncan discerned five basic dimensions of organizational decision unit structure, each measured perceptually using a battery of items in Likert-scale format: Hierarchy of Authority, Degree of Impersonality, Participation in Decision Making, Rules and Procedures Implemented and Division of Labor.
Duncan does not combine these measures to develop summary structural measures. Rather, he relies on profile analysis to discern differences and deviations of these dimensions from one another. In his original statements, Duncan had developed four hypothesized relationships that dealt with the interaction of perceived influence over the environment, degree of difference between routine and nonroutine structures and organizational effectiveness. Table 2-1 illustrates the results discovered which confirmed his hypotheses.

Organization units which most effectively adapted were those which deployed a less structured approach when dealing with nonroutine decisions. This at least partially reflects the expectations of Thompson, who expected differentiation to monitor the environment, but with the organization as the unit of analysis. Another interesting result, and contrary to expectations, it was found that profile difference measures are more highly correlated with decision unit effectiveness under conditions of low perceived influence over the environment. Duncan (1971: p. 146) suggests reasons why this may have occurred and notes its importance:

Apparently, when influence is low over the environment the decision unit implements the less structured decision profile for nonroutine decisions in attempting to gather increased information in order to generate some influence over its environment. It is thus under conditions of low influence that it really matters in terms of the decision unit effectively adapting to its environment to implement different decision profiles.
CELL ONE: LOW PERCEIVED INFLUENCE/LOW PERCEIVED UNCERTAINTY
Hyp: Decision-making structural profiles for both routine and nonroutine decisions will be highly structured across all dimensions.

CELL TWO: HIGH PERCEIVED INFLUENCE/LOW PERCEIVED UNCERTAINTY
Hyp: Profiles for both routine and nonroutine will be highly structured across all dimensions.

CELL THREE: LOW PERCEIVED INFLUENCE/HIGH PERCEIVED UNCERTAINTY
Hyp: Profiles for both routine and nonroutine will be highly structured across all dimensions.

CELL FOUR: HIGH PERCEIVED INFLUENCE/HIGH PERCEIVED UNCERTAINTY
Hyp: Difference will exist between structural profiles for routine and nonroutine decisions; routine decision structures higher.

FIGURE 2-2
Duncan's Hypotheses
From Duncan's work, we see the need to understand how different structures are appropriate for different environmental conditions. More importantly, it seems the nature of a subunit's (as well as total organizational) effectiveness may very well depend on how able its members are to accurately perceive conditions in the environment and react by changing and adapting the unit's or organization's structure to the particular conditions. These empirical results suggest the importance of boundary roles, in which environmental conditions are monitored.

Sathe (1974) extended Duncan's pioneering work along a number of dimensions. Methodologically, Duncan's uncertainty and structure scales were substantially improved and tightened with item analyses and factor analyses, as well as modification for questionnaire administration. Clear evidence was provided for the relationships between degree of uncertainty experienced by the decision unit and the pattern of emergent structure in units (e.g., reported division of labor, hierarchy of authority, rules and procedure usage, impersonality and participation).

Sathe (1975) also found an intriguing lack of relationship between two different perspectives of organizational structure—what he calls the prescribed (objective-document determined) and the emergent
(perceptual) structure. This result suggests a need to study forces which moderate between intended and actual organization design.

The strategic contingencies theory first suggested by Hickson, Hinings, Lee, Schneck and Pennings (1969); and later subjected to empirical test by Hinings et al, (1974) views the distribution of power in the organization as an awareness of the degree to which units cope with environmentally induced uncertainty.

This brief review of the still rapidly growing organization-environment literature has helped to illustrate a number of important points. First, we have seen how theoretically, environmental conditions faced by organizations may influence organizational structures and processes via the generation of uncertainty or the placing of contingencies in the path of the organization. What still remains to be studied in some detail is what March and Simon (1958) term "uncertainty absorption." Uncertainty absorption as they explain it, is the process of transmitting organizational information in such a way that uncertainties are progressively removed and more clear information is produced for organizational use. This corresponds quite closely to Weick's (1969) idea of organizations as cyclical processes of equivocality reduction.
This will bring us closer to a view of the process whereby environmentally (and non-environmentally) caused uncertainties serve as determinants of organizational activity. This study accomplishes this by focusing on the activities performed by those at the boundary of the organization. The performance programs (March and Simon, 1958) of those who encounter externally generated stimuli should prove to be an intriguing focus for study of the uncertainty absorption process, for it is their characteristics and interdependencies which represent organizational activity.

**Uncertainty Absorption**

The literature above sees the organization in the context of an ongoing supra-system (Parsons, 1960), with its activities, to varying degrees, involving the input of resources and personnel from the environment in order to transform resources and personnel and return to the supra-system outputs via regular and controlled patterning of behavior (Katz and Kahn, 1966; Blau and Scott, 1962). Thus, environments may be crucial for organizations—i.e., organizations, facing their environments, must discover appropriate ways of monitoring, processing, transforming, and transmitting information and resources (Katz and Kahn, 1966; Galbraith, 1973; March and Simon, 1958).
Consistent with the position taken by these authors, organization environments are a source of uncertainty or equivocality for organizations and their decision-makers. Organizational needs to minimize and cope with uncertainty result in an authority-based framework of performance programs developed as roles are clarified by activity in the organization. Thus, individuals, besides becoming socialized to organizational norms, gradually learn the nature of their positions, the operations they entail, the interdependencies they include, and the rules, regulations, policies and procedures of the organization.

We can then view the organization as this interactive configuration of individuals linked to one another by organizational norms and task interdependencies. Environmental elements, by demanding flexibility, are sources which strain the rational-legal fabric of the organization. As Adams (1972) indicates, there exist sets of forces which provide stress in positions where organizational norms and deviation are simultaneously required.

It is through the boundaries that initial processes in the organization-environment framework occur. Thus, study of the processes occurring at organizational boundaries is at least one part of the uncertainty absorption process. Below, we expand on the March
and Simon (1958) and Cyert and March (1963) notions of uncertainty absorption.

The uncertainty absorption framework can be used to understand information flows and thus, the structure and process of the organization. Each organizational participant, in occupying an organizational position, is to varying degrees, interdependent with others in this framework of relationships and sets of behaviors which comprise the organization. At the same time, he may face different degrees of environmental stimuli and/or levels of uncertainty. The process of uncertainty absorption refers to the transmission and transformation of sets of stimuli through linkages between organizational positions. We can rely on Weick's (1969) discussion of equivocality reduction to illustrate this organizational process. At some point in the organizational framework (perhaps from one of the organization's task environments) stimuli emerge which the organization sees as equivocal or uncertain. Thus, this input item may not be well understood, it may be obscured, it may not have been predicted, or it may demand new priorities or orientations. This corresponds closely to Weick's (1969) depiction of enactment with equivocality. This is the initial stage of uncertainty absorption--often at the organization boundary--where an item of equivocal or uncertain nature enters the organization. The organization designers,
either by training, reliance on experience, or active role clarification (usually facilitated by supervisory activities), have intended for this organizational location to receive the input and, to some degree, provide for its transformation and transmission as less equivocal information to other parts of the organization. Thus, the between-position communications in organizations, when job related, comprise the framework of uncertainty absorption or transmission of progressively less equivocal information.

Through effective organization design, the uncertainty absorption process can be implemented. If information can flow through the organization in this uncertainty-diminishing fashion, the organization may be allowed to more closely operate under "norms of rationality" (Thompson, 1967). If uncertainty can be progressively absorbed, it may then be possible to seal off more of what Thompson (1967) terms the technical core, allowing the most fundamental, productive processes of the organization to continue on, buffered from fluctuations, changes and new demands. Boundary-spanning units, as Thompson (1967) suggests, can be used to seal off core technologies at least from the uncertainties generated by task environment elements. However, boundary-spanning units may not be able to diminish internal uncertainties, such as those generated in various stages
of conflict latency or manifestation (Pondy, 1967; Schmidt, 1974), or those associated with internal decision making.

**Organization Boundaries**

Study of the uncertainty absorption process (March and Simon, 1958) provides a way of viewing the process of uncertainty input, transformation and transmission as information to other locations in the organization. Our study of organizational boundaries is deeply embedded in this issue, for the boundaries often act as initial reception points in the process of uncertainty absorption.

There is far from a lack of either theoretical (Katz and Kahn, 1966; Thompson, 1962, 1967; Brown, 1966; Aldrich, 1971; Leifer, 1974; McNaul et al., 1974; Starbuck, 1974) or empirical (Organ, 1974; Green, 1974; Green and Organ, 1974; Keller and Holland, 1974; Aldrich, 1974; Leifer, 1975) work on the importance and impact of organizational boundaries.

Katz and Kahn (1966), in building an integrated systems view of the organization, see the boundary of the organization as the set of subsystems that the organization uses to manage relationships with its environment. They suggest three types of structures at the boundary of the organization, designed to support the fundamental productive operations of the organization. The first is the procurement operation, or the boundary system
responsible for acquiring resources, personnel and other inputs necessary for the organization to carry on its through-put processes. They point out that frequently, as resources become more scarce, this subsystem increasingly has the environment as its focus and may become more isolated from the ongoing activities of the organization.

The disposal function is the task of the boundary subsystem that provides the environment with the organizational outputs. In business enterprises, they point out, this is the function of the marketing or sales department.

The third boundary subsystem is the institutional level (Parsons, 1960) of the organization. They rely on Parsons (as explained above) for explanation of this subsystem. It is the institutional actions that legitimize the activities of the organization and establish for it a functional place in the social structure.

Thompson (1967), as discussed above, suggests a theoretical framework for understanding boundaries which is compatible with the Katz and Kahn (1966) viewpoint that explains the boundary-spanning units as supportive structures facilitating the effective activities in the technical core of the organization.

The most comprehensive assessment of boundary definitions and interpretations is contained in Liefer (1975). He relies heavily on the notion of permeability--or the
degree to which the boundaries of the organization are open to inputs and output transactions with the environment (Katz and Kahn, 1966). He also relies on the idea of boundaries as protective mechanisms for the organization, and concludes by suggesting the following definition of organization boundary (1975:12):

the demarcation line or region between one system and another (the environment is included here), that protects the members of the system from extrasystemic influences and that regulates the flow of information, material, and people into or out of the system.

Among other definitions are those suggested by Utterback (1971), who saw the boundary as "that demarcation at the firm/environment interface which fixes or indicates a limit of the extent of the organization." Another is suggested by Aldrich (1971): "the boundary is the distinction between an organization member and a non-member." Still another has been developed from a systems point of view (articulated by Chin, 1969) and used extensively in Bobbitt et al., (1974) and McNaul et al., (1974). This perspective is quite compatible with those suggested above and suggests the boundary to be (McNaul et al., 1974:10):

viewed as a closed line surrounding certain objects and relations and separating them from other objects and relations which become the environment for that system. The boundary is placed such that there is less intensity of interaction across the boundary or among objects outside the line than among objects within the closed line.
A complementary approach is that suggested by Brown (1966), who sees the organizational boundary and its function in the organization in terms of information flows and transmission. This view, representative of the systems viewpoint, builds the idea of organizational boundaries around the notion of information. It is through the boundary that the organization receives and transmits information to the environment. Katz and Kahn (1966) have emphasized the transmission of artifacts across boundaries, but Brown conceptualizes the organization more as an information processing system, dependent upon informational as well as other artifactual exchanges with the environment. Actions, decisions, resource allocations and similar organizational activities all represent information flows; as such, they are paramount in study of organizations.

Above, we explored currently popular notions of the organization-environment relationship as dependent upon the flow of information into the organization and the consequent reduction of equivocality or uncertainty in this information. We now have a framework in which information flows from the environment can be used to designate organizational boundaries. In this view, the organizational boundary is that part of the organization in which information, or more generally, stimuli enter the organization from the environment. These
stimuli may be differentially equivocal at different locations in the organization. This approach also facilitates our dealing with the major issue at hand: the relationship between the boundary activity component in organizational activity and other characteristics of performance programs. In this way, we learn more about the process of the organization-environment interface.

Dichotomous distinction between boundary and non-boundary areas of organizations is virtually the only way in which the idea of boundary has been given empirical content. Several major studies have been concluded that use the individual boundary spanner as unit of analysis, in contrast to Brown's non-boundary-spanning counterpart. Other studies (e.g., Leifer, 1975) dichotomize units into sets of individuals who represent high and low degrees of boundary-spanning activity.

To date, the only efforts at attempting to expand the idea of boundary activity into a meaningful continuum have been the theoretical suggestions by McNaul et al. (1974) of boundary proximity, the empirical measures of boundary activity by Leifer prior to aggregation and dichotomization, and the theoretical and semi-empirical suggestion by Starbuck (1973) that we measure individuals on a number of dimensions relative to "their distance from the organization's center."
In borrowing dimensions of behavior from Aguilar (1967) and Barker (1968), Starbuck suggests four useful dimensions which can be employed to locate all organization members and non-members in organizational space. These are psychological job investment (hours spent on activities directly affecting the company, times job involvement), social visibility (hours spent in social interaction relevant to company, times number of people talked to at one time), influence on resource allocation (expected increments in the values of the company's resource flows) system response speed (reciprocal of the median time for decisions to take effect).

Starbuck is quite unclear about the form of instrumentation used in finding these measurements. Nevertheless, there is utility in the conceptual notion of visualizing individuals as differentially located in organizational space—in this case, differentially proximate to the organizational center. What this conceptualization does not fully express is how this form of proximity relates to the degree of interactions with elements of the environment, particularly with regard to assessing the different degrees of proximity to uncertainty or equivocality. Efforts by McNaul, et al. (1974) attack this issue.

Using the idea of the boundary as a realm of interorganizational or extraorganizational interaction, McNaul, et al. (1974) suggested the usefulness of measuring the
proximity each decision unit bears to the environment of the organization. This framework builds on both the systems ideas and earlier efforts by Shapiro (1973, 1974) to conceptualize organizational units as being differentially proximate to the uncertainties or equivocality of the environment of the total organization. It is also possible, using the systems framework suggested in Shapiro and McNaul (1974) to speak of the proximity of the unit to the boundary of various subsystems. Thus, if we take the organizational decision unit as a subsystem of an hierarchically larger unit (the organization), we can talk of the unit's proximity to the boundary of any hierarchically larger subsystem. It is also important to note that one unit's proximity to the organizational boundary can have an important effect on its proximity to other units and even the boundaries of other aggregates, since a unit at the organizational boundary often inputs critically uncertain information that may be required by other units. Thus, proximity to the organizational boundary may precipitate interaction with other units and aggregations which require information, either in raw or transformed states. In this sense, boundary proximity appears to reflect the process of uncertainty absorption (March and Simon, 1958).

At a more operational level, McNaul, et al. (1974) suggest three "dimensions" for boundary proximity: closeness, intensity and frequency. Closeness presumably
measures the overall position of each unit relative to the organizational boundary (not unlike Starbuck's distance from the organization center, but in reverse). Frequency refers to the number or proportion of the unit's activities that are externally focused, and intensity refers to the potential uncertainty or equivocality environmental elements can create for the unit. A secondary outcome of this research effort is providing a base from which to expand the boundary proximity construct. At this point, the construct, though still unspecified, is somewhat reminiscent of that termed boundary relevance (or degree of boundary activity) suggested in Kahn, et al., (1964).

**Boundary Activity**

Among the most difficult issues in studying processes at the boundary of the organization is the question of the appropriate level of analysis. Work at the organizational level of analysis (Aiken and Hage, 1967; Aldrich, 1969); has concentrated primarily on interorganizational analysis; i.e., studies of relationships between organizations. Among the findings are increased instances of interorganizational programs (Aiken and Hage, 1967) and cooperation (Aldrich, 1969) as a function of shared environmental influences.
Some theoretical work (particularly that by McNaul, et al., 1974 and Leifer, 1975) has been concerned with the question of organizational units. Investigation at the unit level is becoming increasingly popular in organizational research, for it not only provides larger data bases, but allows researchers to study organizational phenomena in greater depth and closer to where organizational processes are actually occurring. Shapiro and McNaul (1974) present a complete review of studies using this level of analysis.

Literature in the area of organization boundaries is dominated by investigations of individual boundary spanners. Thus, this study chooses to focus at this level, where the phenomena of interest are the activities found in organizational positions. The literature still lacks a conceptual approach or empirical demonstration of the linkage between the extent to which one spans the boundary in organizationally related activities and characteristics of the performance program or evoked sets of responses deployed to deal with these external stimuli.

For the balance of this paper, the conceptual and empirical focus shifts to viewing the individual and the boundary-spanning component of activities performed in organizational positions.
Although a recent focus for study, the theoretical frameworks still emerging provide far from a complete picture of what boundary spanning is and its impact on other variables. Two distinct perspectives appear as prominent throughout most of the literature. First, boundary spanning or boundary roles are often understood (Leifer, 1975; Utterback, 1967) as those roles that inherently contain great elements of uncertainty. This somewhat narrow view of boundary activity depicts the boundary spanners as the interface between the stable patterns of organizational process and external disturbances. In this view, the boundary spanners are seen not so much as monitors of environmental change, but more as the innovative members of the organization. This approach may create some confusion, for it augments the boundary literature with that of organizational innovation and organizational development (Duncan, 1974; Lynton, 1969). The boundary spanner, in this view, is the change agent, integrator, and problem solver (Leifer, 1975). In Leifer's (1975) approach to the boundary spanner, he sees this role as predominantly an integrative, innovative one, calling for substantial flexibility, special training and unique personality. For these authors, boundary spanners are those who serve the organization in any developmental, change-centered function.
For our purposes here, we prefer to rely on an alternative framework, one more frequently found in the literature on boundary spanning. In this view, the boundary spanner is seen more as the link to the task environment of the organization. In the Katz and Kahn (1966) sense, these are the individuals who manage the transmission of artifacts across the organizational boundaries. In Brown's (1967) perspective, these are the individuals whose activities consist of information processing across the boundaries of the organization. We should bear in mind that the latter approach above does not preclude instances of the former. Rather, it does not limit boundary spanners to just innovative positions. Instead, it allows us to deal with all types of boundary spanning (i.e., cross-boundary) activity. What this approach does not make clear is extra-unit vs. extra-organizational boundary spanning. Relying on the literature below, we will suggest (at least for this study) viewing only extra-organizational activities as boundary spanning.

Thompson (1962) made an early contribution to conceptualizing and exploring the impacts of boundary positions. He began by focusing most closely on the output transactions of the organization as reflected in the services provided to clients by organizational members. Those in the organization providing the
services, and thus engaging in interaction with clients were classified into boundary positions.

Thompson's crucial contribution is the notion that two dimensions of this client-boundary spanner relationship help to develop a typology of boundary spanning.

The first dimension is the degree to which the organization has "armed its agents with routines." He dichotomizes this dimension into two classes. In the first, termed programmed member, he views the boundary spanners as responding routinely to familiar, frequent stimuli. As an example, a bank teller would provide perhaps a dozen classes of clients with rapid, well-rehearsed services. Little discretion is allowed, as the client aspect of the task environment is clearly defined and functions are limited to few patterns of evoked responses (March and Simon, 1958) by organization designers. The second half of this dimension is what he terms heuristic activities by the organizational member, in which often professional training, experience, and search processes are required for the organizational member to provide adequately a unique client with an appropriate solution.

This first dimension is of great importance to the conceptualization that follows. What Thompson suggests is those in boundary-spanning roles may in fact face highly routine patterns of stimuli, with consequentially
invariant sets of evoked responses. For him, there is no requirement that boundary spanning be highly uncertain or ambiguous. Rather, the organizational designers in designating boundary positions (under the norms of rationality) attempt to achieve maximum closure over those environmental elements that could potentially be sources of contingencies and thus uncertainty.

The bank teller is especially pertinent, as an example of boundary spanning that occurs as part of the extension of the technical core. In confirming the Thompson position, Sathe (1974) found both little uncertainty as well as little between-unit variation for branch banks in a metropolitan area. This suggests how organizational designers, in following an optimal strategy for control, often designate routine, invariant boundary-spanning activities in units as a means for gaining control over critical elements of the organization's environment. It would be difficult, in fact, to see the bank teller as the innovator or change agent in the link between the organization and its environment. As a boundary spanner, the teller has had a limited range of appropriate responses determined a priori by organizational designers, and through role-making processes and training (Dansereau, 1975), the teller comes to develop the appropriate evoked set of responses (March and Simon, 1958).
The second dimension Thompson deals with in this paper is the degree to which organizational services sought by the client demand mandatory client activity. For profit-oriented enterprises in a classical marketplace, the client is free to choose alternative sources for need satisfaction. However, in total organizations (Goffman, 1960), or in activity in intensive technology contexts, participation by the client is often mandatory. Thompson's concern is for the implication of the interaction of these two dimensions on the stages of the transaction process. For this paper, this perspective suggests the importance of organization design in enabling boundary spanners to absorb uncertainty.

**Boundary Spanning: Impacts On Other Organizational Variables**

A major effort in the boundary literature involves both specifying the construct and exploring the impacts of varying degrees of boundary activity. The limited theoretical positions developed (Katz and Kahn, 1966; Kahn, et al., 1964; Adams, 1972) all suggest that the focal person whose job activity includes a substantial boundary-spanning component will experience greater role conflict, stress and tension.

Their theoretical argument begins by viewing this individual in a role framework; the focal person encounters role sending from a variety of directions. In the case
of the boundary spanner, the role senders include both members of the organization of which the focal member is a part as well as representatives of other organizations. The focal person is thus subject to the constraints, rules, procedures and policies of his own organization. In connection with his duties on the part of the organization, he must often encounter externally generated stimuli. In fact, for the boundary spanner, coping with these external stimuli is often a major function of the position. As the boundary spanner attempts to utilize his performance program in order to process information for his organization, he encounters actions and responses from these external role senders. As these interactions occur, our focal person now must cope with the demands made by these external role senders, individuals who make demands on our focal person's organization in the context of the demands, policies and needs of their own organization. Often, these transactions (e.g. buying/selling) require processes of negotiation whereby each side represents a somewhat opposing viewpoint in an effort to allocate resources as he desires.

As Schmidt and Kochan (1972) suggest, this condition of interdependence and potential for blocking suggests the high probability of conflict. The focal persons in the midst of this cross-organizational situation can be expected to experience role conflict as a result. Each
focal person must assess his own organization's demands and the degree to which his own demands can be reconciled with those of his relevant other in the opposing organization. This process of negotiation and conflict resolution creates different sets of demands to be met simultaneously and thus, the theory predicts, stress, tension and even dissatisfaction with the job. To some degree, the limited studies to date support these contentions, with the exception of the latter relationship between boundary spanning and job dissatisfaction.

Kahn, et al. (1964) in both an intensive study of a small sample and in a large survey of American workers, found support for the positive relationship between boundary-spanning activity and role conflict, stress and tension.

More recently, Miles (1975), in a study of five classes of roles in a number of research laboratories, found support for the Kahn, et al. (1964) position. In addition, Leifer (1975) reported that those who score higher in boundary spanning exhibit a greater tendency to report higher levels of role conflict.

Less conclusive results were reported by Keller and Holland (1974), who found boundary activity to be unrelated to role conflict in a sample of scientists in a government R & D laboratory.
Role conflict is only one of several variables which have been theoretically and empirically linked to the extent of boundary spanning found in roles.

In a sample of one-hundred-forty-two superior-subordinate dyads, Organ and Greene (1972) found some support for relationships derived primarily from the bargaining forces model of Adams (1972).

The Adams framework is a comprehensive assessment of the forces operating on boundary spanners, particularly with respect to their interactions with outsiders and their representative function vis-a-vis their constituents (i.e., their organization). Of concern here are the probabilities of suspicion constituents may have about the activities of boundary spanners in their organization and the resulting hostility, mistrust and behavior of these representatives. Attribution processes relative to these processes of trust are examined, as are the conditions of actual organization distance between representatives and their constituents. What Organ and Greene (1972) supply is an extension of the conceptualization of the boundary position and its link to other role related variables. Of concern to them are the differences between boundary-spanning and non-boundary-spanning roles on such dimensions as role consensus and performance evaluation, role compliance and evaluation, supervisor sentiments and performance, role consensus and satisfaction and compliance and satisfaction.
Among significant differences found by Organ and Greene (1972) between boundary-spanning and non-boundary-spanning roles are for role consensus (greater for those in non-boundary-spanning positions), role compliance (also greater for non-boundary spanners), and less job satisfaction for boundary spanners. These results, the authors suggest, confirm several hypotheses about the nature of the superior-subordinate relationship under conditions of boundary spanning vs. non-boundary spanning. Essentially, they argue that boundary spanning requires extended activity on the part of subordinates whose activities may occur away from either the organizational setting or the presence of the superior. This lack of proximity should result in lessened chance for the supervisor to monitor and appreciate the subordinate's actions. The subordinate, though often required to deal with outsiders as part of the environmental monitoring function, must remain sensitive to the needs and constraints of these forces, and thus may desire more deviation in actions to meet the need for flexibility in coping with their changing demands. An alternative hypothesis might suggest just the opposite result: that the potential for deviation that exists so often in roles that are distant from the organization might well create a need for the organization or supervisor (through policies or other role clarification procedures) to demand strict adherence to a set of rules, especially if the organization requires
this role compliance for legal responsibility or because great danger or detrimental outcomes may result. This issue is raised later in this study as we suggest an inability to discern any clear relationship between boundary activity and discretion or formalization permitted the individual. The Organ and Greene data do not answer this question definitively, and this lack of data is one of the precipitating conditions for the present study.

The boundary activity idea as suggested in the terms "boundary relevance," (Kahn, et al., 1964) or "boundary proximity" (McNaul, et al., 1974), suggests conceptually that boundary activity is a question of degree. To date however, nearly all empirical research on the boundary-spanning idea has been conducted at the level of dichotomization. In the Miles and Organ and Greene studies, for example, assumptions about boundary spanning in roles permitted the authors to dichotomize into boundary-spanning and non-boundary-spanning roles without measurement. Leifer (1975) who found restriction in range along his dimension of boundary-spanning activity, also dichotomized and trichotomized his samples. As a result, the construct of boundary relevance or degree of boundary activity is obscured empirically. This study ameliorates these problems by insuring adequate variance on two dimensions of boundary activity and employing statistical techniques more appropriate to interval levels of measurement.
This maximizes the epistemic correlation between the construct and its operationalization.

Leifer (1974; 1975) conducted a far-ranging study in four organizations to obtain a comprehensive picture of boundary spanners, boundary spanning and the links between boundary variables and organizational structure. His comprehensive literature review and broad consideration of issues make the study an important one.

Leifer's revised model of boundary-spanning activity is reproduced in Figure 2-1. From this model, he suggests three sets of variables to which boundary activity can be related. The first set of variables are organizational characteristics, and the remaining two sets deal respectively with relationships between organizational variables and boundary spanning and the personal characteristics of boundary spanners. His investigation relied on two modes of aggregation. Most measures on individuals were aggregated to generate average measures for the units of which these individuals were members. This substantially reduced sample size, along with seemingly invariant distributions on several key variables, suggested the application of primarily non-parametric statistics to what became dichotomous or trichotomous data. Though many of his propositions were worded such that epistemic correlations between theoretical and empirical variables were assumed to be on continua,
PERCEIVED ENVIRONMENT

LO UNCERTAINTY

HI UNCERTAINTY

BOUNDARY SPANNING TYPES

FILTER #1

FILTER #2

CURRENT PERCEIVED ENVIRONMENT

BOUNDARY SPANNER

INFORMATION TRANSMISSION

Regulated Nonregulated

NEED FOR INFORMATION

Regular; Irregular; Anticipated Unanticipated

HIGH

LOW ORGANIZATIONAL NEED FOR INFORMATION

STRUCTURE AND PROCESS

TECHNOLOGY

GOALS

ORGANIZATION MEMORY


FIGURE 2-2

ELABORATED MODEL OF BOUNDARY SPANNING ACTIVITY*
operationalization of variables reduced data from continuous measures to dichotomies or trichotomies. Nevertheless, Leifer's propositions, derived from his revised model, enable us to succinctly review his results.

Hypotheses were tested in four different organizations: a health and welfare agency, a manufacturing firm, an insurance company, and a research and development department in the state government. At times, the between-organizational differences are noted (e.g., labor negotiations in the manufacturing firm) as they may contribute to an understanding of unclear results.

Leifer's first hypothesis is little more than a replication of the Duncan (1971) and Sathe (1974) attempts to use perceptual measures to illustrate the degree to which "organicness" of organizational units is related to perceived environmental uncertainty in each unit. Results were supportive, with the exception of problems of restriction in range of the organicness measure in the manufacturing firm and the R & D departments.

Building on the notions of increased information at the disposal of boundary spanners and thus their importance in the organization (O'Connell and Cummings, 1972; Crozier, 1964; Thompson, 1967; Delbecq and Van de Ven, 1972), Leifer postulates, and finds some support for, the idea that high boundary spanners participate more in administrative decisions than those scoring low on boundary spanning.
Perhaps the most critical results are found in Leifer's test of his sixth proposition, i.e., that boundary spanners will perceive their work as more non-routine than non-boundary spanners. In fact, the unclear support his hypothesis receives leads Leifer to a major modification in his theoretical model. Results indicate that the seemingly tautological link between uncertainty and boundary spanning is a contingent condition, i.e., it applies only when work is not routine. These results are quite important, for they illustrate two theoretical issues. First, increased frequency of interaction between organizational members and environmental elements, when especially routine (e.g., salesperson dealing with customers), will not be highly uncertain, as the repetition involved eliminates uncertainty and thus permits the successful application of more highly structured performance programs. This also illustrates Thompson's (1962) framework and is an example of Thompson's (1967) suggestions that organizations will most effectively attempt to monitor the environment, in fact, if individuals are differentiated functionally to deal repetitively with single aspects of the environment so that they may be able to repetitively provide information on only these limited narrow foci. In an important sense, these findings refine the theoretical positions of Kahn, et al. (1964) and Adams (1972), who suggested the inherently stressful,
conflicting nature of the boundary-spanning position. In fact, they are probably correct, but only under certain conditions (i.e., applicability of many of their propositions is contingent upon the boundary spanning being of a non-routine type).

Leifer's hypothesis eight deserves full expansion, refinement and exploration at a still more meaningful level of analysis. The hypothesis suggests that overall permeability of the organization (measured as the boundary-spanning score) will be positively related to the organicness of the organization.

Though some strong results are found (e.g., manufacturing), restriction in range problems, (having the effect of radically skewing the boundary-spanning distribution) and the imprecise organic measure substantially weaken both the empirical demonstration of the phenomenon and its empirical credibility. A major effort of the study outlined below is to substantially refine and develop multiple measurement approaches useful for focusing on this problem specifically at the individual level of analysis. From Leifer's large set of variables, this study hopes to more narrowly (and completely) focus on this very limited subset--clarifying more clearly the relationship between boundary activity and dimensions of the degree to which structured performance programs facilitate role compliance.
The importance of this hypothesis is not fully explicated by Leifer. This is not surprising because of the comprehensive nature of the work. However, the massive and still emergent literature on the uncertainty-environmental imperative strongly suggests the linkage between an understanding of environmental uncertainty and the performance programs of individuals used to absorb uncertainty. Leifer's hypothesis does not fully explore this perhaps crucial implication of the uncertainty imperative.

The moderating effects of routine in boundary spanning still complicate, in addition, the relationship between boundary spanning and stress. In a limited sense, this contradicts some of the Kahn et al. (1974) results. What Leifer's results do, once again, is suggest the need to control for routine in boundary spanning in order to understand more fully the implications of the boundary position.

Though this confuses somewhat the theoretical framework suggested by Adams (1972), it does not fully take into account the wide variety of constituent pressures, bargaining forces and other specific conditions (McGrath, 1966) that all have an effect on defining the role of the boundary role person. Because of the objectives and magnitude of the study, it is understandable that Leifer has not included a full assessment or measurement of these variables and thus, we are not fully aware of the nature
of role set pressures on the boundary role person. Similarly, no consistent pattern develops between job satisfaction and degree of boundary spanning. This is not surprising, considering the complex nature of job satisfaction (Locke, 1969) and the understanding that job satisfaction is a function of the congruence of individual as well as environmental characteristics (Perrin, 1968).

Conclusion

Several conclusions remain evident from this brief literature review. First, contemporary theories of organization structure depend heavily on the linkage between environmental and organizational characteristics. At the same time, we lack a definitive understanding of the process whereby these characteristics become related. We have yet to fully understand the processes undergone in organization design decision making which show how organization designers consciously rebuild structures to better facilitate environmental transactions.

We have begun to see one promising path of research in this direction: the study of the boundaries of the organization, i.e., the points throughout the organization where environmental transactions occur. Though still inconclusive, much of this literature demonstrates the same instance of greater role conflict and ambiguity
present in many boundary positions (Kahn, et al., 1964; Organ and Greene, 1972, Leifer, 1975). We have also viewed the discrepant conclusions of empirical research on the question of satisfaction, stress and strain in boundary roles. Unfortunately, most of the literature depends on simple dichotomies between boundary spanners and non-boundary spanners and only rarely (Kahn, et al., 1964) suggests boundary activity (or boundary relevance) to be distinguishable in terms of varying degrees.

An important issue in understanding how the boundary interface facilitates organizational operations is understanding the process of decision making and activity at the boundary of the organization.

If, in fact, the boundary of the organization is the location in which organizational members deal with elements and information from the environment, then both the processes they employ to gather and transform and transmit information as well as the structures through which these operations occur are important foci of study.

This study intends to expand our knowledge of the boundary function via focus on these issues. Of concern to us here is the nature of activity which occurs at the boundary of the organization. Our focus for the balance of this study is on the link between boundary activity and the nature of the performance programs of individuals in the organization. The notion of performance program has
been developed by March and Simon (1958) and is a most useful conceptual approach to understanding the processes involved, or programs used, by individuals in organizations as they respond to stimuli encountered on the job. As we note below, our major concern is the degree to which performance programs are seen as highly prescribed or alternatively, highly developmental and discretionary.

From above, we see how the literature lacks a conceptual base from which to view this linkage. Chapter Three below takes us one step further in developing this conceptual base.
CHAPTER THREE
CONCEPTUAL FRAMEWORK

A great deal of diverse literature was reviewed in the previous chapter. This chapter selects, integrates and expands on parts of that literature to formulate a model of activity at the organization's boundary. Below, we make explicit the research need emerging from the prior review of the literature. Next, we delineate the appropriate level of analysis for such study. This latter section clarifies both focus in terms of units of analysis and levels of abstraction appropriate for the problem. The general model is presented next; this is followed by a section which defines each of the three sets of variables in the theoretical framework. The next four sections each provide support for a major component of the theoretical framework and the hypotheses testing that follows. A final section suggests potential sources of alternative explanation.

Research Need

The conceptual frameworks and empirical efforts to this point have suggested the importance of organization environment relationships and the need to study exchanges
occurring across the boundaries of the organization. There have also been limited efforts at depicting the organization as an information processing or uncertainty absorbing mechanism. We have yet to observe a comprehensive analysis of the process whereby the organization, through its differentiation and appropriate coordination, encounters, diminishes and absorbs uncertainty. This is especially true of uncertainties which are environmental in origin. The literature still demands an understanding of the process whereby the organization encounters uncertainty at its boundaries. As part of the need to expand the uncertainty absorption framework and test propositions derived from the framework, we suggest, as an initial focus, activity at the boundary of the organization.

Since environmental conditions are an important potential cause of uncertainty, focus on what occurs (i.e. the activities or behavior) at the boundary of the organization could be quite informative. In much of the literature above, appropriate activities for dealing with uncertainty were suggested and to a limited degree, justified empirically. Since theoretical frameworks explain that boundary-spanning activities are important to the organization and useful in reducing equivocality, we are justified in choosing the organizational boundaries as appropriate foci for study.
As the literature above indicates, environments and conditions of instability, segmentation or heterogeneity are but one major potential source of uncertainty. Considerable uncertainties exist in the organization involving internal activity (decision making, resource allocation, conflict resolution). Thus, we also investigate the processes whereby organizations deal with internal uncertainties.

In order to do this, we can investigate phenomena occurring at various points in the organization. In particular, we should investigate the relationship between stimuli experienced in organizational positions and the degree of structure or flexibility in response to stimuli. As March and Simon (1958) suggest, effective organizational activity consists of appropriate delineation of spheres of activity, in which individuals match responses to stimuli. If this condition can be attained, information will flow through the organization as intended by design.

To date, no one has empirically investigated the relationship between sets of stimuli/response in organizational positions, although this is a most appropriate way of viewing cross-sectionally, activities occurring in the organization that allow the organization to face uncertainty.
Since our interest is on the process of how organizations confront and ameliorate the uncertainty, we should focus on the manner in which the organization is differentiated (Lawrence and Lorsch, 1967) and how appropriate designs can facilitate congruence between stimuli and response patterns. This strategy allows us to focus on both environmentally and non-environmentally caused uncertainty. In fact, it will help us establish the importance of external vs. internal conditions that create uncertainty.

Below, we explain the unit of analysis at which this problem is posed and the levels of abstraction we intend to use for treating this issue (Shapiro and McNaul, 1974).

**Level of Inquiry**

To fulfill the research need noted above, what is needed is an understanding of the process of uncertainty absorption, or the process of equivocality (uncertainty) confrontation by the organization, and understanding of responses and the subsequent transmission of less equivocal results of information processing to other parts of the organization.

The first step in supplying more of an understanding of this process of transformation and transmission requires us to determine the most appropriate unit of analysis (Shapiro and McNaul, 1974) for study. Using
the total organization as level of analysis provides little direction in understanding these processes, since our focus is on characteristics within the organization. We can, however, turn to studies at the unit level of analysis. Among these past efforts are those by Duncan (1971) and Sathe (1974), who view organization units as sets of individuals under a single supervisor charged with official responsibilities that contribute to the goals of the organization.

Although this level of analysis may well be viable for certain investigations, it is subject to a number of major weaknesses. First, we see the difficulty in designating organization units when each aggregation of individuals, at least in a hierarchical organization, is composed of further aggregations. Thus, for example, in Sathe's (1974) study of insurance company departments, is the department level the lowest level of aggregation in the organization? With some departments having as many as seventy employees, one wonders whether or not further differentiation within that level would be more meaningful. Since the choice of units appears arbitrary, we have little understanding of double-counting or overlaps in designating organizational units (Zenisek, 1974). The problem is compounded by the requirement that the unit's responsibilities be tied to the organization's goals. The goal paradigm has been subject to substantial criticism (Georgiou, 1973) and contributes
little to understanding the designation. A further problem with the use of the organizational unit is one suggested first as a logical extension of the differentiation idea and observed empirically in both the work of Duncan (1971) and Sathe (1974). This is the issue of within-unit variance, when using the emergent approach to organizational structure.

Shapiro and McNaul (1974) supply a framework for understanding this progression. As organizational researchers, we may focus on between-organizational variance (e.g., the Aston studies). Or, realizing the within-organizational variance as demonstrated so clearly by Pennings (1973), we may choose to focus on explanation of between-unit or within-organizational variance. What we suggest here is that variance may exist even within units along many of the dimensions suggested in the literature (e.g., structuring of behavior, uncertainty faced, etc.). Conceptually, if environments impact on organizations and vice versa, then we should explore to some reasonable level of analysis, the interactions between organizations and environments. At one level of analysis, organizations and environments relate, but an understanding of organizational processes may require examinations of interactions that occur between people—between individuals with their various sets of evoked responses. Organizational processes such as
uncertainty absorption and information transmission should be understood as flows that must be traced through parts of the organization. Each part is a set of activities, bound by various hierarchies of norms (organizational, unit, individual) and subject to conflicts and interdependencies with other parts of the organization.

We can understand these organizational parts as organizational positions. This corresponds closely to the relational concept of organizational office (Katz and Kahn, 1966). Positions are identified as locations within the configuration of activities, norms and interdependencies which define the organization. Organizational position or location is thus identified by the activities performed and interdependencies with other sets of activities. For many in the organization, this location in the organizational configuration includes activity with positions occupied by elements of the environment. In this special case, the activities may be especially interesting, for they normally entail input/output of information or other artifacts from non-organizational sources. At the same time, they include in these interdependencies, links between positions with often varying sets of norms and authority allegiance.

Our focus in this study will be on organization positions as our unit of analysis. As noted above, the organization is understood as coordinated patterns of behaviors which are to varying degrees interdependent.
These patterns of behavior are the result of past activities by individuals who have acquiesced to rational authority in the organization and whose performance programs (sets of behaviors which are evoked in response to stimuli) are to some degree the result of specification by an hierarchical arrangement of others' performance programs. Individuals exhibit these patterns of behavior as a result of their acceptance of the authority (i.e. the legitimized right of the organization) to identify these activities. Individuals, in becoming part of the organization, agree to accept this authority, but with an important qualification: in return for the agreement to evoke patterns of behavior in response to stimuli as suggested to by those in authority, they receive remuneration. In a sense, this represents use of the inducements/contribution argument of Barnard (1938) March and Simon (1958). In this understanding, the individual subverts his/her own motivation to evoke random or fully self-determined sets of behaviors, and instead substitutes patterns of behavior which may be to varying degrees, the result of organizational specification, designed to facilitate effective organizational activity. In return the individual receives, in direct form, financial compensation in the form of salaries, incentives, bonuses, insurance, health care and similar benefits. Thus, anyone who is officially employed by a recognized entity is thus a member of that entity (Aldrich, 1969).
However, an organization is far more than just a sum of those whose performance programs are outlined by and used for the benefit of the organization. The organization is the full set of behaviors which comprise these performance programs, but most importantly the interrelationships, communications, interactions, and interdependencies among these individuals, all subject to the same set of constraints, implicit in the legitimation they attribute to one another.

These sets of behaviors identify organizational positions for us. The position is the set of behaviors performed by an individual at a location in this configuration of behavior (stimulus/response) sets.

A second level of inquiry problem demanding resolution is the designation of appropriate levels of abstraction for study. The literature reviewed above contains theoretical positions developed at various ranges of abstraction. Most empirical studies focus great attention on operational issues, and in a somewhat logical-positivist perspective, de-emphasize conceptualization or definitions at higher levels of abstraction.

In developing the model below, we suggest three appropriate levels of abstraction. First, many of the linkages contained in the model may be understood at a maximum level of abstraction. At an intermediate level of abstraction, we suggest for each higher level concept, several constructs presently available in literature of
the middle range. Finally, we suggest in the next chapter how our operational definition for each variable is isomorphic to the middle-range construct. As part of the effort below in this chapter, we will flow from the moderate level of abstraction to the maximum level, pointing out justification for assuming high epistemic correlations between each higher order concept and its lower order counterparts.

**Conceptual Model**

Figure 3-1 presents a model which can be used to understand the implications of boundary spanning for other characteristics of organizational positions. This model is somewhat limited in focus and can be understood at three levels of abstraction.

Of interest are three basic constructs: location in the organization (relative to the boundary of the overall organization), the evoked set of responses, and characteristics of stimuli to which the evoked sets are linked. Though our focus may be isomorphic to organizational units at various levels of analysis, we intend to focus on the organizational position as unit of analysis.

The balance of this chapter is an exposition of this model, and is accomplished by first presenting a detailed definition for each of the constructs at the two higher levels of abstraction. At this stage, we establish definitional transformations between each
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<th>LEVEL OF ABSTRACTION</th>
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<tr>
<td><strong>MAXIMUM</strong></td>
<td>Operational Position Relative to Boundary</td>
<td>Pattern Discernibility</td>
<td>Evoked Set of Responses to Stimuli</td>
</tr>
<tr>
<td>MODERATE</td>
<td>Boundary Activity</td>
<td>Uncertainty</td>
<td>Degree of Structure in Performance Program</td>
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<tr>
<td>MINIMUM (OPERATIONAL)</td>
<td>Boundary Activity: Interactional Informational</td>
<td>Uncertainty</td>
<td>Dependence on Sup. Formalization Discretion Developmental Act.</td>
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**FIGURE 3-1**

**CONCEPTUAL FRAMEWORK**
respective higher order construct and its lower order counterparts. Four propositions derived from the model are explicated, illustrating theoretically anticipated linkages among the higher order constructs and expected hypothetical relationships among the lower order constructs.

As the propositions demonstrate and justify below, of particular concern is the expectation of little clear relationship between the boundary activity component in organizational positions and characteristics of either stimuli or response. From a careful approach to theory taken below, we suggest and find these relationships to be considerably more complex. Our theory will suggest that in understanding uncertainty absorption, we should rely heavily on the relationship between characteristics of stimuli and response. The boundary component, suggested by some to be highly uncertain, is perhaps an oversimplefication that often fails to consider the effects of organization design on organizational activity. Thus, this model is explained by understanding the propositions stated and justified below.

Construct Definitions: Boundary Activity

As Chapter Two has pointed out, there are a wide variety of definitions for the term organizational boundary. Most definitions rely on a systems or modified systems' framework and define boundaries as areas which delineate the extent of the organizational system and protect it from its environment (Brown, 1966; Leifer,
1967). Nearly always explicit in these definitions is the nature of the boundary as some hypothetical line that distinguishes the organization from its environment. As an example, McNaul, et al (1974), relying on the systems' definition espoused by Chin (1969) and Bobbitt, et al (1973), suggest the boundary to be a line that differentiates between areas of greater and lesser intensity of activity. Implicit in this systems' viewpoint is the assumption that one can discern greater intensity of relationships within an organization's boundaries in contrast to the greater disorganization of external elements. This conceptualization allows us to contrast high intensities of flows and processes within organizations to the greater randomization and disorganization in processes outside, but obscures consideration of flows through the boundary. In many highly permeable (Leifer, 1975) organizations, transactions through the boundary may well be more intense than those among only organizational members. Thus, by their definition, we might continue to expand the boundaries of the organization until this extra-organizational flow ceases. The ultimate result of such a strategy is to emerge with what Starbuck (1973) terms the "distance from an organization's center." In this conceptualization, Starbuck begs the question of identifying an organization's center and views all individuals in a macro social structure as varying along several dimensions (e.g., psychological and temporal
investment in the job). The result, he concludes, is to arbitrarily suggest different levels of boundaries and by viewing the distribution of positions, note who does and does not fall within each arbitrary boundary.

Part of the problem here lies with the term boundary—we suggest here replacing the idea of boundary with the more easily managed term, boundary position. As we demonstrate below, this term is somewhat easier to define and facilitates both theoretical treatment and operationalization. It also remains quite compatible with prior studies and allows us to utilize the information-processing framework suggested by Brown (1966). At the same time, this definition focuses our attention on the most appropriate unit of analysis.

A boundary position will be understood as an organization location through which the organization-environment interface occurs. Environment will be understood as that set of conditions which emerge from exposure to non-organizational sources. Environmental conditions are any stimuli which may be experienced by members of the organization, that had sources external to the organization. Thus, any stimuli perceived by the organization that have not been created as part of some organizational process or alternatively, are artifacts created by some non-organizational source may be understood as environmental to the focal organization.
The interface between locations is the linkage that exists between the stimuli and/or responses of one location and the stimuli/responses of other locations. Of interest here is the interface between the organization and its environment. This interface is the impinging of stimuli from external sources on a location which is subject to the rational-legal framework that ties this location into the configuration that is the organization. Simply, boundary positions are those locations in the arrangement of stimuli/response sets where externally generated stimuli are a component of the full range of stimuli impinging on that location. The evoked sets of behaviors in response to stimuli may or may not be directed to the environment or other organizational positions. Thus, the boundary position is one in which external stimuli comprise a portion of the defining stimuli.

This view is highly consistent with many of the contemporary attempts at defining the boundary position. At the same time, it supplies us with a conceptual base from which to develop boundary activity as a question of degree. One approach is to view the size of the external stimuli component in organizational positions as the extent of boundary spanning in the position. At a moderate level of abstraction, we may suggest a model of perspectives from which to view organization-environment linkage, or stimuli/response patterns in boundary activity.
We begin with the systemic viewpoint (Katz and Kahn, 1966) that boundary spanning can be related to three possible relationships between the organization and its environment. Some organizational locations in which external stimuli occur involve the process of importing resources, personnel, materials, or information into the organization, i.e., taking something and moving it from a position external to the organization to where it becomes a part of the organization. This is the input location. Other organization locations including boundary activity involve transmission of organizational property into the environment of the organization. In this process, environmental stimuli also impinge on the location; however, often part of the initial source of the stimuli include activities by the organizational member. Still a third type of position is possible: one in which environmental stimuli relate to both input and output processes. As an example, in many highly advanced technological organizations, sales forces may be composed of highly trained engineers, capable not only of facilitating sale of the organization's product, but also capable of providing information on new input needs for the organization.

The second clarifying issue in boundary activity is what we term "focus." The focus of environmental activity are the conditions that generate stimuli. One way of visualizing focus is to suggest that boundary activity may include interactions between individuals, information
transmission, or movement of artifacts (including information). Interactions would include all types of personal contact in which one party provides stimuli to which another party responds and vice versa (Homans, 1950). Information transmission, which may partially overlap with interactions, is the flow of ideas, words, or data into the mind of a perceiving being. Thus, information is more inclusive than interaction. It includes the flow of any perceived stimuli from outside into perceptual awareness of the individual. Information transmission can occur via personal contact (interactions) or through correspondence, study, other written or video contacts.

The third dimension of boundary activity foci involves the movement of non-informational artifacts either into or out of the organization. The movement of products, personnel, machinery, records and all other non-informational artifacts which have emerged from organizational processes outside the organization comprise one part of this focus; the second is the movement into the organization of these artifacts for the purpose of expanding the organization's collection of artifacts. It is also possible for some positions to involve both artifact input and output (e.g., the warehouse superintendent who supervises both receiving and shipping of merchandise).

These two conditions identify the focus of boundary activity and its function (input, output, or both). However, a full understanding of boundary activity includes
the important provision for degrees of these boundary activities. Among the measures of degrees more useful at a lower level of abstraction are the amount of activity, frequency, extent, diversity, duration and location of activity.

Amount refers to the ratio of the particular boundary activity to all activity in the location. It may be understood as the proportion of all stimuli received in a position which are externally generated. Frequency is some measure of the rate at which these external stimuli occur within a period of time. Extent is the number of stimuli with which a position incumbent must deal, while diversity is the number of different kinds of external stimuli experienced. Duration is the amount of time spent in dealing with a particular external stimuli. A final possible measure is the location of the interaction or information/artifact transmission--varying in the degree to which it is close to the organization premises.

Multinational corporations and the interactions/information transmission activities of their representatives may be of relevance here, for they are often conducted far from organizational premises.

These three sets of defining characteristics are better thought of as providing a typology of boundary spanning involving degree, focus, and function of boundary spanning.
Empirically, boundary activity refers to the amount of external stimuli in the form of artifacts and inter­actions which are experienced as part of the location in the organizational configuration. At the lowest level of abstraction, discussed in Chapter Four below, we will show how operationalizing boundary activity via informa­tional and interactional foci is consistent with the definition suggested above.

These definitions clarify the first construct of the model. Next, we clarify the construct termed evoked set of responses or performance programs.

Definition: Evoked Set (Performance Program)

Individual decision makers in the organization, as they encounter stimuli from other individuals via written, face-to-face, telephone, or other media-related communica­tion, react to these stimuli by evoking a particular set of responses (March and Simon, 1958). If the response is appropriate, the individual decision maker can facilitate the operation of the organization and allow necessary organizational processes to occur. As an example, consider the clerk whose main task is to classify records on the basis of a particular response to a question on the form. In this case, the stimuli are quite repetitive; with appropriate role specification and appropriate response (i.e., making the correct classification), this small bit of data may be transformed into information useful to others who will further process these records--
and in like manner, the process continues as information flows through the organization. Provided this individual's response (i.e., classification) was correct, the operations of the organization are enhanced. If the response is inappropriate, operations can be hampered, misinformation can be transmitted, delays may occur, dissatisfaction or poor service may be the result. (March and Simon, 1958).

We thus view the organization as a coalition of interrelated individuals engaged in coordinated patterns of behavior—patterns representing the evocation of appropriate responses to stimuli faced by the individual.

For each individual, an understanding of appropriate evoked sets or performance programs are supplied either by supervisors, others in the organization (e.g., personnel managers, training managers, industrial engineers), specialized training, or experience. By a combination of extra-organizational and intraorganizational education, interactions with others and written documents, the employee comes to learn the appropriate evoked set of alternatives, or the performance program required for the job.

Though all role incumbents follow performance programs in accomplishing their tasks, i.e., responding to stimuli impinging upon them, we should not mistake their connotation of performance program for assuming that a set of rules and procedures can be developed for each job. Rather, they suggest, individuals will apply various decision criteria, set priorities, gain information, discover
answers in a variety of ways. These responses are the performance program. They also contain filtration mechanisms which distinguish those stimuli to which response is appropriate.

In many cases, there is little discretion allowed the worker in determining the most useful performance program. Some workers have performance programs outlined for them in detail in the form of rules manuals or standard procedures—thus they have little discretion in deciding how to develop a performance program or what programs they are to follow. The programs of these workers are pre-determined by others in the organization.

Others in the organization, who face more difficult tasks, especially when dealing with elements about which the organization knows little and feels it wants to know more, will also use performance programs. However, these evoked sets are radically different, because the individual has a variety of options available—he or she may attempt to solve the problem in a variety of ways; it may be impossible for the organization to specify a standard set of procedures for an individual working with highly uncertain areas. This is the individual who needs more flexibility—more discretion in finding those rules and procedures which most effectively facilitate task accomplishment, i.e., uncertainty absorption. Particularly for those who are actively engaged in absorbing uncertainty and transmitting information to others in the organization,
the need for flexibility in developing and implementing highly complex performance programs may be more critical. Thus, as we conceptualize and later operationalize our dimensions of flexibility in performance programs, care must be taken to keep the autonomy/discretion/participation distinction in mind and continually focus on the degree of pre-specification of performance programs.

As the performance program represents an alternate term for denoting the evoked set of responses to job stimuli, it should be possible to characterize each performance program in terms of the degree to which the specific response is structured, predetermined, planned, rehearsed or specified a priori. Organizational designers, supervisors, training directors and experience all help individuals to know the specific responses intended by the organization for specific stimuli. To varying degrees, the organization may be unable to supply fully specified performance programs, particularly as a function of stimuli in the position. Below, we explore this issue of performance program determinants. The crucial dimension of interest in studying performance programs here is the extent to which each is fully structured, or alternatively, composed of a developmental process that precludes application of formalized procedures. This is the variation of interest in this study—the within-organizational variation among performance program structural characteristics present to facilitate the flows of information and interdependencies among organizational positions.
At a lower level of abstraction, we might have concretely noted the set of activities performed by individuals (e.g. picking up a form, calling for its verification, stamping it with the appropriate details, obtaining signature and filing under designated area). At a more abstract level, we can speak of the degree of structure found in performance programs. As examples, we can speak of the degree to which there is discretion, supervisory dependence or adherence to a formalized set of procedures or rules. These characteristics are more general and can be used to describe the specific concrete activities performed. Our focus in this study is on the structuring of activities in performance programs.

This interpretation of the performance program idea is of great current interest, for its supplies an isomorphic alternative to what is commonly studied as organizational or especially unit structure. Among dimensions of structure are degree of hierarchy, degree of functional specialization, degree of impersonality, degree of rule usage and procedure adherence, degree of participation, and others which have emerged from the Weberian conceptualization of organizational structure. (Weber, 1948; Hall, 1962)

Our suggestion is to follow these variables to their isomorphic equivalents at the level of the individual position in the organization represented in the structure of the performance program.
It seems quite reasonable to suggest an isomorphism between the degree of structured behavior present in one's performance program and the idea of specification in relationships (structure) at the unit or organizational level. One important consideration must be discussed, however.

Much of the present empirical literature on the issue of organizational structures, their determinants, correlates and impacts is obscured by an empirical bifurcation. While conceptually, the concept of structure has been dealt with adequately, operational interpretations of the construct at lower levels of abstraction have suggested two forms of empirical representation with presumably convergent results. As Sathe (1974) notes and Pennings (1973) and Sathe (1975) demonstrate, two distinct operational approaches have been taken to represent organizational structure and have been found to totally lack convergence. These are the objective or document-centered approach which requires enumeration of units, levels, persons and roles. The alternative is the perceptual-descriptive approach, where typically aggregations of respondents are used to summarize structural relationships. We have yet to see convergence develop between these two approaches. A recent paper has helped us to understand how we can improve our measures in the former approach; traditionally, this approach has been found most often at the organizational level (Seidler, 1975).
More familiar to researchers at the unit level of analysis is the work of Duncan (1971), Leifer (1975) and Sathe (1974) who use aggregated responses of unit measures to develop unit pictures of perceived or emergent characteristics.

While the issue of aggregation in these studies has yet to be resolved adequately (Shapiro and McNaul, 1974), it seems much more reasonable for individuals to describe the degree to which each of the dimensions of rule/procedure usage, hierarchy and division of labor is employed in units than to expect impersonal numbers on charts to reflect abstract notions relevant to interactions, relationships, and stimuli enactment overtime.

Sathe helps to resolve this issue by suggesting the objective measures designate the intended structural configurations while the perceptual measures tap the emergent structure of units. We will accept this interpretation and thus suggest an isomorphism between our understanding of performance program structuring and emergent organizational/unit structure. Below, in Chapter Four we clarify our operational interpretations of performance program structuring, building on this isomorphism.

At the operational level, we will measure four dimensions of performance program structuring. They are supervisory dependence (analogous to the hierarchy of authority construct), formalization (use of predetermined rules and procedures), discretion (amount of
decision-making authority in each position) and developmental activity (extent to which individuals develop performance programs or strategies).

Definition: Pattern Discernibility

As noted above, a number of useful constructs have been suggested for explaining structural variation in organizations. These include uncertainty/equivocality, task variability and task analyzability. (Duncan, 1971; Perrow, 1967) These constructs have seen some theoretical development at the organizational and the unit levels, but have yet to receive attention at the level of individual positions in the organizational network of information flows and interdependencies. In this respect, they are ripe for examination; this model examines these constructs and suggests theoretical links between them and the degree of performance structuring in the evoked sets of responses to stimuli.

Below, we shift to a higher level of abstraction from which it will be observed these three constructs can be definitionally transformed. We first present the more abstract notion of pattern discernibility and then illustrate how each of the three constructs, while perhaps orthogonal are lower order constructs derived from this higher order concept.

The suggestion by March and Simon (1958) that we view individual evoked sets of responses and their interdependencies in organizations as a focus for organizational
analysis provides a long overlooked perspective from which to explain organizational phenomena. What March and Simon fail to provide, however, is an adequate conceptualization of the stimulus characteristics found in organizational positions. While this short theoretical statement far from accomplishes this goal, the framework developed below, in unison with complementary positions at a similar level of abstraction, begins to provide a conceptual answer to this question.

Our general need is to establish some basis on which we can conceive of the stimulus properties of organizational positions. If this could be accomplished, we would have potential for suggesting measurable constructs that could explain variation in organizational characteristics.

We approach this problem at a high level of abstraction by suggesting it is possible to generally characterize job-related stimuli in organizations. To varying degrees, the stimuli experienced in organizational positions appear in discernible patterns. The stimuli may be observed in configurations, priorities, orders, and temporal sequence. They may appear in clusters, or in segmented, detached, even isolated form. They may consist of demands, requests, and interaction with others or with artifacts (e.g. reports). A useful literature for depicting this interpretation of activity begins with a consideration of the "purposive behaviorism" of Tolman and Brunswick (1935). They develop a theoretical framework which depicts the living organism
as an active, perceiving entity continuously compelled to monitor its environment for survival and productive activity. The environment is problematic, as the organism continuously seeks to discern linkages or patterns in the stimuli enacted (Weick, 1969). They suggest that simple linkages (eindeutig) are rarely observable and instead, environments are equivocal as a result of the diverse variety of potential linkages between conditions and entities. Activity and experience, then, are a continuous process of environmental enactment, response and further monitoring in order to reduce equivocality.

Emery and Trist (1965) were the first to find this conceptualization isomorphic at the organizational level. As explained in Chapter One, they viewed the organization as an analogue of the individual, moving along in its life-space, monitoring its environment and confronting and reducing equivocality. Weick (1969) without making the level of analysis explicit, advanced this as an entire basis for organized activity.

Now, we simply shift our level of analysis back to the individual organizational position and suggest this general idea to be of some use in understanding the determinants of performance program structural characteristics.

This notion of what we term pattern discernibility is intended to be isomorphic to the discernibility of causal texture in the environment of the organism. Now, our focus is on the perceived set of stimuli impinging on the
position occupant. We will characterize this stimuli set as having varying degrees of discernibility in pattern, or varying degrees of ease in determining linkages among stimuli, stimuli sets and sources of stimuli. A major problem with this conceptualization and one not pursued in this conceptual approach or the empirical study to follow is the cognitive determinants of effective monitoring and pattern discerning capability. Studies of decision making (Kerr, Klimoski, Tolliver and Von Glinow, 1975) and cognitive processes (Behling, Schriesheim, and Tolliver, 1973) have shown the differential capabilities individuals have for assessing informational needs, information accumulation and information processing. These literatures suggest pattern discernibility to be not only a function of the range of stimuli and their perceived linkages, but also a function of the cognitive capacities of individuals. This latter important issue is not explored in this study, as perceptions of pattern discernibility (from whatever source) will be the focus of attention as independent variables. In future studies, the notion of pattern discernibility may be explored as a dependent variable arising from objective environmental characteristics, cognitive capabilities, their interactions, and somewhat non-recursively, performance programs. This study does not rule out the possibility of temporal lack of recursion in the framework of pattern discernibility as a determinant of performance program structure. Rather, it postpones
a full explanation for the causes of pattern discernibility.

The general construct we term pattern discernibility is conceptually useful at a high level of abstraction. In developing support for the model later in this Chapter, we pursue linkages at such a level. A search of the literature, however, reveals that prior focus by many authors at a lower level of abstraction has generated the three constructs mentioned earlier which can be seen as more concrete examples of pattern discernibility.

The most researched of these constructs is uncertainty (Lawrence and Lorsch, 1967; Thompson, 1967, Downey and Slocum, 1975) or equivocality (Weick, 1969). As noted in the literature review, uncertainty may refer to any lack of knowledge, predictive ability or understanding of cause-effect relationships. Garner (1971) suggests uncertainty to be the opposite of information. Uncertainty, then, is one way of viewing the inability to discern pattern in stimuli. Under conditions of uncertainty, stimuli sources and linkages among stimuli are obscured. Patterns which reflect information are unavailable and remain problematic for the individual.

Uncertainty is only one of several constructs presently in the literature that can be used to explain variation in the performance programs as aspects of pattern discernibility. An entire complementary literature is presently evolving from early work by Perrow (1967) and
others who have focused more on the technological or task imperative in understanding the appropriateness of different structures for organizations.

Perrow advances two constructs which he sees of great potential for explaining structural variations among organizations. In this approach to the question of comparative organization structures, Perrow focuses on the nature of the raw material being worked on by the organization. He sees the structure of the overall organization as appropriate in order to facilitate the technological operations associated with transformation on raw materials.

The two dimensions along which he suggests we can conceptualize the technology employed by organizations are the variability and analyzability of the raw materials being worked on.

The variability reflects the amount of variation or range of raw materials worked on and the degree to which the raw material changes over time. The analyzability reflects the degree of complexity in the raw material and is analogous to understanding cause-effect relations. As an example, many of what Thompson (1967) would term intensive technologies have as their focus individuals with unique characteristics or demands. These uniquenesses may prevent standardization in approach and demand attention to the complexities of each case. Conversely, many raw materials, especially in smaller manufacturing firms, are relatively simple and require little analysis in the
process of transformations performed by the organization. Perrow also suggests, in dichotomizing each of these dimensions, how a typology of organizations can be developed on the basis of these two dichotomous conditions. His effort may be understood as a classification scheme for organizational technologies. Figure 3-2 illustrates his model. In later work (1969), he expands the framework by suggesting structural implications for each of the technological types. Of particular concern are questions of differentiation and the coordination among the three subsystems (analogous to Parsons' levels) of the organization. The transformation of these constructs to lower levels of analysis is of greater interest here.

Researchers at the University of Wisconsin (Delbecq and Van de Ven, 1973) began utilizing Perrow's dimensions in investigations with the organizational unit as level of analysis. In subsequent studies, these researchers next developed a typology of organizational units based on trichotomizations of each of the two dimensions. This was expanded in an effort (Delbecq and Van de Ven, 1974a, b) to validate the typology by discovering distinguishable categories or organizational units by measuring the two dimensions. The resulting classification identified various modes of organizational units, based on aggregated measures of task characteristics perceived in each unit.
### CHARACTERISTICS OF PROCESSES USED TO TRANSFORM MATERIALS

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<th>RAW MATERIAL CHARACTERISTICS</th>
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**FIGURE 3-2**

PERROW'S TASK/TECHNOLOGY TYPOLOGY*

Bobbitt (1975) notes that at the lowest level of abstraction (i.e. operational) the Van de Ven group has focused not on task variability, but task variety. We shall continue this orientation.

Further work in this direction was undertaken by Lynch (1974), who measured various task/technological characteristics in a large library sample. As a result, she was able to provide some demonstration of reliability and convergent/discriminant validity for measures reflecting Perrow's constructs at the unit level. Below, we build on this operationalization.

The theoretical position advanced by Perrow and the Wisconsin group has yet to see its analogue suggested at the individual level. In part, this study suggests the usefulness of these constructs as part of the framework developed at a higher level of abstraction.

It also recognizes explicitly, the definitional transformations between each of the constructs uncertainty, task analyzability and task variety and their more abstract representation, pattern discernibility. In this way, the two complementary literatures of the environmental-structure and technology-structure imperatives are integrated by relying on a more inclusive level of abstraction. Thus, the notions of uncertainty (equivocality), variety and difficulty all really represent lower levels of abstractions of the general construct of discernibility in patterns of stimuli for organizational positions.
In the case of task analyzability or difficulty, the definitional link is clear. The difficulty or lack of analyzability derives primarily from a lack of discerning pattern in stimuli. Tasks high in analyzability are those high in discernibility of pattern.

The greater the variety in stimuli, the greater potential for complex linkages among stimuli, thus limiting discernibility (Tolman and Brunswick, 1935).

We now explore four propositions from the model above, and supply justifications for each.

PROPOSITION ONE: JUSTIFICATION

From the model presented in Figure 3-1 we suggest the following proposition:

Proposition One: Across organizational positions, there will be a direct relationship between pattern discernibility and structure in evoked sets (performance programs).

We suggest using the idea of pattern discernibility (i.e., the degree to which causes, linkages and information can be discerned) as an explanation for performance program structuring.

This linkage is the critical foundation for the theory of this study. If we can assume that our definition of the organization above (as an interactive collection of positions engaged in obtaining, transforming and transmitting information) is an acceptable way of integrating much of the organizational theory literature, then the
linkages between stimulus/response characteristics and between patterns of performance programs is an effective way of describing organizational activity. When we augment this approach with our conceptualization of the environment as a potential source of uncertainty, we see the utility of this approach in further conceptualizing uncertainty absorption. Two efforts, then, are necessary to finalize this explanation. First, we must fully understand how stimulus/response characteristics interrelate, and second, discover the nature of linkages among organizational positions. Our most immediate concern in this study (as suggested above) is focus on the former question; further conceptualization and research will allow us to develop a future answer to the latter question.

What is necessary now is explicit clarification of the linkage between pattern discernibility in organizational positions and the degree of performance program structuring. We can suggest, consistent with the theoretical positions of Thompson (1967), Lawrence and Lorsch (1967), Burns and Stalker (1963), Emery and Trist (1965), Duncan (1971) and Leifer (1975) that increasingly high levels of inability to discern pattern will be directly associated with greater degrees of freedom, discretion or flexibility in the performance programs for positions. More appropriate for positions that entail high pattern discernibility are highly structured performance programs. We suggest congruence must exist between the stimuli characteristics
(pattern discernibility) and response set characteristics (performance program structure) in organizational positions. In cases where great inability to discern pattern exists, there can be little prescription a priori and little opportunity for structuring that which is not fully understood. In circumstances where stimuli characteristics are well known, it would be highly inefficient to allow great flexibility or discretion when standardization in evoked sets adequately and quickly facilitates information processing. This reflects Thompson's (1962) suggestion that many environmentally focused activities are amenable to standardization.

Performance program structure (or a priori specification of appropriate response) is expected when tasks contain great discernibility in pattern; the developmental, incremental or adaptable performance programs will be found when facing tasks lacking in pattern discernibility.

Further justification for the position above comes from a complementary viewpoint based in the systems literature. Originally stated by Ashby (1962), the law of requisite variety has become an important explanatory force in current organizational theory (Weick, 1969). In one recent dissertation on patient-care states (Banasik, 1974) the law provided important perspectives on understanding the nature of patient states and appropriate response by nursing service personnel.
Stated simply, the law suggests that only variety can destroy variety. A system facing great variety (or lacking pattern discernibility) can only respond effectively by countering with variety in response. Thus, in responding to a diverse and complex set of stimuli, simple, ordered action is inappropriate. Tolman and Brunswick (1935) also support this position.

As an example, consider the individual whose activities vary from day to day, perhaps even from hour to hour. At different times, this individual may face heterogeneous tasks in which complex cause-effect linkages must be assessed. The individual must establish priorities, identify information needs and their sources and make assumptions, all as components of response. The greater the inability to discern pattern (i.e. the more varied, complex, or uncertain the linkages between stimuli and their causes), the more the individual must depend upon unique, developmental patterns of response in order to transform equivocal or confusing stimuli into information ready for transmission to other positions in the organizational configuration.

The individual facing easily understood, simple, or homogeneous conditions in stimuli patterns, finds it easier to utilize formalized, rehearsed procedures or patterns of evoked response. Often as a function of organizational design processes, position occupants in the organization are given limited spheres of activity which delineate
appropriate stimuli along with frequently employed, simplistic response patterns.

To the degree which the individual faces new tasks, new information, lacks information, does not have resources to fully understand the environment, or deals with a changing or complicated environment, he will have a lesser dependence upon some pre-determined performance program. He may use procedures, rules, and strategies in order to get information, but the procedures of a different type. If in fact, he is facing conditions which are rapidly changing and not fully understood, he cannot anticipate outcomes and develop rules a priori. Instead, his behavior is much more flexible, developmental, innovative.

Thompson's suggestion for viewing performance programs or strategies in understanding different types of decisions by the organization is helpful. Decision issues, Thompson suggests (1967) always involve two major dimensions: first, beliefs about cause and effect relations and preferences regarding possible outcomes. Each of these two critical variables can be differentially understood or can be perceived by the decision maker as differentially certain or uncertain.

As one proceeds from a full understanding of cause-effect relations and clear preferences about outcomes (high certainty), to the range of insufficient knowledge of cause-effect relations and uncertainty about outcome
preferences, there is a consequentially greater need for more flexible, less computational strategies in making decisions.

Weick (1969) has also made use of this concept. In building his theory of organizing processes, he suggests one implication of the law of requisite variety involves responses to highly equivocal situations. As he interprets these concepts, organizations exist in environments that are differentially equivocal. A crucial organizational activity, then, is reduction of equivocality, or alternatively, transformation of equivocality into organizationally useful information. As Weick (1975) explains it, organizations face a wide variety of alternatives, decisions, and paths. The equivocality is represented in this complex set of alternatives as the condition of failure to understand all alternatives, their determinants and implications.

Weick's suggestions, for organizations facing these conditions, or in organizational locations where these conditions are faced, is to rely on cycles on interlocked activity, intended to sequentially reduce equivocality. Organizational positions facing little equivocality should be able to transform minimally equivocal stimuli into information quickly and easily with only a limited number of frequently employed rules. When facing highly equivocal situations (corresponding to the case we term lack of discernibility in stimuli pattern), the most appropriate response is an iterative, developmental sequence involving
application of various rules, criterion assessment and reassessment. In this way, variety in response may be congruent with variety in stimuli and organizationally desired outcomes (useful information) may result.

The problem of structural configurations differentially appropriate for varying situations can also be approached from an additional direction in the literature. March and Simon (1958) briefly summarize three major efforts towards viewing the potential dysfunctions of highly bureaucratic structures. We discuss this material below, for at the level of individual organizational positions, it provides a compliment to the explanation provided by the Weick framework and the law of requisite variety.

In brief, three major models have been suggested in the sociological literature for explaining the potential dysfunctions of highly bureaucratic structures (March and Simon, 1958). The first of these, the "Merton" model (Merton, 1936) has as its focus the dependent variable of difficulty in dealing with clients. The organizational demand for control, with its emphasis on reliability of behavior (often in lieu of focus on unique approaches), creates the need for defensibility in actions by role incumbents. The rigidity of behavior which results may potentially create the unanticipated consequences of difficulty in dealing with clients. If we assume our organization's designers (or others in the organization) are cognizant of these potential problems, then greater
pattern discernibility should be associated with greater structuring in performance programs. The more variable the stimuli, the more flexible the potential response to avoid unnecessary rigidity.

A similar approach is offered by Selznick (1949) who sees the impact of organizational differentiation on potential for conflict generation. Schmidt and Kochan (1972) present a somewhat simpler model of the potential for conflict creation as a direct result of differentiation among subunits. The Gouldner model (1954), as March and Simon suggest, sees the dysfunctional impact of bureaucratic controls on the closeness of supervision. Bobbitt, et al (1973) have expanded many of these models and include a model which sees trained incapacity, lack of flexibility and adaptability as potential dysfunctions of highly structured responses when faced with turbulent, dynamic conditions.

One can understand these models as derivable from the basic law of requisite variety. What they all demonstrate is the need for a fit between conditions faced (degree of pattern discernible to the perceiver) and the set of responses or performance programs. Overly structured performance programs for organizational positions with stimuli that lack clear discernibility may be dysfunctional, unless other organizational constraints (e.g. dangerous outcomes or legal requirements) offset these relationships.
Other sources of dysfunction can result from the lack of congruence between stimuli and evoked response (March and Simon, 1958). First, the individual may respond to particular stimuli with an inappropriate response. As an example, the clerk may misclassify the data. A second problem comes when an individual misinterprets a particular response for another—he may ignore the true response, and because of perceptual filters, respond with a program appropriate to his interpretation of the response. A third possibility is inadequate response to stimuli.

Due to the probability of occurrence for these "unanticipated" consequences, organizational members must, via some role clarification procedure, minimize inappropriate responses to stimuli. This requires, at the minimum, an accurate assessment by governing units or designers of the full set of possible stimuli to which their subordinates can respond. As an example, a supervisor, in order to fully clarify the role of a subordinate and thus provide for the evocation of maximally appropriate responses (i.e., maximize patterned, organizationally functional behavior), must have a full appreciation of the range of stimuli that can be enacted by subordinates. It is useful to apply Weick's (1969) concept of enactment here, for the term may refer to the process of anticipating stimuli which will occur in the future. Supervisors engaged in role clarification for subordinates should be engaging in enactment with elements of the subordinate's environment—
they must visualize the future range of stimuli and
provide a priori appropriate means for evocation of desired
responses. However, when pattern discernibility is
especially low, there is little opportunity for pre-
structuring of performance programs here. Thus, again we
see the direct relationship between pattern discernibility
and performance program structure.

Table 3-1 presents the hypothesized correlation
matrix which corresponds to the proposition developed
above. As explained in the definitions above, these
hypotheses are obtained directly from the proposition,
since the lower order constructs represent definitional
transformations of the more abstract constructs.

**PROPOSITIONS TWO AND THREE: JUSTIFICATION**

Proposition Two: Across organizational positions, there
will be no relationship between boundary activity
and pattern discernibility.

Proposition Three: Across organizational positions, there
will be no relationship between boundary activity
and performance program structure.

The literature reviewed above, as well as the conceptual
approach outlined in the last section has focused on the
close relationship between characteristics of stimuli and
a response in organizational positions. The main effort
of this study, however, is to utilize this literature in
an attempt to discover the relationship between boundary
activity in organizational positions and the evoked sets
### TABLE 3-1

**Hypothesized Correlation Matrix for Testing Proposition One**

<table>
<thead>
<tr>
<th>Contingent Independent Variables</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Variability</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

### TABLE 3-2

**HOSPITAL SAMPLE**

**Hypothesized Correlation Matrix for Testing Proposition Two**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Boundary Activity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactional</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
of response (performance program structure) of organizational positions.

As the model in Figure 3-1 indicated, this relationship is quite weak; the literature reviewed above either ignores this issue or oversimplifies the conceptualization of boundaries and leaves the reader to discover an implicit relationship.

Below, we demonstrate theoretically how weak direct linkages are between boundary activity and either pattern discernibility or performance program structure.

We have depicted the organization as an interactive information processing organism composed of differentiated yet integrated parts, linked by flows of resources and information. Each position in the locus of organizational space can be viewed from the perspective of enaction, response and transmission (March and Simon, 1958). Each organizational participant, in evoking a response for sets of stimuli, provides for different levels of transformation prior to transmission of information. For those who have large quantities or proportions of these stimuli sets located extra-organizationally, we might wonder if particular response sets are uniquely appropriate for absorption of environmental uncertainty (i.e. reduction of equivocality). This need has triggered a subtle but critical flaw that has yet to be fully identified in the boundary literature.
The uncertainty absorption or equivocality reduction ideas, in fact are not dependent upon the organization's environment as suggested above. Often, the organization-environment literature creates the impression that environments are inherently uncertain and thus provide organizations with their greatest needs for reducing equivocality or uncertainty. Organizational boundaries, in this view, might be those points through which the greatest levels of environmental uncertainties are experienced.

Unfortunately, this literature too frequently assumes uncertainty or pattern discernibility exists from only environmental sources. Since boundary spanners, (Leifer, 1975), their argument goes, spend a large part of their time in facing uncertainty from the organization's environment and deal substantially with parties over which the organization has little or no control, the result is usually more conflict (Kahn, et al, 1964), greater stress (Organ and Greene, 1972) and lessened ability to utilize standard procedures.

Since the environment is the source of uncertainty for the organization, those who deal more with the environment will experience the greatest uncertainty, and thus, need greatest flexibility in performance programs (Leifer, 1975). Alternatively, in terms of the framework above, boundary activity is assumed to involve low pattern discernibility. What this perspective fails to recognize is that environmental contingencies create only limited
forms of uncertainty for the organization (Thompson, 1967). As Thompson points out, constraints imposed on the organization by environmental elements help minimize uncertainty, while contingencies create conditions in which cause-effect relationships are often obscured by complex or changing conditions. Still, these uncertainty sources are only partial determinants of the full range of uncertainty faced by the organization. Internal problems of technological change, interdependencies, coordination and information flows also remain problematic for the organization and thus generate substantial uncertainty.

The contention, then, that environments are the sole source of uncertainty for organizations is rejected. This subsequently weakens any link between boundary activity and pattern discernibility or performance program characteristics. In organizations of today, complexity and need for information often require a wide variety of organizational locations to include some part of boundary spanning (i.e. evocation of responses to external stimuli) in the position. It may be possible, in many organizations, to discover that 70 to 90 percent of the positions entail boundary spanning as part of the activities in the position.

The position that these boundary spanning activities are inherently low in pattern discernibility is untenable, considering the potential influence played by organization design. As part of the design process, homogeneous areas of the environment may be distinguished for focus or
limited spheres of activity may be identified for action in each position. In especially mediating technologies, performance programs for occupants of positions high in boundary spanning may be highly predetermined as part of the design process (Thompson, 1962). Uncertainty from the organization's environment may be reduced by appropriate differentiation, performance programming and provision for coordination to other positions.

As an example, large insurance companies may contain large numbers of boundary spanners, but since organizational design has limited their spheres of activity and response, they deal with conditions high in pattern discernibility. Perhaps for the organizational designer, conditions initially lacked discernibility in pattern, but for masses of workers performing jobs with limited scope, the association between boundary activity and pattern discernibility may well be very high. For highly limited situations, frequent boundary activity may allow patterns to be easily discerned.

It seems inappropriate to equate boundary spanning and lack of pattern discernibility, for organization design affects this relationship. At the same time, other individuals and organization variables come into play.

Bobbitt (1975) and Downey and Slocum (1975) both point out that environments are not inherently uncertain. Instead, the cognitive or information processing limitations of individuals who perceive (or enact) these environmental conditions result in states of uncertainty. Understood
this way, uncertainty is a function of individuals in the organization.

If this argument holds, we no longer see environmental conditions as inherently uncertain for organizations. First, we may see environmental conditions as the potential partial determinants of pattern discernibility. As an example, in Duncan's classical study (1971), he found the Dill dimensions of complexity and dynamicism to account for uncertainty. A plausible explanation in this cross-sectional design is that environmental conditions have the capability for generating uncertainty. Yet, this uncertainty is only a state that exists for the particular individuals in the organization. They may in fact be the organizational designers, capable of adapting or modifying organizational structures to meet what they see as uncertain conditions.

We also recall for support in this argument, the literature from which the uncertainty construct has emerged. Prior to its use in studies of macro organizational nature, uncertainty was intensely studied by information processing students and other researchers. As an example, Garner (1968) reviews much of the literature pertaining to both univariate and multivariate distributions of alternatives. For these authors, the general definition of uncertainty is a somewhat concrete one: the logarithm of the number of possible outcomes associated with making a decision. Later authors, beginning with Lawrence and Lorsch (1967),
revised this precise construct to include more abstract notions of inability to anticipate, predict, acquire information or understand cause and effect relationships. Regardless of the perspective from which the construct is pursued, it remains nevertheless, a primarily individual construct. This is especially consistent with our definition of the organization as an interactive mechanism of individual locations with sets of stimuli and response. Uncertainty is not a characteristic of the organization's environment; rather, it is a characteristic relative to the occupants of organizational positions, as they seek to transform equivocality into information.

A second major problem with the idea that environments reduce pattern discernibility has not fully escaped the attention of organizational theorists. This is the issue of uncertainty as limited to external causes vs. uncertainty as general states throughout the organization. In Thompson's classic work (1967), he spoke of two types of uncertainties: first, those generated by conditions in the environment; uncertainties of this nature were complicated by a second type of uncertainties, those confusing, unclear internal conditions resulting more from technological causes. Thus, uncertainty was not only a result of environmental elements, but also probable with respect to organizational decisions vis-a-vis resource allocation, interdependency, coordination, conflict resolution and other non-environmentally generated
conditions. Among others, Alutto (1974) and McNaul (1975) have found this latter perspective important. They see two types of uncertainties—those externally generated and perhaps the more important internally generated uncertainties.

This latter argument is especially powerful, for it transforms our earlier notion of uncertainty absorption into a much more complex and confusing one. In the initial formulation, we succumbed to the tendency to view the uncertainty absorption process as initialized at the organization's environment. Thus, greatest uncertainties (lack of pattern discernibility) could be found at the boundaries of the organization, where the absorption process begins by initial enaction with equivocality, incremental reduction in equivocality, and transmission of the less equivocal information to other organizational locations. In this simplistic view, the further away one gets from the environment (or alternatively, moves to the organization's center), the less the equivocality and the greater closure. This makes the uncertainty absorption process somewhat of a simplistic flow, with successive decrements in uncertainty as transmissions occur progressively more removed from the environment. In fact, this approach seems to be more an assumption than a useful model. If the frameworks suggested by Thompson (1967), Alutto (1974) and McNaul (1975) are correct, then organizations almost by definition are continually engaged in processes of uncertain resource allocation, decision-making, conflict
resolution and other environmentally unrelated activities which have great potential for generating uncertainties or lack discernibility in pattern. Thus, the earlier view of uncertainty absorption is an assumption that organizations either have the rational (or even semi-rational) capabilities to structure themselves in such a fashion as to eliminate all internal sources of uncertainty. This last assumption upon which the simplistic absorption framework is developed seems especially unreasonable. Even a brief consideration of the literature on organizational conflict (March and Simon, 1958); (Schmidt and Kochan, 1972) would illustrate how theoretically inappropriate this assumption is. At a lower level of abstraction, the incidents cited in any contemporary management text would provide empirical demonstration of the lack of support for such an assumption. As noted above, lack of pattern discernibility may exist in any organizational locations where closure can not be achieved by appropriate organizational design.

This awareness of a subtle flaw in much of the organization-environment literature leaves us in a precarious position vis-a-vis our objective for this study. We have seen above that our only direct theoretical link to the abstract dimension of the performance program of interest has been through the general construct of pattern discernibility, an aspect of which is uncertainty. We also reviewed a second stream of literature capable of
supplying explanation for different degrees of structured behavior in performance programs. This direction was the set of constructs suggested theoretically by Perrow (1967) and employed at lower levels of abstraction by the Delbecq and Van de Ven group. We were left with an interesting and plausible relationship between performance program characteristics and the dimensions of task variety and task difficulty. We wonder at this point, how these provide a linkage between boundary activity and performance program characteristics.

To accomplish this, we would have to develop a conceptual link between either or both of these Perrow dimensions and boundary activity characteristics. One possible route for this development is the limited and still conceptually or empirically inconclusive idea that boundary activity is inherently more stressful or difficult for role incumbents than non-boundary activity. Simplistically, we can rely on the Kahn, et al (1964) framework and the limited evidence on stressful implications for boundary activity to assert that since boundary activity is inherently difficult, and that which is difficult requires special flexibility in performance programs for responses, thus an association exists between performance program characteristics and boundary activity. This linkage, however, is weak for several reasons. First, as Thompson has shown, organizational designers are capable of eliminating much of the difficulty possible in boundary
roles. In the case of especially mediating technologies, operation of the technical core often requires an extension into environmental space. (Sathe, 1974). Yet this environmental space is held to be minimally uncertain for occupants of positions, as the sets of stimuli (pattern discernibility) levels are manipulated by organizational designers and thus, little flexibility in response is necessary. For these types of organizations, designers of organizational positions eliminate the difficulty in boundary activity. One might suggest in organizations of this type that often the greatest difficulty is not encountered across the boundaries of the organization, but relative to internal decisions (e.g. conflict resolution).

Considering this latter example, it is once again important to assert that our definition of boundary activity refers to activities at the interface between the organization and its environment. As Lawrence and Lorsch (1967) point out, the integrative positions located at many between-unit boundaries of the organization are often made difficult, as a function of the demands for conflict resolution between organizational units in securing an effective integration of differentiated parts.

Similarly, organizational designers may minimize the variability in stimuli experienced by individuals with appropriate delineations of spheres of responsibility or designated activities. The bank teller, again is an example of an organizational position in which very
limited, familiar patterns of stimuli are delimited for organizational activity. Referral is a standard way in which stimuli from other categories are handled. Although the boundary activity is very great (perhaps one hundred percent of the time is spent in transmitting information or engaging in interaction across organizational boundaries), there is no consequent implication for variability or difficulty. These conditions are ameliorated by appropriate organizational design activity.

In one respect, this section of the chapter provides a great disappointment for readers. What we have suggested here in fact, is the lack of direct relationship between boundary activity (as conceived above) and either pattern discernibility or performance program structural characteristics. In terms of the gradual steps which distinguish progress in our still emerging science, this kind of effort will more appropriately help us in finding future foci for our attention. From above, we see how a variety of additional organizational variables obscure the relationship between boundary activities and performance program responses (e.g. pattern discernibility; organizational design activities).

Table 3-2 presents the hypothesized correlation matrix for relationships between each of the boundary dimensions (independent variables) and each of the pattern discernibility variables (contingent independent variables). Table 3-3 presents hypothesized relationships between each
TABLE 3-3  
HOSPITAL SAMPLE  
Hypothesized Correlation Matrix for Testing Proposition Three

**DEPENDENT VARIABLES:**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Boundary Activity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interational</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

TABLE 3-4  
HOSPITAL SAMPLE  
Hypothesized Correlation Matrix for Testing Proposition Four

**DEPENDENT VARIABLES:**

<table>
<thead>
<tr>
<th>Interactions</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity: Informational X Uncertainty</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boundary Activity: Informational X Task Difficulty</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boundary Activity: Informational X Variability</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boundary Activity: Interational X Uncertainty</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boundary Activity: Interational X Task Difficulty</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Boundary Activity: Interational X Variability</td>
<td>—</td>
<td>—</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
of the boundary dimensions and the performance program variables (dependent variables). Note that all entries in both matrices are null, as suggested above. It may still be possible to present (using one of these variables) an argument that does link boundary activities to the dependent variables. This is done below by positing the existence of contingent dynamics in boundary activity.

**Contingent Dynamics**

**Proposition Four:** Across organizational positions, there will be a direct relationship between the interactive effect of boundary spanning and pattern discernibility and the structure of performance programs.

As indicated above, the link between the boundary activity component in various positions and other organizational variables is still unclear. As Thompson (1962) suggests and Leifer (1975) demonstrates, much boundary spanning actually entails routine, repetitive interactions with especially well-understood clients.

What we may conclude from prior conceptualizations of the boundary position and the model suggested above is the inability to discern any direct link between the extent of boundary activity in a role and the degree to which performance programs are discretionary or developmental. In fact, organizational designers, in order to best facilitate the output of information or services to clients or the input of information to the organization,
may utilize Weber's notion of functional specialization to delineate limited domains of individual action for role incumbents. Narrow limits of responsibility and activity, albeit at the boundary of the organization, may remain very highly structured with functional results. As an example, were the bank teller permitted to handle a variety of cases in addition to the small number of routine transactions, inefficiency might result with dysfunctional outcomes for the organization. Since for some organizations, the range of output transactions with clients can be well understood and viewed as stable, limited bases of activity (e.g., deposits/withdrawals, check-cashing) the large number of routine transactions can be handled most effectively with maximum focus on these specializations.

It is important to note these examples of repetitive, routine and limited transactions are actually only one position on a continuum (Thompson, 1962). As Thompson suggests, boundary transactions may vary from highly routine to highly unique. As an example, the medical team in a hospital deploying a wide variety of resources, talents and procedures in applying an intensive technology suggest boundary spanning of a different type. In this instance, performance programs are highly developmental in order to process a somewhat more unique form of raw material.
If these examples have any intuitive appeal, they begin to suggest an additional path of research into study of the relationship between boundary activity and the nature of one's performance program. In fact, we intend to demonstrate the linkage is a contingent one: in order to understand the relationship between our two variables, we are forced to rely on assessing the simultaneous impact of both boundary activity and pattern discernibility on the dependent variables.

This contingent linkage between boundary activity and performance program structure is one that allows us to integrate the boundary literature with the intensive framework suggested above linking performance program structure to pattern discernibility. As we saw above, pattern discernibility and performance program structure are seen as having a strong direct relationship. We spent considerable time justifying this contention and utilized a variety of literatures to help with supportive theory. However, direct linkages between boundary activity and either performance program structure or pattern discernibility seemed theoretically unjustifiable.

There is one aspect of this potential set of relationships that may be of interest however; that is the nature of the hypothesized relationship when we consider an interaction between pattern discernibility and boundary activity.
This idea is most clear as we visualize various types of boundary activity. Boundary activity, as we have seen, may at times, be especially uncertain or especially routine and standardized. We can thus potentially have boundary spanning which varies in degrees of pattern discernibility. The pattern discernibility is not seen as generated by boundary activity, but potentially due to other organizational variables. We can thus view the interaction between boundary activity and lack of pattern discernibility—an interaction that ranges from being simultaneously high in both to simultaneously low in both.

Of interest are the theoretical predictions we might make about extreme values along this conceptual continuum for the dependent variable of performance program structure.

At the lowest end of this interactive continuum, we would see organizational positions that entail little boundary spanning and are high in discernibility of pattern. This situation could result from low uncertainty, low difficulty of tasks, low variability in tasks performed, or combinations of these conditions. In visualizing this organizational position, we see virtually no interaction or informational transmission across the boundaries of the organization. Thus, the occupant of the position experiences little stimuli from others who may make difficult demands as part of their roles in a different organizational-authority configuration. At the same time the individual finds patterns easily discernible, there
exists little confusion, uncertainty or variablity in stimuli or their linkages. For this extreme position, we can expect maximum prespecification of performance programs. The individual should perceive his behavior as sets of evoked response to be highly formalized, with minimal discretion of flexibility necessary. In fact, the lack of uncertainty and ease with which linkages between stimuli can be observed should make highly discretionary activity both undesirable and ineffective. Not only would the organizational designers be expected to prevent this incongruence, but the individual occupying the position would also be expected to see the efficacy of a more structured performance program.

At the extreme opposing end of this interactive continuum, we have the individual whose position entails dealing simultaneously with both outsiders as well as little pattern discernibility. It is this case that most clearly indicates the contingency argument and allows us to employ much of the boundary literature. The pattern discernibility variable is seen as the more critical condition in explaining performance program structural variation. However, when there is great inability to discern pattern and at the same time there are demands that require the occupant of the position to deal extensively with outsiders in the form of either interactions or information processing or both, the pattern discernibility allows us to append the dynamics suggested
in portions of the boundary literature. The key literature sources here are Leifer (1975) and aspects of Kahn, et al (1964), who see boundary spanning as potentially very difficult, with a need for meeting the opposing demands of a constituency and his representatives in the context of attempting to adhere to one's own set of norms. The unique difficulties of this situation, coupled with the possible attribution of behaviors of constituents outlined by Adams (1972) make this situation especially confusing. Besides the potential for role conflict and stress, there is a consequent need for more discretion or flexibility in the performance program. A highly structured program would be ineffective in reducing equivocality at the same time the demands of bargaining and negotiation (potential dynamics in boundary positions) would demand greater flexibility in response. Absolute, unequivocal responses would probably fail to allow the organization to achieve its goals. Rigidity in behavior or adherence to formulas, policies or standard procedures would only ignore the uncertainties and deprive other organizational locations of the transformed information that could result if more flexible strategies were instituted. As an example, refusing to comply with the uncertainties associated with a particular supplier for a manufacturing organization could potentially deprive the organization of raw materials necessary for profitable assembly of products. For those at this type of boundary, the needs are for
minimal structure. Instead, we should be sure that experience, training and past performance by this individual will contribute to appropriate developmental or discretionary activities in order to reduce equivocality and respond effectively to stimuli.

A similar approach could be taken to visualizing the performance program structural impacts of varying combinations of the independent dimension (boundary activity) and the contingent independent dimension (pattern discernibility). Thus performance program structuring should be an increasing inverse function of the interactive effect of boundary activity and lack of discernibility in pattern for organizational positions.

Table 3-4 illustrates hypothesized correlation coefficients derived from the proposition above. Note that one set of variables are the performance program variables and the other set are new variables, created by multiplying respectively each of the independent variables (boundary activity) and each of the contingent independent variables (pattern discernibility) to create six interactive variables.

Alternative Explanations

At a conceptual level, these hypotheses are straightforward. However, what they do not make clear is the possible influence of other variables on the hypothesized relationships. What these propositions fail to clarify is the potential for alternate explanations to account for results.
This issue is explored in greater depth below, as we suggest controlling (in each pair wise set of relationships) for the remaining set of variables. Also pursued in some depth is the question of a number of potential sources of confounding, suggested primarily at lower levels of analysis.

For this more abstract chapter, there is one potential confounding variable worthy of some theoretical treatment. This variable, in some respects, is related to the idea of organizational configuration or the nature of the hierarchical relationships and interdependencies between organizational positions.

A major theoretical treatment of the hierarchical level of organizational positions may be found in Parsons (1960), who suggests three basic organizational levels: the operative, managerial and institutional. Parsons sees the functions at each level as qualitatively differentiated from one another and views power and responsibility distributions as a function of level in the organizational hierarchy. He also suggests the greatest amount of boundary spanning occurs at the institutional level.

Briefly, we can consider the potential implications for level on each of our three variables. First, since height in the organizational hierarchy should determine level of responsibility or difficulty of the work, we might expect an inverse relationship between level and pattern discernibility. Those at the highest parts of
the organization (as Parsons suggests) would be most likely to make major strategic decisions on coordination, resource allocation, technological changes; at the same time these positions are most often engaged in important boundary-spanning functions for legitimizing and maintaining the organization.

In addition, since the most experienced and important persons are progressively higher in the hierarchy, we should expect an inverse relationship between height (level) and performance program structure. For many of those at the height of the hierarchy, there may exist no job descriptions and positions may entail primarily discretionary and highly developmental activities. As we progress lower in the hierarchy, job descriptions can become more specific, and organizational designers, via standardization and appropriate divisions of labor can more rigidly suggest appropriate behavior patterns. Thus, for the first three propositions, controlling for organizational level is important if the results are to retain validity in the face of alternative explanation.

Another potential source of explanation is organizational or positional experience. This variable might help explain knowledge of procedures or ability to develop new performance programs. Similarly, as frequency of interaction increases potential knowledge, the greater the experience either in a position or in an organization, the greater the ability to discern pattern.
These two variables are among several that will be statistically held constant below. Further details on these issues, as well as those of operationalization, scale building and psychometric properties are contained below. As part of the reported results in Chapter Five, we examine these and other potentially explanatory variables.
CHAPTER FOUR
RESEARCH DESIGN AND METHOD

Measurement Issues, Decisions and Rationale

In order to translate the theoretical concepts discussed above into operational representations useful for testing hypotheses of the type indicated, we must be concerned with developing four sets of scales: measures for the independent variables (dimensions of boundary activity), measures of the dependent variables (job activity-performance programs), characteristics measurement of the contingent independent variables (pattern discernibility) and measures of the variables necessary for testing alternate hypotheses and clarifying linkages between the independent and dependent dimensions.

Three options are potentially useful in this regard (March and Simon, 1958). First, observations over time of individuals would provide a full view of all activities and the nature of performance programs necessary to accomplish activities. At this initial, almost exploratory, stage in a cross-sectional study of this type, such a complex and demanding approach is not required. Future investigations, preferably in a controlled laboratory setting, will provide data
of this type, as we learn more from cross-sectional studies about the nature of the constructs dealt with.

A second alternative involves obtaining copies of documents, reports and other written materials that illustrate the presumed performance programs employed by individuals. This approach has been termed the "prescribed structure" approach by Sathe (1974); interestingly, he found imperfect convergence between the prescribed performance programs and actual behavioral processes as reported by respondents. This study intends to operationalize variables purely in the perceptual perspective of individual respondents, accepting the criticism that substantial error or deviance often exists between what is perceived by an individual and what actually is the case (Pennings, 1973).

As developed in the previous chapter, the focus of this study is on stimuli experienced by individuals and the responses evoked in the face of stimuli. As Dansereau (1975), Alutto (1975) and others have suggested, measurements of this type should focus at the level at which the greatest potential for accurate data provision exists. Since our focus is on stimuli/responses of individuals, they argue, our measurement should focus on the individual perceptions held by individuals. They argue that peers, subordinates, and especially supervisors may have little accurate perception of the continuous stream of stimuli faced by others on the job.
The problem with this approach, though rigorous in attempting to focus on the most accurate source, develops as we examine the interrelationships among sets of measurement similarly obtained. Psychometrically, each score will contain some true score component, various error components (e.g. differential by time, location, circumstances, interpretation, psychological state), and common variance due first to organizational commonality and finally within-subject common variance.

The issue raised above will be considered for future model building and scale development. In this initial study of the relationships between boundary activity and characteristics of the performance program, it was decided that precision in focus on the stimuli, responses and discernibility of pattern to the perceiver were the most critical issues and outweighed the possibility of method commonality. In fact, critics would be hard put to argue that any meaningful component of observed common variation (e.g. correlation coefficient) is due to method commonality. This decision also reflects Weick's view (1969) that only perceptual phenomena truly have meaning in organizations. At this early stage of instrumentation, it would not be inappropriate to accept the possible distortions in our data, and anticipate testing perceptions of reality against observers in later studies.
Thus, the major data gathering technique will involve asking respondents for perceptions of their activities. Two options are available: interviews and questionnaires—each with trade-offs of its own. The questionnaire, with its standardized phrasing, impersonal quality, consistent explanations and speed has advantages over the usually more involved interview. Though the questionnaire assumes variance in interpretation of questions is minimized by large numbers of respondents, it also minimizes the effect of experimenter bias and differential involvement with respondents (Rosenthal and Rosnow, 1971). The interview, even when highly structured, allows considerable involvement differentially between pairs of administrators and respondents.

Cognizant of these tradeoffs, data gathered for statistical analysis required the administration of a survey-type instrument, modified for each of the two organizations under study. Other psychometric considerations considered important in this study include the process of scale development, phrasing of questions, level of measurement, validity and reliability of scales.

To provide operationalization for the four groups of variables suggested in the theoretical framework and alternative hypotheses, items measuring nine scales were needed. The point of the study, however, was not to build and validate optimally constructed scales for each
variable. Rather, reflecting the contemporary activities by others in the field, either scales developed in the literature or isomorphic with variables at higher levels of analysis were chosen to provide a first set of empirical knowledge on the relationships suggested in the framework above.

Though the study was not intended to be a validation or scale development project, some demonstration of validity was available and scale development proceeded along these lines. Two modes of validation were attempted: first, scales were factor analytically derived and created on the basis of face validity and homogeneity of focus. Second, relying on prior research as well as hypotheses tested here, many of the results provide some construct validation for the scales developed.

Two orientations were used in the development of scales. First, many of the constructs taken from the current literature already included demonstrations of construct and face validity. For those variables that had either never been dealt with in the literature and/or only dealt with at levels isomorphic to the present, items were assembled in a pretest questionnaire.

This method was utilized to develop scales that were not organizationally specific, and allowed hypothesis testing to be conducted on different samples. The composition of the pretest sample is discussed below. A copy of this questionnaire appears in Appendix A.
Scale building from this pretest sample was accomplished via a multi-staged process. First, the literature in the area was thoroughly reviewed, amassing lists of items exhibiting face validity (in the opinion of the researcher as well as previous researchers). On each dimension for which a scale was to be developed, a matrix of intercorrelations for all items exhibiting face validity was assembled and subjected to alpha factor analysis (Rommel, 1970; Kaiser and Caffrey, 1967).

All matrices of items with face validity were factor analyzed separately, as combinations would have exceeded the ratio of cases to variables suggested by Nunnally (1968). Each intercorrelation matrix, subjected to the alpha factor analysis (using a criterion of one as the minimum acceptable eigenvalue) was examined prior to rotation. The need for rotation, and its associated and often arbitrary statistical procedures (Rummel, 1970) were avoided, as simple structure was not the main goal of the factor analysis. Rather, items linked to one another as depicted in the initial factor structure were the focus of the analysis. Signalled out for attention as items for scale construction were those that loaded highest on the first factor emerging from the analysis. In all cases, loadings greater than or equal to .5 were used; in some cases with large numbers of items, only those items with loadings greater than .6 were used.
Scales developed on this basis, with at least this limited concern for validity, were then subjected to various tests for other statistical properties. In this study, several procedures were used to provide information on the internal consistency of scales, necessary prior to hypotheses testing involving the scales. Following the generation of scales either from the literature or via the factor analysis discussed above, internal consistency estimates of reliability were generated for scales developed in the pretest as well as the equivalent scales used to test hypotheses in each of the two final samples. A prime effort involved avoiding, as much as possible, a construction of scales in the same sample in which hypotheses tests would be performed. As noted below, this was achieved with certain exceptions.

Internal consistency estimates of reliability were confirmed in the pretest and agencies sample by use of a program that generated scale values, reliabilities and item-scale correlations from an adaptation of the general Cronbach alpha variance analysis. In addition, for the hospital sample, this approach was supplemented by use of the Kuder-Richardson 8, adapted for non-dichotomous items (Wherry, 1974). All internal consistency coefficients are presented for study. With the possible exception of the scale developed by Van de Ven and Delbecq (1975) to measure task variability, all reliabilities are found to exceed
minimal standards set by the current literature prior to hypotheses testing. Details on items, reliabilities, item total correlations, and standard deviations are given below where specific scales are discussed.

Additional psychometric considerations in developing the scales included two concerns: phrasing of items to evoke responses that are readily interpretable and measurable empirically and second, employing recent studies that rely on the Tilton overlap statistic to provide response categories that maximize the probability of data being measured at the interval level. This latter issue is of some importance as the design involved measuring the impact of interactive effects. This technique demands data which should be at the interval level.

Questions such as "how many times do you...?" or "how often...?" while still subject to error, nevertheless compel the respondent to confront the question in terms of quantifiable frequencies or amounts. Thus, a closer representation to the actual behavior is obtained. In developing the instruments, primary emphasis in phrasing included provision for responding in terms of these more quantifiable frameworks. In developing questionnaires for both pretesting and hypotheses testing, four patterns of phrasing were used: magnitude estimation (e.g., how much ability must a worker demonstrate to get a job?); frequency (e.g., how often are you evaluated?); percentage
(what percentage of the job duties are specified?); and amount (e.g., how many months have you been in this job?).

The second problem, that of response categories, follows the patterns suggested by Bass et al. (1974) in developing five-point response categories for frequency and magnitude estimation. Sathe's (1974) approach in quantifying response categories involving percentages was used.

**Questionnaire Format**

For each scale in the final questionnaire, items measuring the dimension were grouped into categories of responses. These five types of categories represented the five parts of the questionnaire. In each of parts II, III, IV and V, all items were randomly assembled (as they were in the pretest questionnaire). Part I of the questionnaire consisted primarily of identification, demographic and other characteristics of individual respondents. Part II consisted of fifty-four questions measuring a variety of constructs phrased in terms of frequency of occurrence. As noted in Bass, et al. (1974), these response categories most closely approximate interval data. Minimal values on the Tilton overlap statistics help demonstrate this as noted in the relevant tables of the Bass, et al. study.
Part III, composed of twenty-four questions, also includes response categories developed by Bass, et al. (1974). In this case, all items are of the magnitude estimation type.

Part IV, with ten items, attempts to phrase questions that enable respondents to visualize proportion of time spent in activities. This approach was suggested by Sathe (1974). The final part of the questionnaire, Part V, with eight questions measuring primarily task analyzability and interdependence (the latter not used in this study), was the only departure from either the more quantitative approach of Sathe (1974) or the suggestions by Bass, et al. (1974). The original response categories developed by Van de Ven and his colleagues (1974a, 1974b, 1974c) were retained in principle, although the scale was collapsed from a seven point to a five point continuum, making it compatible with all other scales developed for this study.

Sampling: Framework and Sites

An important issue in behavioral science is the need to identify the population from which one's sample is drawn (Bobbitt, 1975). Basic statistical inference theory sees the relationship between the population and samples as of critical importance when attempting to test hypotheses.
In this initial study, the level of analysis is organizational positions, i.e., sets of stimuli and responses perceived by individuals in their capacity as members of an organization, subject to constraints on behavior and interdependencies with others in the organizational configuration.

Critical need in the sampling procedure was to find a sample of individuals who would report considerable variation along the crucial dimensions of interest. Thus, restriction in range along any of the three dimensions would not facilitate adequate testing of hypotheses. The population from which the samples described below were drawn may be considered that of all possible positions occupied by individuals in organizations. Since the issue under study here was characteristics of stimuli and response by people in organizational positions, it was necessary to sample enough individuals from a variety of organizational settings in order to fulfill this need. As we see below, in at least two of the three samples selected for study, we can observe little restriction in range, and thus conclude that the sampling is representative in general of sets of linkages between job stimuli and evoked response.

The pretest sample included 125 students who were either presently employed or had been employed for at least several weeks in a part or full time capacity. Among the large variety of positions thus sampled were:
unskilled laborers, lifeguards, salespeople, construction workers, a financial institution vice president, a hospital publicity director, managers of all types of organizations, cooks, waitresses and scores of other occupations. Copies of the two-hundred-eighty-five item questionnaire, developed to conform to the response categories discussed above, were distributed to students as part of the course requirement. This questionnaire appears in Appendix A. Completion time ranged from thirty-five to fifty minutes; of the respondents, 58.6% were male; 41.4% female. The average age was 25 and ranged from 19 to 39. In this sample, 36.1% of the students described a job they had worked at part-time, while 63.9% responded relative to a full time job.

The larger of two sites available for study was a large, private hospital located in a medium-sized city in the Midwest. An internal consultant, familiar to the researcher in connection with a prior study, found the study of substantial interest and facilitated several meetings between the researcher and chief administrators of the hospital. The administrators agreed to let the researcher administer questionnaires to approximately 15% of the total hospital staff, in an attempt to provide information of use to the administrative staff.

The hospital was composed of seventy-five distinguishable compensation units, based on organization charts supplied to the researcher. In addition, the researcher
received a complete enumeration of all employees by
department, position and number in each position. Both
top and the full range of administrative staff were
enthusiastic about the project and saw the data as a
source of potential benefit to the organization.

Cognizant of the standards set above and managing
the twin needs of the researchers and hospital staff,
it was decided the researcher could select approximately
250 individuals occupying more than one-hundred roles
for possible questionnaire administration. With this
number as a base, the researcher sought to select a
wide variety of hospital roles, in order to best achieve
the major sampling goal of maximizing variation. The
selection was made in consultation with the internal
consultant, who was judged by the senior administrative
staff to have a high level of familiarity with the
composition of hospital roles. Thirty-six departments
of the seventy-five departments in the hospital were
chosen for potential sampling. Several major departments
(e.g., housekeeping) were eliminated from consideration
after evaluating the potential inability of many unskilled
workers with limited education to comprehend and respond
meaningfully to questions of this nature. An earlier study
in a major subsystem of the hospital revealed the need for
substantial re-development of instrumentation and required
interviewing in order to effectively communicate questions
and facilitate responses from certain categories of lesser educated employees. This study was limited to those who would be expected a priori to have the educational skills and ability to comprehend questions on relatively abstract aspects of jobs. In addition, the major subsystem from the earlier study was not sampled, as it was part of a quasi-experimental design investigating the impact of a major technological change.

For each of the chosen departments, roles were chosen via a stratified sampling procedure. All salary (i.e. responsibility) levels were included for each department, with the exception of all department heads. The latter consideration was prompted by the need to avoid making any substantial time demands on department heads with already extensive responsibilities.

A full listing of all roles occupied in each department was then assembled, from which every salary level was represented in each department. The number of individuals occupying each role differed substantially, ranging from one in many unique roles to several dozen in many of the major roles of nursing services. Samplings developed in this manner nearly always included from eighty to one-hundred percent of all roles in the department, and from twenty to one-hundred percent of all individuals in the department. This latter issue is important, for it reflects the explicit level of inquiry (Shapiro and McNaul, 1974) of this study, the individual, and his/her
perceived activities in an organizational position. The level of analysis was not the role itself, as unique supervision patterns, interdependencies, and task differences suggest substantial within-role variation. As an example, Tables 4-1 to 4-9 illustrate the divergence in perceptions of various characteristics within each of five major roles comprising nursing services. In every case, there exists substantial range and variation. In most cases, kurtosis is positive, suggesting a more platokurdic distribution. Twenty-one staff nurses (R.N.) were included in these calculations, as were eleven L.P.N.'s, three Patient Care Assistant II's, thirteen Patient Care Assistant I's and eight unit secretaries.

From the total list of designated positions (selected a priori with a concern for variation), a number of individuals were selected, roughly in proportion to the number who occupied that job. The actual selection of specific individuals presented somewhat of a logistics problem for two reasons. First, the researcher wished to insure anonymity for all respondents, reflecting the potential for social desirability distortion in responding to questionnaires for which potential identification is possible. Thus, a listing of individuals occupying each job would have created a problem. The second problem was more critical, relative to the needs and constraints of the hospital. Scheduling of group meetings for
### TABLE 4-1
HOSPITAL SAMPLE
Perceptual Convergence Data: Boundary Activity - Informational

<table>
<thead>
<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>1.376</td>
<td>1.360</td>
<td>.548</td>
<td>-.730</td>
<td>.360</td>
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</tr>
<tr>
<td>Licensed Practical Nurse</td>
<td>1.157</td>
<td>.910</td>
<td>.617</td>
<td>-.647</td>
<td>.360</td>
<td>2.360</td>
</tr>
<tr>
<td>Patient Care Assistant II</td>
<td>.393</td>
<td>.090</td>
<td>.450</td>
<td>-1.500</td>
<td>.09</td>
<td>.910</td>
</tr>
<tr>
<td>Patient Care Assistant I</td>
<td>.874</td>
<td>.730</td>
<td>.311</td>
<td>-.858</td>
<td>.270</td>
<td>1.270</td>
</tr>
<tr>
<td>Unit Secretary</td>
<td>1.262</td>
<td>1.000</td>
<td>.775</td>
<td>-.387</td>
<td>.360</td>
<td>2.730</td>
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</table>

### TABLE 4-2
HOSPITAL SAMPLE
Perceptual Convergence Data: Boundary Activity - International

<table>
<thead>
<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
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<tbody>
<tr>
<td>Nurse</td>
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<td>.800</td>
<td>.714</td>
<td>-1.143</td>
<td>.600</td>
<td>2.800</td>
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<tr>
<td>Licensed Practical Nurse</td>
<td>1.273</td>
<td>.400</td>
<td>.850</td>
<td>-.576</td>
<td>.400</td>
<td>3.000</td>
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<tr>
<td>Patient Care Assistant II</td>
<td>.533</td>
<td>.200</td>
<td>.577</td>
<td>-1.500</td>
<td>.200</td>
<td>1.200</td>
</tr>
<tr>
<td>Patient Care Assistant I</td>
<td>.954</td>
<td>.800</td>
<td>.470</td>
<td>-.812</td>
<td>.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Unit Secretary</td>
<td>1.875</td>
<td>2.000</td>
<td>.614</td>
<td>-.779</td>
<td>1.000</td>
<td>2.800</td>
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### TABLE 4-3
**HOSPITAL SAMPLE**
Perceptual Convergence Data: Uncertainty

<table>
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<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Nurse</td>
<td>1.470</td>
<td>1.570</td>
<td>.399</td>
<td>.947</td>
<td>1.000</td>
<td>2.570</td>
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<tr>
<td>Licensed Practical Nurse</td>
<td>1.337</td>
<td>1.430</td>
<td>.487</td>
<td>-1.209</td>
<td>.710</td>
<td>2.140</td>
</tr>
<tr>
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<td>1.710</td>
<td>.242</td>
<td>-1.500</td>
<td>1.290</td>
<td>1.710</td>
</tr>
<tr>
<td>Patient Care Assistant I</td>
<td>1.318</td>
<td>1.43</td>
<td>.451</td>
<td>-.157</td>
<td>.430</td>
<td>2.140</td>
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<tr>
<td>Unit Secretary</td>
<td>1.322</td>
<td>1.430</td>
<td>.437</td>
<td>-.395</td>
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### TABLE 4-4
**HOSPITAL SAMPLE**
Perceptual Convergence Data: Task Difficulty

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<th>Role</th>
<th>Mean</th>
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<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
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<td>Staff Nurse</td>
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<td>-.490</td>
<td>.430</td>
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<td>-.954</td>
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<td>Patient Care Assistant II</td>
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<td>.430</td>
<td>2.000</td>
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<tr>
<td>Patient Care Assistant I</td>
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<td>1.430</td>
<td>.422</td>
<td>.154</td>
<td>.860</td>
<td>2.430</td>
</tr>
<tr>
<td>Unit Secretary</td>
<td>1.232</td>
<td>1.570</td>
<td>.630</td>
<td>-.305</td>
<td>.430</td>
<td>2.430</td>
</tr>
<tr>
<td>Role</td>
<td>Mean</td>
<td>Mode</td>
<td>SD</td>
<td>Kurtosis</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Staff Nurse</strong></td>
<td>1.755</td>
<td>1.890</td>
<td>.696</td>
<td>.501</td>
<td>0</td>
<td>3.110</td>
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<tr>
<td><strong>Licensed Practical Nurse</strong></td>
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<td>.830</td>
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<td>.034</td>
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<td>2.670</td>
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<tr>
<td><strong>Patient Care Assistant II</strong></td>
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<td><strong>Patient Care Assistant I</strong></td>
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<td>.708</td>
<td>.357</td>
<td>.670</td>
<td>2.830</td>
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<table>
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<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
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<tbody>
<tr>
<td><strong>Staff Nurse</strong></td>
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<td>.310</td>
<td>-.834</td>
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<td>2.130</td>
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<tr>
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<td>1.776</td>
<td>1.880</td>
<td>.633</td>
<td>1.125</td>
<td>.250</td>
<td>2.500</td>
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<tr>
<td><strong>Patient Care Assistant II</strong></td>
<td>1.587</td>
<td>1.630</td>
<td>.886</td>
<td>-1.500</td>
<td>.630</td>
<td>2.380</td>
</tr>
<tr>
<td><strong>Patient Care Assistant I</strong></td>
<td>1.888</td>
<td>2.130</td>
<td>.384</td>
<td>1.471</td>
<td>1.380</td>
<td>2.880</td>
</tr>
<tr>
<td><strong>Unit Secretary</strong></td>
<td>2.144</td>
<td>1.750</td>
<td>.958</td>
<td>-.831</td>
<td>1.130</td>
<td>3.630</td>
</tr>
</tbody>
</table>
### TABLE 4-7
**HOSPITAL SAMPLE**
Perceptual Convergence Data: Formalization

<table>
<thead>
<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff Nurse</strong></td>
<td>2.678</td>
<td>2.780</td>
<td>.452</td>
<td>.693</td>
<td>2.000</td>
<td>3.890</td>
</tr>
<tr>
<td><strong>Licensed Practical Nurse</strong></td>
<td>2.716</td>
<td>3.56</td>
<td>.693</td>
<td>-.904</td>
<td>1.440</td>
<td>3.560</td>
</tr>
<tr>
<td><strong>Patient Care Assistant II</strong></td>
<td>2.370</td>
<td>1.440</td>
<td>1.242</td>
<td>-1.500</td>
<td>1.440</td>
<td>3.780</td>
</tr>
<tr>
<td><strong>Patient Care Assistant I</strong></td>
<td>2.812</td>
<td>2.330</td>
<td>.606</td>
<td>-1.366</td>
<td>2.000</td>
<td>3.780</td>
</tr>
<tr>
<td><strong>Unit Secretary</strong></td>
<td>2.957</td>
<td>2.780</td>
<td>.476</td>
<td>-1.171</td>
<td>2.220</td>
<td>3.560</td>
</tr>
</tbody>
</table>

### TABLE 4-8
**HOSPITAL SAMPLE**
Perceptual Convergence Data: Discretion

<table>
<thead>
<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff Nurse</strong></td>
<td>1.843</td>
<td>1.500</td>
<td>.431</td>
<td>-.945</td>
<td>1.1</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Licensed Practical Nurse</strong></td>
<td>1.536</td>
<td>1.400</td>
<td>.463</td>
<td>.174</td>
<td>1.000</td>
<td>2.500</td>
</tr>
<tr>
<td><strong>Patient Care Assistant II</strong></td>
<td>1.400</td>
<td>1.500</td>
<td>.173</td>
<td>-1.500</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Patient Care Assistant I</strong></td>
<td>1.362</td>
<td>1.200</td>
<td>.357</td>
<td>-.744</td>
<td>1.000</td>
<td>2.000</td>
</tr>
<tr>
<td><strong>Unit Secretary</strong></td>
<td>1.600</td>
<td>2.400</td>
<td>.665</td>
<td>-.688</td>
<td>.400</td>
<td>2.400</td>
</tr>
</tbody>
</table>
### TABLE 4-9
HOSPITAL SAMPLE
Perceptual Convergence Data: Developmental Activity

<table>
<thead>
<tr>
<th>Role</th>
<th>Mean</th>
<th>Mode</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Nurse</td>
<td>1.354</td>
<td>1.22</td>
<td>.399</td>
<td>.091</td>
<td>.670</td>
<td>2.330</td>
</tr>
<tr>
<td>Licensed Practical Nurse</td>
<td>1.203</td>
<td>1.110</td>
<td>.434</td>
<td>-.367</td>
<td>.330</td>
<td>1.780</td>
</tr>
<tr>
<td>Patient Care Assistant II</td>
<td>.777</td>
<td>.780</td>
<td>.335</td>
<td>-1.500</td>
<td>.440</td>
<td>1.110</td>
</tr>
<tr>
<td>Patient Care Assistant I</td>
<td>1.436</td>
<td>1.560</td>
<td>.639</td>
<td>-1.217</td>
<td>.670</td>
<td>2.440</td>
</tr>
<tr>
<td>Unit Secretary</td>
<td>1.152</td>
<td>.890</td>
<td>.666</td>
<td>-.507</td>
<td>.220</td>
<td>2.330</td>
</tr>
</tbody>
</table>

### TABLE 4-10
HOSPITAL SAMPLE
Responding Departments

<table>
<thead>
<tr>
<th>Operational/Administrative</th>
<th>Nursing Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Office</td>
<td>Psychiatry</td>
</tr>
<tr>
<td>General Accounting</td>
<td>Surgical Service</td>
</tr>
<tr>
<td>Out-Patient Billing</td>
<td>Recovery Room</td>
</tr>
<tr>
<td>Financial Counselors</td>
<td>Labor/Delivery</td>
</tr>
<tr>
<td>P.B.X./Information</td>
<td>Administration</td>
</tr>
<tr>
<td>Data Processing</td>
<td>Nursery</td>
</tr>
<tr>
<td>Purchasing</td>
<td>Intensive Care</td>
</tr>
<tr>
<td>Personnel</td>
<td>Obstetrics/Gynecology</td>
</tr>
<tr>
<td>Security</td>
<td>Continuous Care Unit</td>
</tr>
<tr>
<td>Medical Records</td>
<td>Extended Care</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Endocrine Unit</td>
</tr>
<tr>
<td>Social Service</td>
<td>Floor A</td>
</tr>
<tr>
<td>Medical Systems</td>
<td>Floor B</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>Floor C</td>
</tr>
<tr>
<td>Respiratory Therapy</td>
<td>Floor D</td>
</tr>
<tr>
<td>Emergency Room</td>
<td>Floor E</td>
</tr>
</tbody>
</table>
questionnaire completion was deemed logistically unfeasible considering the diverse variety of shifts, patient care demands and needs for supportive services in this highly intensive technology. At the same time, this would have tied up substantial amounts of movement time with great scheduling difficulties. In lieu of this, it was decided by the researcher with the agreement of the internal consultant and the senior administrators, to designate job titles on the cover sheet of each booklet, facilitating the identification only by job for each intended questionnaire booklet. These questionnaires with the intended recipient identified by job were presented to each department head personally in the non-nursing services departments. For nursing services, the administrative staff there facilitated distribution of the questionnaires.

Prior to meeting with each department head, a memorandum drafted by the researcher was distributed to all administrative staff and department heads. The memo, reproduced as Appendix B solicited the support of department heads in distributing the questionnaires to those in their departments chosen to participate in the study. It also informed them of the nature of the study in general terms designed to maintain their naivete about the specific hypotheses or variables under study. In meetings with all department heads, cooperation was elicited, questions
were answered about the study and its results and details were presented regarding the procedures for distributing the questionnaires. It was explained the sampling should be as close to random as possible, where each individual within a job stood an equal chance of receiving the questionnaire. It was important not to single out any one group or category of people, they were told. At all stages of development, the questionnaire was designed to eliminate any questions with an evaluative or affective component. Thus, the department heads were told, there was no need to select out especially satisfied employees. All department heads appeared to understand these directions and agreed with the guidelines presented. In the case of nursing services, it was suggested by senior administrative staff there that a useful sampling procedure would include provision for stratification by shift as well. A copy of the hospital questionnaire appears in Appendix C.

In pretesting the questionnaire, it was found that time of completion ranged from thirty minutes to forty-five minutes. Hospital administrative staff were somewhat concerned about the potential for extensive thought in many of the questions and feared individuals might spend as much as several minutes on some particularly intriguing questions. It was agreed, then, to incorporate in the directions the suggestion that individuals read each question, think about it for a few seconds, respond
rapidly with their best opinion, and move quickly on to the next question. In addition, the internal consultant recommended inclusion of a provision for completing the questionnaires at home, considering the potential financial ramification of absorbing more than two-hundred on-job man-hours for questionnaire completion.

Each questionnaire included an envelope attached, labeled OSU-Administration. As explained in the directions to each respondent, all sealed envelopes arriving through hospital mail or hand delivered were deposited in a private area in the administrative suite, insuring confidentiality and security. Throughout the three-week period for data collection, senior administrative staff reminded department heads to encourage their subordinates to return the questionnaires. Originally, two-hundred-forty questionnaires were distributed. Of these, one-hundred-fifty were returned within three weeks of distribution. Three questionnaires were unusable, as they contained more than ten percent missing values.

The balance of one-hundred-forty-seven responses represented an overall response rate of sixty-two percent. However, examining the response rates on a departmental basis, it was found that of the thirty-six departments, no responses at all were obtained from only four. These departments together included thirty-one respondents and were primarily float personnel in nursing service. In
fact, these positions had already been measured in other parts of the hospital. At various points throughout the three-week collection period, department heads were contacted by a senior administrator and urged to suggest that subordinates complete their questionnaires. Excluding these departments, the overall response rate was 71\%. The same figure was obtained in calculating the average response rates among all thirty-two departments in which anyone responded. Eight departments had a one-hundred percent response rate. A listing of the departments which returned questionnaires appears in Table 4-10. Descriptive statistics on the 147 returned responses appear in Table 4-11, while details on missing responses are presented in Table 4-12.

The second "organization" was a federation of six publicly funded agencies with a religious orientation. The main federation office, besides providing funds for the other five, coordinated all religious fund-raising in a metropolitan area. A second agency provided social services and vocational counseling; its staff was predominantly professional counselors and social workers. The largest agency of the six included in the study was a community center which provided a full range of services and activities. The fourth sub-organization was a local religious school with both a full and part-time staff. As part-time staff were employed only four hours a week,
TABLE 4-11
HOSPITAL SAMPLE
Descriptive Statistics of Selected Respondent Characteristics

AGE: Mean of 33; S.D. of 11.661; range: 18-61
93.9% FULL TIME 6.1% PART TIME
YEARS AT JOB: Mean of 3.65; S.D. of 4.27; Maximum of 25
OTHER HOSPITAL POSITIONS HELD AT SOME TIME: Mean of .796; Maximum of 6
YEARS WITH HOSPITAL: Mean of 5.537; S.D. of 5.495; Maximum of 28
SHIFT: 22.4% Early 65.3% Main (8 to 5) 8.8% Late 3.4% Variable
EDUCATION: 46.9% High School 50.3% College/Prof. Training
2.8% Graduate Work
SPAN OF CONTROL: Mean of 3.014; S.D. of 9.178; Maximum of 80
NUMBER OF SUPERVISORS: Mean of 2.104; S.D. of 1.187; Maximum: greater than 5
PROFESSIONAL ASSOCIATION MEMBER: 23.4%
ATTEND MEETINGS OF PROFESSIONAL ASSOCIATION: 9%
HOLD ANOTHER POSITION: 7.5%
TOTAL RESPONDENTS: 147

TABLE 4-12
HOSPITAL SAMPLE
Missing Data

Percent of Questions Percent of Booklets in Each
With Missing Data Missing Data Category

<table>
<thead>
<tr>
<th>Percent of Questions</th>
<th>Percent of Booklets in Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% or less</td>
<td>15%</td>
</tr>
<tr>
<td>2-5%</td>
<td>7%</td>
</tr>
<tr>
<td>5-10%</td>
<td>5%</td>
</tr>
<tr>
<td>None</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
the principal of the school deemed it unwise to include them in the study. The largest of the agencies, a nursing home for the aged, declined to participate in the study, as it was undergoing a major, sensitive organizational expansion. A sixth potential agency was not included in the study as it had only one employee.

The structure and interdependence of the agencies is of some interest. The umbrella agency is responsible to its board of directors, composed of individuals prominent in the local religious community. Similarly, each individual agency has its own lay board of directors, to which each executive director is responsible. Only paid employees of the agencies were included in the study.

In the case of the four agencies sampled (with the exception of the religious school), potential respondents comprised a census of those at the operative level.

Contact with the federation of agencies was initially made through the executive director of the umbrella/fund raising agency, who found the study of potential interest and arranged for the researcher to make a presentation to all executive directors of the agencies. With the exception of the home for the aged, all directors agreed to let the researcher distribute questionnaires to all employees of each agency. As in the hospital sampling, logistical problems prohibited large meetings of employees for questionnaire administration and instead, questionnaires
were distributed to all employees by chief administrators. A copy of the questionnaire used for the agencies sample is contained in Appendix D.

Items are identical with those in the hospital study, although modified in wording (e.g. substituting non-agency personnel for non-hospital personnel) to reflect more appropriately the difference in organizations.

All employees including executive directors were potential respondents. In the somewhat extensive meetings with the group of executive directors and in private sessions with each, there was considerable discussion of the general objectives and areas of investigation in the study. The researcher chose to pursue this direction in these agencies for several reasons. First, the executive directors, many of whom had doctoral or other advanced graduate degrees, were quite familiar with studies of this type. Among their interests were issues of construct development, scale development, validation/reliability and theoretical underpinnings of the study.

Also, discussions with each director were informative vis-a-vis the researcher's orientation, for they helped to supply ancillary data on hypotheses, suggestions in questionnaire development, and familiarized the researcher with the organizational structure and processes of the agencies.
Cognizant of the potential biasing of results from non-naive subjects (Rosenthal and Rosnow, 1969), the researcher took two actions. First, relying on the director's familiarity with sociological research, it was emphasized that directors not discuss the specifics of the study with employees beyond the vague statements that suggested the purpose of the study was to learn about "working arrangements." This ambiguous reference to the purpose of the study suggested by Sathe (1974) provided adequate explanation of the study without revealing the constructs or relationships under investigation. In much the same way that experimenters, in debriefing subjects, solicit confidentiality about the objectives of a study, so the researcher sought the support of the executive directors.

A second decision made by the researcher involved receipt of completed questionnaires from the executive directors. All looked forward to the chance to more abstractly think about their jobs and were quite careful in providing responses. All responses from any of the eight directors which were identified by job titles and other administrators involved in the meetings were eliminated from data analysis. This reduced the already small sample, but was an appropriate strategy considering the extent of knowledge they had gained about the study.
All questionnaires were distributed by directors to employees, who were provided with blank envelopes in which to seal completed responses. In the reception area of each building a clearly labeled and sealed box was designated for receipt of completed questionnaires. Only one returned questionnaire was totally unusable, as it contained more than 10% missing values.

Table 4-13 illustrates the response rates for each agency. Within three weeks, the main (umbrella) agency and the social services agencies had provided adequate response rates, but even with periodic encouragement of employees, the community center only had a response rate of 20%. The column labeled "removed" indicates how many questionnaires were responses by administrators who had knowledge of the study. The limited overall response for the agencies resulted in a sample of 24 usable for possible hypotheses testing.

Besides the small sample size, the meager overall response from the entire agencies sample (30 of a potential total of more than 200) suggests a restriction in range. Returned questionnaires were predominantly from highly professional employees and did not reflect the range required by our sampling framework.

Scale development and zero-order correlations were later computed for this sample, but these reservations, besides necessitating the use of non-parametric procedures,
TABLE 4-13
AGENCIES SAMPLE
Response Data

<table>
<thead>
<tr>
<th>Agency</th>
<th>Quest. Dist.</th>
<th>Returned</th>
<th>Removed</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Services</td>
<td>14</td>
<td>11</td>
<td>3</td>
<td>80%</td>
</tr>
<tr>
<td>Center</td>
<td>45</td>
<td>9</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>School</td>
<td>03</td>
<td>1</td>
<td>0</td>
<td>33%</td>
</tr>
</tbody>
</table>

TABLE 4-14
AGENCIES SAMPLE
Descriptive Statistics of Selected Respondent Characteristics

AGE: Mean of 38.864; S.D. of 14.146; Range: 18-68
54.2 FULL TIME 45.8 PART TIME
YEARS AT JOB: Mean of 3.875; S.D. of 5.4; Maximum of 25
OTHER POSITIONS HELD AT AGENCY: Mean of .250; Maximum of 2
YEARS WITH AGENCY: Mean of 4.542; S.D. of 5.461; Maximum of 25
SHIFT: 81% Main 19% Late
EDUCATION: 33% High School 29% College 38% Graduate Work
SPAN OF CONTROL: Mean of 1.542; S.D. of 3.526; Maximum 17
NUMBER OF SUPERVISORS: Mean of 1.81; S.D. of 1.25, Maximum 5 or more
PROFESSIONAL ASSOCIATION MEMBER: 33%
ATTEND PROFESSIONAL ASSOCIATION MEETINGS: 12.5%
HOLD ANOTHER POSITION: 21%
TOTAL RESPONDENTS: 24
suggest caution in attaching any substantial weight to its results. The results are informative and of interest, but worthy of much less confidence than those in the hospital sample. Throughout the balance of the study, much greater attention will be directed to presenting and interpreting results found in the hospital sample. For purposes of information, Table 4-14 contains data for the agency respondents on characteristics of the reduced sample of 24. Table 4-15 contains data on missing values for the agency sample.

The agencies sample differed from the hospital sample not only in terms of size, but with respect to an additional major organizational variable: intra-organization interdependence. Unlike the hospital, where cross-organizational interactions and interdependencies may be critical to the organization's success, the agencies were, in fact, nearly autonomous from one another, although for certain purposes considered part of the federated structure. While their funding came from both public sources and the main agency of the federation, in operation they were virtually autonomous and responsible only to their individual boards of directors. This differs sharply from the more integrated and interdependent relationships among the organizational units of the hospital.
<table>
<thead>
<tr>
<th>Percent of Questions With Missing Data</th>
<th>Percent of Booklets in Each Missing Data Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1%</td>
<td>18%</td>
</tr>
<tr>
<td>2-9%</td>
<td>10%</td>
</tr>
<tr>
<td>None</td>
<td>72%</td>
</tr>
<tr>
<td></td>
<td>100% Total</td>
</tr>
</tbody>
</table>
Scale Construction

Prior to hypotheses testing, each of the constructs suggested in the previous chapter had to be translated into a more operational representation. This section translates definitionally from the minimal level of abstraction suggested in the prior chapter and illustrates how operational definitions were developed for each variable, along with data on the internal consistency.

Four sets of variables were suggested in the theoretical framework: boundary activity (independent variables), pattern discernibility (contingent independent variables), performance program characteristics (dependent variables), and miscellaneous data needed for testing alternative explanations.

In each of the first three cases, scales were constructed for each variable by taking the average of a respondent's measures on all items comprising the scale. Considering the missing data detailed above and the suggestions by Wherry (1974), it was decided to substitute the mean value of each question in place of missing values a priori to scale construction. As a result, internal consistency and hypotheses testing results incorporate the full data base.
Boundary Activity: Informational

The conceptualization of boundary activity developed at the end of Chapter Three at a low level of abstraction, provides a path for development of scales measuring boundary activity. The two crucial distinctions drawn in typologizing boundary activity were the input/output and the interaction/information processing distinction. In this initial study, we shall focus our attention on only the later concern; the distinction between input and output activities in boundary spanning will be reserved for future study.

In this study, two operational measures of boundary activity are developed, relying on the information/interaction distinction. Scales were developed to measure both the extent of interaction with non-organizational members, and the extent to which external sources of information (reports, correspondence, magazine articles and the like) are dealt with as part of the job. We shall explore each of the measures, illustrating the approaches suggested thus far in the limited empirical literature on operationally defining organizational boundary activity.

From the framework developed earlier, we see as one path for measurement the extent of cross-boundary information transmission engaged in by individuals. One way of depicting boundary spanners is in terms of the amount of input information, output information, and both input and
output information they transmit into or out of the organization. This approach, building on the framework of Brown (1966), clearly depicts all individuals in the organizational configuration as information transmitters and/or transformers. Many organizational positions, to varying degrees, entail information transmission across the organizational boundaries. Thus, our link to operationalization comes when we consider the need to measure the degree to which each individual reports engaging in a variety of information-transmission related activities.

To date, the only major operationalization suggested in the literature has been the short questionnaire developed by Keller and Holland (1974) which contains items measuring the number of magazine articles and extent of professional activity reported by respondents. This approach may be inadequate for two reasons. First, it fails to tap the diverse variety of information transmission activities (planning, problem solving, etc.) in which boundary spanners may engage. Secondly, as Leifer (1975) notes, questions of this type do not refer specifically to job-related activity. Thus, the Keller and Holland instrument taps extent of overall reading of journals, articles and newspapers without insuring that direct organizationally-related activity is the referent.

With these concerns in mind, it was decided to rely on the questionnaire items developed in the Zeitz (1974) and Leifer (1975) studies and include eleven questions.
about various kinds of informational activity at the organization boundary.

Table 4-16 lists items, and corresponding question numbers for each of the five items comprising the boundary activity-informational scale. As for the remaining scales in the study, this table lists several pieces of information summarizing the internal consistency of the scale. Below the main table is a summary of several characteristics of the scale. The left column is the standard deviation of the entire scale for each of the samples; the right side of the diagram contains the internal consistency coefficients for the agency sample and for the two approaches used in obtaining internal consistency reliability estimates for the hospital sample. As will be the case for all scales, Hospital (A) represents the more conservative estimate of internal consistency reliability based on the derivation analogous to Cronbach's alpha statistic. Hospital (B) represents the internal consistency found using the Wherry computation for KR-8, adapted for non-dichotomous scales. As indicated by the data, the entire scale which is intended to tap the variety of informational transmission (both input and output) activities by boundary spanners enjoys considerable internal consistency. In the small agencies sample and in both modes of estimation in the hospital sample, the entire scale has internal consistency reliability coefficients all above .80. The columns on the right of the main diagram are
## TABLE 4-16
INTERNAL CONSISTENCY DATA
Scale: Boundary Activity: Informational

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp.*(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In contacts with non-organizational personnel, request information</td>
<td>025</td>
<td>5950</td>
<td>5743</td>
<td>6820</td>
</tr>
<tr>
<td>In contacts with non-organizational personnel, provide information</td>
<td>032</td>
<td>5783</td>
<td>5929</td>
<td>6980</td>
</tr>
<tr>
<td>In contacts with non-organizational personnel, work together for planning coordination</td>
<td>033</td>
<td>5655</td>
<td>4931</td>
<td>6070</td>
</tr>
<tr>
<td>Fulfill legal requirements for organization by dealing with non-organizational personnel</td>
<td>035</td>
<td>7177</td>
<td>4712</td>
<td>6070</td>
</tr>
<tr>
<td>Dealings result of agreements with other organization</td>
<td>038</td>
<td>5271</td>
<td>3930</td>
<td>5240</td>
</tr>
<tr>
<td>Need to gather information from outside organization</td>
<td>039</td>
<td>6917</td>
<td>5772</td>
<td>6620</td>
</tr>
<tr>
<td>Work together with others on mutual problems</td>
<td>054</td>
<td>7583</td>
<td>6104</td>
<td>6990</td>
</tr>
<tr>
<td>Receive written materials as part of job</td>
<td>069</td>
<td>6781</td>
<td>3605</td>
<td>4980</td>
</tr>
<tr>
<td>Time spent providing services information to non-organizational personnel</td>
<td>083</td>
<td>4122</td>
<td>4224</td>
<td>5590</td>
</tr>
<tr>
<td>Time spent analyzing written information entering from outside</td>
<td>087</td>
<td>7971</td>
<td>3465</td>
<td>4450</td>
</tr>
<tr>
<td>Percent time spent obtaining or analyzing information coming from outside</td>
<td>105</td>
<td>1803</td>
<td>2960</td>
<td>4170</td>
</tr>
</tbody>
</table>

**S.D. | Scale Reliability**

<table>
<thead>
<tr>
<th></th>
<th>Agency</th>
<th>Hosp. (A)</th>
<th>Hosp.*(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.46 8707</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.95 7947</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.95 8450</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*KR-8; All others based on modified alpha computation.

Decimals omitted above.
the item-total intercorrelations for each of the items in the scale. While some variation exists by samples and by modes of calculation, it was felt a standardized scale would be more useful to this and future research rather than one which was individually modified and adopted to be sample specific. Only the last item appears especially weak; however, its weakness still appears to be sample specific. Each of the question numbers corresponds to the question in the questionnaires used for measurement in each of the two samples.

Boundary Activity: Interactional

The most familiar operationalizations of boundary activity are those which see the boundary position in a role framework (e.g., Kahn, et al., 1964). In formulations of this type, assessments are made of the role senders for a particular role. Essentially, boundary spanning is identified in a role when members of a role set include extra-organizational personnel. In most instances, the definition of extra-organizational personnel or non-organizational member is implicit. In fact, the literature to date has yet to be explicit about identifying organizational vs. non-organizational members. Even Starbuck (1973) suggests the need to only distinguish "distance from the organization's center" and McNaul et al. (1974), in talking about organizational units, suggest proximity to the boundary. In building a definition
of organizations from the literature (Blau and Scott, 1962; Katz and Kahn, 1966), we provided for making this distinction. Since as we understood it, the organization is an interrelated set of behaviors by individuals occupying organizational positions and thus subject to the legal authority patterns of the organization (in return for remuneration), we shall define organizational members as those who perform activities as employees of the organization in return for direct payment. This definition allows us to develop a clear distinction between who is and is not an organization member (Aldrich, 1969).

We can thus classify organizational positions into boundary-spanning vs. non-boundary-spanning categories. In fact, Kahn, et al. (1964) and most studies of boundary vs. non-boundary spanners (Keller and Holland, 1974) use this approach in dichotomizing e.g. production personnel (assumed to have no extra-organizational job related contacts) as non-boundary spanners, and salesmen or scientists (who presumably have great numbers of such contacts) are viewed as boundary spanning. Though crude, this approach may be appropriate as long as the focus of study is on boundary vs. non-boundary positions. If we agree, as McNaul, et al. (1974) suggests, that boundary activity is a question of degree, this approach is far too simplistic and certainly inadequate.
A much more comprehensive approach is that suggested by Sathe (1974), who first conducted interviews with chief administrators of organizations to assess the nature of the task environments (e.g. suppliers, customers, competitors, regulatory bodies, government) with which the organization had to deal. He then asked respondents to examine a large, full-page matrix listing these categories as rows and with frequency response categories as columns. After depicting the full set of non-null cells, he had respondents rank these in order of frequency. This time consuming procedure has yet to demonstrate any viable path for measurement. Sathe used this procedure as an aid to developing scales measuring uncertainty; Duncan used a similar technique (with questions on factors incorporated when making decisions) in a lengthy, interview procedure.

As this study relies on questionnaire administration for the reasons outlined above, this approach was deemed inappropriate. It may, however, be one mode to consider for limited sampling in boundary activity as precisely as possible.

The second tradition of measurement in the literature is that found in Zeitz (1974) and Leifer (1975). In these efforts, an attempt was made to develop sums of interactions of both formal and informal nature across both organizational and departmental boundaries. Among
the questions used in this mode of operationalization are requests for respondents to indicate number of times, number of hours per week and extent of in-person and telephone conversation with those from outside the organization.

Our first question about this mode of operationalization is the issue of informal vs. formal. In summing scores, Leifer makes no distinction between the two and, in fact, suggests the distinction may be trivial. The key issue here (and one raised in the Kahn, et al. 1964, assessment of role senders) is the reason for the interaction. Presumably, formal interactions are more closely related to job activities, and informal activities are of a more personal, non-job related nature. Since our interest is only in activities relevant to job performance, we shall not employ this distinction. In order to measure boundary activity along the dimension of interactions, a five item scale was constructed, based on the Zeitz-Leifer items.

These five items were developed as a modification of the more intensive items suggested in the Leifer-Zeitz instrument to measure boundary activity. As was indicated above, the original measures were more an enumeration by frequency, of interactions across the organization's boundary. Two considerations prompted the need for revision in this method of measurement. First, the Leifer results
that were restricted in range on the boundary activity summation scores may have been due to the problems inherent in non-interview questions about number of times interactions occurred or for how many hours per week interactions occurred. The second related consideration reflects the concerns of researchers who have used these methods in other studies. As an example, Klimoski (1975) in reflecting past experience with measures of this type, has found results to be of limited validity as respondents either ignore difficult questions or have great difficulty in enumerating or summarizing interactions without reliance on response categories. Reflecting this statement of past experience, it was decided that the boundary interaction scales could be easily reworded into five point response continua that kept these responses consistent with those of the remaining scales in the study. For these questions, as with those with informational activity as the focus, the Bass, et al. (1974) response categories were used to develop maximally interval scales.

Some convergence for this decision comes with an examination of the cross-sample internal consistency of the scales composed from these items. This information appears in Table 4-17, which follows the same format as the earlier informational scale. The internal consistency is especially high for the small agencies sample, and although the modified Cronbach alpha is a bit lower than
TABLE 4-17
INTERNAL CONSISTENCY DATA
Scale: Boundary Activity - Interactions

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Item-Total Correlation</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp.* (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making contact with other organizations part of job</td>
<td>051</td>
<td></td>
<td>7430</td>
<td>3553</td>
<td>5740</td>
</tr>
<tr>
<td>Contact (person/telephone) with persons from outside</td>
<td>063</td>
<td></td>
<td>8979</td>
<td>6206</td>
<td>7870</td>
</tr>
<tr>
<td>Variety of outside personnel</td>
<td>077</td>
<td></td>
<td>8002</td>
<td>4984</td>
<td>6820</td>
</tr>
<tr>
<td>Job related activity consists of meetings and telephone conversation with non-organizational personnel</td>
<td>078</td>
<td></td>
<td>6294</td>
<td>6371</td>
<td>7740</td>
</tr>
<tr>
<td>Percent of job related activity consists of dealing with non-organizational personnel</td>
<td>101</td>
<td></td>
<td>7546</td>
<td>4418</td>
<td>7000</td>
</tr>
</tbody>
</table>

* KR-8; All others based on modified alpha computation.

<table>
<thead>
<tr>
<th>S.D.</th>
<th>Scale Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.12</td>
<td>.8918 Agencies</td>
</tr>
<tr>
<td>4.14</td>
<td>.6994 Hosp. (A)</td>
</tr>
<tr>
<td>4.14</td>
<td>.8370 Hosp. (B)</td>
</tr>
</tbody>
</table>

Decimals omitted above.
that for some of the other scales, the KR - 8 coefficient puts the internal consistency clearly in the range of more than .8000. The item-total score correlations also appear favorable.

One further detail is of special interest when considering these operationalizations. As was made clear above, the informational and interactional frameworks provide alternative means for measuring the construct of boundary activity. Tables 4-18 and 4-19 respectively, indicate the high and consistent intercorrelation of the two measures for both samples. These results, coupled with the later observation that no correlations between either of these two measures with any other measure ever reaches the magnitude of their intercorrelation adds some convergent/discriminant validity to these measures of boundary activity (Campbell and Fiske, 1957).

Although it may have been possible to combine the two into a single boundary activity scale, it was suggested that slight variations between the aspects of boundary activity tapped by each of the scales might result in variations among intercorrelations with the remaining sets of variables. Thus, all hypotheses were tested separately for each of these two highly oblique dimensions of boundary activity.

We now discuss in some depth the operationalization of the set of contingent independent variables, above termed the pattern discernibility dimension.
### TABLE 4-18
**AGENCIES SAMPLE**
Intercorrelation Matrix for Boundary Activity Scales

<table>
<thead>
<tr>
<th>VAR</th>
<th>Boundary Activity Informational</th>
<th>Boundary Activity Interactional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity Informational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boundary Activity Interactional</td>
<td>**** 7343</td>
<td></td>
</tr>
</tbody>
</table>

Decimals omitted above.

See list of symbols for interpretation of significance level notation.

### TABLE 4-19
**HOSPITAL SAMPLE**
Intercorrelation Matrix for Boundary Activity Scales

<table>
<thead>
<tr>
<th>VAR</th>
<th>Boundary Activity Informational</th>
<th>Boundary Activity Interactional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity Informational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boundary Activity Interactional</td>
<td>**** 7336</td>
<td></td>
</tr>
</tbody>
</table>

Decimals omitted above.

See list of symbols for interpretation of significance level notation.
Pattern Discernibility

From the propositions developed above, we see the second important set of variables as those we have termed pattern discernibility. This class of variables, which we shall term the contingent independent variable set, represents several constructs presently popular in the literature that provide a conceptual linkage between environment and technological conditions and structure as a dependent variable.

The three constructs are uncertainty, task difficulty and task variability. The first has been the focus of extensive work by Duncan (1971), Sathe (1974) and Ford (1975). The latter two constructs emerge from the theoretical framework of Perrow (1967).

In an early effort to measure uncertainty, Lawrence and Lorsch (1967) developed several questions asked of chief executives. Among referents in this short questionnaire were issues of inability to predict, inability to understand, and inability to discern causation. Following this, Duncan (1971), in an interview approach, sought to determine similar states held by respondents relative to a number of major issues in decision making. Sathe (1974), building on the foundation set by Duncan and Lawrence and Lorsch, sought to rebuild the uncertainty scale through interviews and finally emerged with a short list of valid items that might be administered via questionnaire.
He was successful in this approach, and developed a thirteen item scale which exhibited both face validity as well as limited construct validity (as evidenced by its correlation with various theoretically developed structure variables), along with adequate internal consistency. As the purpose of this study was not the development of scales, but rather explorations using presently available scales with some validity, it was decided to use the Sathe scale in original form. Two problems emerged that modified this decision. First, three of the Sathe items have as their referent environmental conditions (e.g. technological change, social and political change). As such, use of these items may have threatened a tautological link with boundary activities. In fact, these items appeared to have little face validity in measuring uncertainty—they appeared to be more accurately measuring determinants of uncertainty. As Duncan points out (1971), environmental conditions have the potential for creating uncertainty, but are not uncertain inherently. As Downey and Slocum (1975) point out, uncertainty is not a characteristic of the environment, but a characteristic of individuals who have enacted their environments. Reflecting these arguments, it was decided to eliminate from the scale those items concerned with social, political or technological change and concentrate on the balance of items, closer to the construct of uncertainty (lack of knowledge, inability to predict or understand).
A second problem that emerged was extreme low item-total correlations for two items in both the hospital and agencies sample. Both were in the range of zero and were totally heterogeneous to the balance of the scale; thus, these two items were dropped from both samples. This represented the only deviation from original decision rules about keeping scales intact. Table 4-20 presents the internal consistency reliability data for the remaining eight items. The scale appears adequate for hypotheses testing; a possible explanation for the low internal consistency is the multi-dimensionality of the uncertainty construct.

In an early paper, Perrow (1967) suggested two critical variables of use in explaining different organizational structures. These two dimensions of analyzability and variability in terms of the organization's raw materials have been translated into the constructs of task difficulty and task variety by Van de Ven, Delbecq and colleagues (1974a, 1974b). We have discussed the theoretical framework above; our concern at this point is on operationalization.

The task difficulty dimension is operationalized by the Van de Ven group through a series of seven questions. In the studies to date, the task difficulty scale has had reliabilities as high as .90. At the same time, the close operational link between this dimension and major Weberian dimensions suggests the scale has demonstrated limited construct validity.
### TABLE 4-20
INTERNAL CONSISTENCY DATA
Scale: Uncertainty (Sathe)

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can tell about meeting expectations of those dealt with. (R)</td>
<td>022</td>
<td>Hosp. (A): 7429 Hosp. (B): 5310</td>
</tr>
<tr>
<td>Certain about how others want the job done. (R)</td>
<td>036</td>
<td>Hosp. (A): 6672 Hosp. (B): 5760</td>
</tr>
<tr>
<td>Difficult to determine if method used was effective</td>
<td>042</td>
<td>Hosp. (A): 5373 Hosp. (B): 4410</td>
</tr>
<tr>
<td>Uncertain about how to act to meet expectations of those dealt with</td>
<td>049</td>
<td>Hosp. (A): 3754 Hosp. (B): 5810</td>
</tr>
<tr>
<td>Difficult to determine if a decision was incorrect</td>
<td>060</td>
<td>Hosp. (A): 3643 Hosp. (B): 5480</td>
</tr>
<tr>
<td>Have all information necessary for making decisions</td>
<td>071</td>
<td>Hosp. (A): 2445 Hosp. (B): 5350</td>
</tr>
</tbody>
</table>

* KR-8; All others based on modified alpha computation.

<table>
<thead>
<tr>
<th>S.D.</th>
<th>Scale Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.03</td>
<td>7196 Agencies</td>
</tr>
<tr>
<td>2.85</td>
<td>5455 Hosp. (A)</td>
</tr>
<tr>
<td>2.85</td>
<td>7080 Hosp. (B)</td>
</tr>
</tbody>
</table>

Decimals omitted above.
Considering the potential variability of the pretest sample, it was decided to adapt the Van de Ven items for administration in the diverse occupations (i.e. pretest) sample. Of the seven items, six were included and their wording revised. The disappointing results of the pretest are shown in Table 4-21, where we see the internal consistency of the scale to be just below .5, far below both our criterion as well as that recommended as adequate for hypotheses testing. As a result, the decision was made to use the actual Van de Ven items in the final questionnaire, assuming the reliabilities would increase as long as the scale was not sample specific. Unfortunately, the results still suggest the scale lacks the internal consistency enjoyed by the remaining scales of the study. At best, it is just above the .5 level, suggesting great caution in its use and less confidence for its results in hypothesis testing. An alternative explanation for these results again is a lack of unidimensionality in the construct and the sample specificity of the original scale.

Perrow's (1967) seminal paper on comparative analysis of organizations suggested a second dimension, task variability, and viewed it as the degree of variability in raw materials worked on within the organization. This focus was primarily on the organization as level of analysis; however, it is the contention here that
## TABLE 4-21
INTERNAL CONSISTENCY DATA
Scale: Task Difficulty (Van de Ven)

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Pretest #</th>
<th>Pretest</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp. (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How long is it before you know work effort is successful</td>
<td>015</td>
<td>14</td>
<td>1552</td>
<td>3271</td>
<td>-0124</td>
<td>4300</td>
</tr>
<tr>
<td>Come across specific difficult problems don't know how to solve immediately</td>
<td>073</td>
<td>56</td>
<td>4557</td>
<td>0702</td>
<td>3153</td>
<td>4710</td>
</tr>
<tr>
<td>Thinking time spent solving such problems</td>
<td>074</td>
<td>21</td>
<td>2497</td>
<td>3258</td>
<td>1499</td>
<td>3950</td>
</tr>
<tr>
<td>Aware of what the results of effort will be. (R)</td>
<td>102</td>
<td>81</td>
<td>5182</td>
<td>1432</td>
<td>1455</td>
<td>4970</td>
</tr>
<tr>
<td>Clearly defined body of knowledge or subject matter as guide. (R)</td>
<td>108(b)</td>
<td>74</td>
<td>1598</td>
<td>1510</td>
<td>3206</td>
<td>5670</td>
</tr>
<tr>
<td>Understandable sequence of steps followed in doing work. (R)</td>
<td>113</td>
<td>20</td>
<td>-0066</td>
<td>5403</td>
<td>2624</td>
<td>5180</td>
</tr>
<tr>
<td>Can go to someone else for answer to something not known #</td>
<td>115</td>
<td></td>
<td>5225</td>
<td></td>
<td>2110</td>
<td>4680</td>
</tr>
</tbody>
</table>

# Not included in pretest

* KR-8; All others based on modified alpha computation.

<table>
<thead>
<tr>
<th>S.D</th>
<th>Scale Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.66</td>
<td>.4817 Pretest</td>
</tr>
<tr>
<td>4.08</td>
<td>.5423 Agencies</td>
</tr>
<tr>
<td>3.34</td>
<td>.3548 Hosp. (A)</td>
</tr>
<tr>
<td>3.34</td>
<td>.5890 Hosp. (B)</td>
</tr>
</tbody>
</table>
this construct has considerable import at the individual level of analysis. Besides, it is highly probable that in an organization of more than minimal complexity, there exists a variety of positions, each with different degrees of variability in the stimuli faced in the particular position. This is a crucial notion to which we address ourselves: that within organizations, to varying degrees, organizational positions may entail working with varying amounts of different stimuli. Some positions, as determined by organizational designers, are highly specialized and limit the individual's focus of attention to only few stimuli. Others, because of the nature of the material or issues dealt with, may face different stimuli and different configurations of stimuli over time.

Scales focusing on task variability have received the attention of several researchers. Most notable among these are the Van de Ven group (1974b) and work by Lynch (1974) in the libraries at the University of Wisconsin. In these works, the idea of variety has been tapped more than variability. We shall continue this approach. In preparing a list of potential items for measuring these scales, these references served to generate a large number of items exhibiting face validity (in measuring variety of job stimuli). As was done for the rest of the scales below, these items were subjected to a factor analysis that allowed us to extract those items loading greater than .6 on the first unrotated factor.
Selection of items with face validity presented some difficulty for two reasons. First, especially in the work of Lynch (1974), items emerging from a large factor analysis of library staff responses had both descriptive and evaluative orientations. Many of the items, presumably representing Perrow's variability concept were taken from Hall's (1962) scale measuring routineity. As such, many of these items were phrased in highly affective fashion. As an example, items referring to jobs as monotonous or boring were included as descriptions of activities. This study was not intended to be one of evaluation or attitudes towards job characteristics, but rather, one of describing job characteristics. Thus, Lynch's scale was first purged of items with any affective or evaluative denotation before entry into the initial matrix of intercorrelated items with face validity.

A second problem was one of tautology between variety and the formalization and discretionary dependent variables. Many of the items purportedly measuring the variety of stimuli impinging on individuals (in especially the work built on Hall's foundations), refer to the routineness of response. Since the nature of response was the dependent variable of the study, all items were checked to insure the referent was the set of stimuli experienced in the position. In this way, an inadvertent tautology between a contingent independent and dependent variable was avoided.
Table 4-22 details the internal consistency data for the variety measure. With the exception of the alpha statistic in the hospital sample, no item-total correlations are below .5 and the overall internal consistency reliability is easily in the desired range. Notice also that in each case we clearly avoid any reference to responses.

Intercorrelations among the three contingent independent variable measures appear in Tables 4-23 and 4-24 for the agencies and hospital samples, respectively. The agencies sample, although small, exhibits considerable convergence and suggests a single dimension. In the hospital sample, with a more diverse sampling of tasks representing various technologies, the results are more complex. Uncertainty and task difficulty, as we might expect, are weakly inversely related.

**Dependent Variables**

The dependent variable of interest in this study is the degree to which performance programs used by individuals in carrying out organizational activity are pre-structured or alternatively, developmental or discretionary in nature. The idea of performance program is a convenient way (March and Simon, 1958) to depict the activities and procedures used in carrying out tasks. The performance program, then, is the set of response procedures employed...
## TABLE 4-22
### INTERNAL CONSISTENCY DATA

**Scale:** Variety

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Pretest</th>
<th>Pretest</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp. (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find something new happening in job</td>
<td>034</td>
<td>53</td>
<td>7209</td>
<td>5339</td>
<td>4676</td>
<td>6670</td>
</tr>
<tr>
<td>Something different to do</td>
<td>059</td>
<td>71</td>
<td>6469</td>
<td>8553</td>
<td>5814</td>
<td>7300</td>
</tr>
<tr>
<td>Work is of different kinds</td>
<td>075</td>
<td>23</td>
<td>6520</td>
<td>8113</td>
<td>5294</td>
<td>6920</td>
</tr>
<tr>
<td>Variety in events that cause work</td>
<td>093</td>
<td>17</td>
<td>7207</td>
<td>5004</td>
<td>5311</td>
<td>6860</td>
</tr>
<tr>
<td>Variety in a day's work</td>
<td>098</td>
<td>07</td>
<td>7754</td>
<td>7821</td>
<td>6813</td>
<td>7910</td>
</tr>
<tr>
<td>Duties change from day to day</td>
<td>107</td>
<td>83</td>
<td>5559</td>
<td>6840</td>
<td>2922</td>
<td>5270</td>
</tr>
</tbody>
</table>

*KR-8; All others based on modified alpha computation.*

<table>
<thead>
<tr>
<th>S.D</th>
<th>Scale Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.08</td>
<td>.8525 Pretest</td>
</tr>
<tr>
<td>4.72</td>
<td>.8709 Agencies</td>
</tr>
<tr>
<td>4.18</td>
<td>.7314 Hosp. (A)</td>
</tr>
<tr>
<td>4.18</td>
<td>.8360 Hosp. (B)</td>
</tr>
</tbody>
</table>

Decimals omitted above.
### TABLE 4-23
**AGENCIES SAMPLE**
Intercorrelation Matrix of Pattern Discernibility

<table>
<thead>
<tr>
<th>VAR</th>
<th>Uncertainty</th>
<th>Task Difficulty</th>
<th>Variety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty</td>
<td>****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>5887</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>* 4638</td>
<td>*** 5168</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 4-24
**HOSPITAL SAMPLE**
Intercorrelation Matrix of Pattern Discernibility

<table>
<thead>
<tr>
<th>VAR</th>
<th>Uncertainty</th>
<th>Task Difficulty</th>
<th>Variety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>3619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>* -1803</td>
<td>* 1460</td>
<td></td>
</tr>
</tbody>
</table>

Decimals omitted.
in performing the transformations or decisions that occur in an organizational position. For the assembly-line worker, as an example, the performance program is often simplistic. It may consist simply of obtaining a particular part from a large quantity of parts and fashioning it onto an assembly periodically as these objects pass before the work site. His performance program is the full set of action and decisions made on the already partly transformed raw materials. March and Simon alternatively refer to the performance program as the evoked set (of responses).

For the social case worker, the performance program would consist of the questions asked, forms completed, information obtained in early stages of therapeutic relationships, and the incremental processes of interaction that later seek to aid the client in solving his/her unique problem. The full range of activities performed by the caseworker in response to the stimulus of the client's need for information or relief is the performance program.

To facilitate the testing of hypotheses, an important distinction must be developed between two potential perspectives in measuring characteristics of performance programs. Two levels of abstraction are relevant in understanding and description of individual performance programs: The basic, concrete content of the program
and the more abstract question of overall structuring. The content of the performance program is the full enumeration of actual activities performed by the individual in responding to job stimuli. In the case of the assembly-line worker, content of the program would include specific details on: size, position, location, diameter of the part and perhaps a torque specification. These characteristics are all content-specific. They detail what is being worked on and physical characteristics of the process whereby the work is carried out. Similarly, the specification of what forms and how many copies of each necessary for the social worker to fulfill client needs is the concrete content of that performance program.

Abstractions, such as performance program structuring, however, can be clearly differentiated from the job description-type characteristics reflected in the performance program content. The abstract idea of program structure would refer to a more general dimension applicable across jobs which require working with different forms of raw materials.

Structure characteristics would include degrees of decision-making involved, the amount of discretion or judgment permitted, the extent of formalization in the content of the position and other dimensions that all relate to how the specific materials or procedures are used and to what degree a predetermination for
behavior exists. In order to study content, we would examine job descriptions and note references to specific parts, forms, procedures or activity outlines. When studying structural characteristics of performance programs, we study somewhat more abstract dimensions, such as the degree to which procedures are developed individually, to what degrees they are prespecified, or the degree to which patterns of behavior must adhere to rules. Structure is thus related to content since the degree of structure has specific content as its referent.

Our focus in this study is squarely on the latter approach—that of examining the more abstract characteristics of performance programs structure. As noted above, our need to find as accurate depiction as possible of the activities performed leads us to each individual for a perceptual impression of the degree to which performance programs are seen as structured or discretionary.

As noted above, the shift from a higher level of abstraction at which we discuss the general characteristics of performance programs is interesting, for it clearly supplies us with a long needed approach isomorphic to many familiar ideas about organizational structure. What we term the abstract characteristics of performance programs is easily understood as the lower level counterpart of what we often term organization or unit structure. At the unit level, we focus on the structural arrangement
of decision making and activity. We might find the
degree of overall bureaucratization (Weber, 1948) or
examine various dimensions of it (Hall, 1962; Duncan,
1971; Leifer, 1975). By borrowing the evoked response
set idea from March and Simon (1958) using the abstract
interpretation, we see strong analogies between, for
example, the dependence on one's supervisor (at the
individual level) and the overall use of hierarchy
for decision making (at the unit level). Similarly,
measures of formalization or rule/procedure use by
work units are most frequently aggregations across all
members of the work unit (Sathe, 1974; Hage and Aiken,
1967; Pennings, 1973). As noted briefly above, recent
evidence presented by Pennings (1973), Sathe (1975),
and Ford (1975) casts doubt on the convergence between
what Sathe (1975) calls the perceptual and objective
approaches to organizational structure. As our focus
in this study is on perceived performance program charac-
teristics (as reported by respondents), we pursue our
measurement along purely perceptual lines. One implication
of this is that although these performance program charac-
teristics are to be somewhat isomorphic with organizational
structure measures, this isomorphism is a limited one.
We are suggesting analogies between perceptual measures
of individual job characteristics and non-objective
measures of organizational structure. With this issue
in mind, operationalization of structure dimensions at lower levels of analysis was facilitated considerably. This approach also supplies a new and exciting level of analysis for more macro studies. Below, we examine each of the four variables used in this study to represent the more abstract characteristics of evoked sets of responses to stimuli. For each, details on item selection, validity and internal consistency are presented below.

One Weberian dimension that permeates much of the literature in organizational structure is the degree to which a hierarchy of authority exists in the organization for decision making. At the level of individual performance programs, response sets may differ in the degree to which there is dependence on one's supervisor. Unfortunately, the cross-sectional nature of this study could not focus on the intra-individual covariation along this dimension over time, as there exists literature to argue for differential supervisor-subordinate involvement over time in the role-making process (Graen, Dansereau, Minami, 1972; Dansereau, 1975; Graen, Dansereau and Cashman, 1973). In this study, no relationship was found between time in position and supervisory dependence. One reason may have been the crude measure of time in position (years, without focusing on months).
Potential items for measuring supervisory dependence were assembled in the pretest questionnaire, described above. Items from the Hall (1962), Duncan (1971) and Sathe (1973) studies measuring the hierarchy of authority were examined. Those exhibiting potential face validity (in depicting the extent to which there is dependence on one's supervisor) were entered into the alpha factor analysis as described above. The cutoff point for inclusion was a loading of at least .5 on the largest unrotated factor.

Table 4-25 presents the items which emerged from the factor analysis, the question number on the final questionnaire, the question number on the pretest questionnaire, and the item-total intercorrelations for each of the eight items in each sample. The data at the bottom of the page illustrate the internal consistency reliability data for the full scale in each of the three samples. With the exception of the modified alpha computation for the hospital sample, the internal consistencies are all in the desired range.

A second familiar Weberian dimension (often suggested as two separate dimensions) is the extent to which rules, regulations, procedures and standard practices are employed. This dimension is a familiar hallmark of bureaucracy in the more popular literature. Again, items from the Hall, Duncan and Sathe studies provided a potentially large
# TABLE 4-25

INTERNAL CONSISTENCY DATA

Scale: Supervisory Dependence

<table>
<thead>
<tr>
<th>Content</th>
<th>Var/Ques.</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ques. #</td>
<td>Pretest #</td>
</tr>
<tr>
<td>When unusual situations arise, how frequently go ahead without supervisor's approval? (R)</td>
<td>044</td>
<td>39</td>
</tr>
<tr>
<td>How often must ask sup. before doing a job?</td>
<td>046</td>
<td>60</td>
</tr>
<tr>
<td>How often orders from higher-up?</td>
<td>064</td>
<td>64</td>
</tr>
<tr>
<td>How frequently does sup. check work?</td>
<td>066</td>
<td>68</td>
</tr>
<tr>
<td>When prob. arise, how often must go to sup.?</td>
<td>068</td>
<td>78</td>
</tr>
<tr>
<td>When new type of decision, how often must obtain approval from sup.?</td>
<td>072</td>
<td>27</td>
</tr>
<tr>
<td>How much decision-making on job without consulting sup.? (R)</td>
<td>081</td>
<td>24</td>
</tr>
<tr>
<td>How much awaits sup. approval?</td>
<td>094</td>
<td>22</td>
</tr>
</tbody>
</table>

* KR-8; All others based on modified alpha computation.

<table>
<thead>
<tr>
<th>Scale Reliability</th>
<th>Decimals omitted above.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.D. Scale Reliability</td>
<td>Pretest</td>
</tr>
<tr>
<td>5.86</td>
<td>.8131 Pretest</td>
</tr>
<tr>
<td>5.53</td>
<td>.8422 Agencies</td>
</tr>
<tr>
<td>4.76</td>
<td>.7307 Hosp. (A)</td>
</tr>
<tr>
<td>4.76</td>
<td>.8170 Hosp. (B)</td>
</tr>
</tbody>
</table>
inventory of questions. These items were augmented by several from studies by Hage and Aiken (1967) and Lynch (1974). As a result of the factor analysis (again with the loading .5 as the criterion for final scale inclusion), the twelve items shown in Table 4-26 comprised the formalization scale. As shown in the table at the bottom of the page, there was considerable variance in these scores and all calculations for internal consistency were just under the .8 mark. Most noticeable in the body of the table are the weaknesses of the fourth, sixth and twelfth items for the agencies sample. Again, in spite of this lack of perfect consistency across samples, the need to maintain scale consistency for hypotheses testing suggested the scales should remain intact and uniform.

One aspect common in the later operationalizations of the Weberian dimensions is degree of participation in decision making. From the definition above of the performance program characteristics of interest, the idea of discretionary activity is important. Reflecting the theoretical framework, we should expect substantial relationships between particularly the uncertainty of stimuli or the variability of stimuli and the amount of judgment or discretion perceived in the performance program. In effect, we are also suggesting discretion as a counterpart to programmed, formalized activity or dependence on one's supervisor.
TABLE 4-26
INTERNAL CONSISTENCY DATA
Scale: Formalization

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Pretest</th>
<th>Pretest</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp.*(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems handled adequately by following</td>
<td>029</td>
<td>37</td>
<td>4425</td>
<td>4912</td>
<td>3425</td>
<td>4410</td>
</tr>
<tr>
<td>standard procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same steps followed</td>
<td>037</td>
<td>30</td>
<td>4772</td>
<td>6229</td>
<td>5086</td>
<td>6000</td>
</tr>
<tr>
<td>Procedures available for effectively</td>
<td>048</td>
<td>38</td>
<td>4311</td>
<td>3702</td>
<td>3379</td>
<td>4780</td>
</tr>
<tr>
<td>dealing with problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rules manual covers what is worked on</td>
<td>052</td>
<td>46</td>
<td>3750</td>
<td>1914</td>
<td>4770</td>
<td>5950</td>
</tr>
<tr>
<td>Follow same procedures during day</td>
<td>055</td>
<td>42</td>
<td>4679</td>
<td>5392</td>
<td>4912</td>
<td>5880</td>
</tr>
<tr>
<td>Activity done because rules must be</td>
<td>079</td>
<td>08</td>
<td>4188</td>
<td>-0530</td>
<td>3046</td>
<td>4310</td>
</tr>
<tr>
<td>obeyed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job is repetition of procedures</td>
<td>080</td>
<td>10</td>
<td>2504</td>
<td>4235</td>
<td>3941</td>
<td>5150</td>
</tr>
<tr>
<td>Activity depends on knowledge of standard</td>
<td>092</td>
<td>05</td>
<td>4539</td>
<td>4366</td>
<td>3364</td>
<td>4580</td>
</tr>
<tr>
<td>procedures and practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job duties specified</td>
<td>103</td>
<td>79</td>
<td>5496</td>
<td>7760</td>
<td>5791</td>
<td>6720</td>
</tr>
<tr>
<td>Decisions made on job are handled with</td>
<td>104</td>
<td>85</td>
<td>5188</td>
<td>8542</td>
<td>6508</td>
<td>7260</td>
</tr>
<tr>
<td>existing procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems handled by following written</td>
<td>106</td>
<td>86</td>
<td>5240</td>
<td>3790</td>
<td>5418</td>
<td>6790</td>
</tr>
<tr>
<td>and verbal instructions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems not handled with available</td>
<td>108(a)</td>
<td>84</td>
<td>4630</td>
<td>0933</td>
<td>2063</td>
<td>4070</td>
</tr>
<tr>
<td>instruction reported in standard way</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S.D.  Scale Reliability
7.79  .7904 Pretest
6.68  .7775 Agencies
6.57  .7682 Hosp. (A)
6.57  .8210 Hosp. (B)

* KR-8; All others based on modified alpha computation.
Decimals omitted above.
For building this scale, the Duncan-Sathe measures of participation in decision making and judgmental activity were entered into the pre-test questionnaire. For this scale, the potential pool of items was so large and the homogeneity so great, it was decided to use the criterion of a .6 or better loading as the cutoff for scale inclusion. The resulting scale is shown in Table 4-27; the discretion scale emerged as the strongest one in the study. The ten items comprising the scale were found, when combined, to have very great variability in the diverse occupation pretest sample. Considerable variability was also found in the two samples for hypotheses testing; as a result, the scale approached .9 in its various measures of internal consistency. Of the item-total correlations, only ten percent in the agencies sample and twenty percent in the hospital (A) sample were less than .5. This scale is particularly suggested as useful for future research in this area.

Though not every Weberian dimension has an analog at the individual level (e.g. division of labor among individuals), one important interpretation suggested by March and Simon (1958) in developing the performance program idea has yet to be operationalized. This aspect we term developmental activity and corresponds to their idea of the potential in some positions for development of performance programs in an incremental, strategic
### TABLE 4-27
INTERNAL CONSISTENCY DATA
Scale: Discretion

<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Pretest</th>
<th>Pretest</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp.*(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in making decisions involving job responsibilities</td>
<td>026</td>
<td>31</td>
<td>6703</td>
<td>7661</td>
<td>4817</td>
<td>6030</td>
</tr>
<tr>
<td>Take active part in decisions that concern job</td>
<td>031</td>
<td>69</td>
<td>6430</td>
<td>6080</td>
<td>5846</td>
<td>6940</td>
</tr>
<tr>
<td>Permitted to use judgment in handling problems</td>
<td>050</td>
<td>73</td>
<td>7060</td>
<td>7169</td>
<td>5243</td>
<td>6250</td>
</tr>
<tr>
<td>Decisions related to job made without involvement. (R)</td>
<td>056</td>
<td>52</td>
<td>6204</td>
<td>4328</td>
<td>4360</td>
<td>5600</td>
</tr>
<tr>
<td>Participate in decision to hire new staff</td>
<td>065</td>
<td>26</td>
<td>6111</td>
<td>5662</td>
<td>4625</td>
<td>5540</td>
</tr>
<tr>
<td>Participate in decisions or adopting new policies</td>
<td>070</td>
<td>61</td>
<td>6457</td>
<td>6297</td>
<td>6085</td>
<td>7060</td>
</tr>
<tr>
<td>Control over how job is done</td>
<td>076</td>
<td>15</td>
<td>7450</td>
<td>8143</td>
<td>6076</td>
<td>7000</td>
</tr>
<tr>
<td>What is done is left up to individual</td>
<td>086</td>
<td>18</td>
<td>7072</td>
<td>6948</td>
<td>5148</td>
<td>6170</td>
</tr>
<tr>
<td>Leeway in doing work</td>
<td>088</td>
<td>16</td>
<td>6258</td>
<td>6198</td>
<td>5416</td>
<td>6300</td>
</tr>
<tr>
<td>Responsibility in deciding how work to be carried out</td>
<td>090</td>
<td>03</td>
<td>6832</td>
<td>7372</td>
<td>6804</td>
<td>7570</td>
</tr>
</tbody>
</table>

* KR-8; All others based on modified alpha computation.

<table>
<thead>
<tr>
<th>S.D. Scale Reliability</th>
<th>Pretest</th>
<th>Fed.</th>
<th>Hosp. (A)</th>
<th>Hosp. (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.23</td>
<td>0.8975</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.79</td>
<td>0.8922</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.55</td>
<td>0.8297</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.55</td>
<td>0.8740</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Decimals omitted above.
fashion. For some organizational positions, the nature of stimuli demands a developmental, gradual process of trial and error or experimentation in order to find the most appropriate strategies for satisficing in response. This is represented here by the operationalization of developmental activity. Unfortunately, this variable was developed after administration of the pretest questionnaire. The scale properties demonstrated in the agencies and hospital samples are quite favorable. Table 4-28 summarizes the items and internal consistency data for this scale. While somewhat weak in internal consistency using the modified alpha criterion, the two remaining measures of internal consistency show this scale to be in the targeted range.

Tables 4-29 and 4-30 provide data of interest to the question of intercorrelation among the four (presumably oblique) dimensions of performance program structure. The data for the agencies sample show considerably more convergence than that for the hospital sample. The direction of intercorrelations is as we would expect (i.e. positive relationships between supervisory dependency and formalization; inverse relationships between these two and the last two and direct relationships between discretionary and developmental activity). The data, on balance, do not argue for a single dimension of performance program structuring; thus, in the results of hypotheses testing below, separate results and
<table>
<thead>
<tr>
<th>Content</th>
<th>Ques. #</th>
<th>Agencies</th>
<th>Hosp. (A)</th>
<th>Hosp.*(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop S.O.P. yourself</td>
<td>023</td>
<td>6623</td>
<td>4624</td>
<td>6120</td>
</tr>
<tr>
<td>Use trial/error methods in order to get work done effectively</td>
<td>047</td>
<td>2954</td>
<td>4329</td>
<td>5670</td>
</tr>
<tr>
<td>Develop new strategies for dealing with work related problems</td>
<td>053</td>
<td>6819</td>
<td>6257</td>
<td>7430</td>
</tr>
<tr>
<td>Adopt new methods for dealing with work</td>
<td>057</td>
<td>7018</td>
<td>5871</td>
<td>7050</td>
</tr>
<tr>
<td>Deviate from standard practices in order to be effective in solving problems</td>
<td>061</td>
<td>5014</td>
<td>4772</td>
<td>5970</td>
</tr>
<tr>
<td>Normal procedures inadequate for accomplishing work</td>
<td>062</td>
<td>5564</td>
<td>4530</td>
<td>5800</td>
</tr>
<tr>
<td>Time is spent developing new procedures or patterns for accomplishing work</td>
<td>089</td>
<td>7172</td>
<td>4388</td>
<td>5744</td>
</tr>
<tr>
<td>Develop new procedures over time</td>
<td>099</td>
<td>6721</td>
<td>3393</td>
<td>5410</td>
</tr>
<tr>
<td>Successful in solving job related problems by developing new approaches?</td>
<td>109</td>
<td>6298</td>
<td>2646</td>
<td>4610</td>
</tr>
</tbody>
</table>

* KR-8; All others based on modified alpha computation.

**Scale Reliability**

- 5.76 .8587 Agencies
- 4.56 .7555 Hosp. (A)
- 4.56 .8250 Hosp. (B)

Decimals omitted above.
### Table 4-29: Agencies Sample
Intercorrelation Matrix for Performance Program Scales

<table>
<thead>
<tr>
<th>VAR</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisory Dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formalization</td>
<td></td>
<td>4063</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discretion</td>
<td>*</td>
<td>****</td>
<td>**</td>
<td>***</td>
</tr>
<tr>
<td>-5903</td>
<td></td>
<td>-3505</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developmental Activity</td>
<td>-3998</td>
<td>-6217</td>
<td>5398</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4-30: Hospital Sample
Intercorrelation Matrix for Performance Program Scales

<table>
<thead>
<tr>
<th>VAR</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisory Dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formalization</td>
<td>*</td>
<td>1872</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discretion</td>
<td>****</td>
<td>**</td>
<td>-2077</td>
<td></td>
</tr>
<tr>
<td>-4506</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developmental Activity</td>
<td>-2713</td>
<td>-3732</td>
<td>3597</td>
<td></td>
</tr>
</tbody>
</table>
interpretations will be provided for each of these dependent variable dimensions.

Alternative Explanation Items

Among the possible sources of alternative explanation suggested in Chapter Three are time in position, time with the organization, role preponderance (number who occupy role), unit size, age of respondents, professional activity, and level.

As we find in Chapter Five, only controls for level have any impact on our hypothesized correlation matrices. Details on measures of these variables, along with several measuring auxiliary hypotheses from the boundary-spanning literature are found in Chapter Five.
CHAPTER FIVE
RESEARCH FINDINGS

This chapter delineates the results of data analysis for testing the propositions developed earlier in the study. In this chapter, focus is on results and their implications for retention or rejection of hypotheses derived from the propositions above. We also explore the effects of controlling for various alternative explanations. Chapter Six explores the results further and discusses factors which may account for certain interesting relationships obtained. A final chapter suggests implications for further theory, research and practice.

This chapter consists of five sections. The first section outlines the statistical analyses developed to test hypotheses derived from the four general propositions above. In each of the four following sections, the credibility of each of the propositions is discussed as specific results are presented.

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OUTLINE OF STATISTICAL ANALYSIS

Several types of analyses will be required to explore the credibility of the four propositions. For each of propositions one, two and three the hypothesized matrix of zero-order intercorrelations among relevant scales will be used as a base. From these matrices, we will examine deviations in actual zero-order correlations and first order partial correlations, controlling for other variables in the framework as well as sources of alternative explanation. This was done to consider pairwise relationships between each general construct, holding constant variation in the third construct. For each proposition, a matrix of observed correlations with levels of significance will be reported. Deviations within this matrix from the hypothesized matrix will be examined. We then present all matrices of first order partial correlations that include any deviating cell entry. The following decision rules were used to determine if significant deviation existed in a cell. The first criterion was any cell entry changing its level of significance (for all correlations significant at a probability less than .05) with subsequent partialling. Change here includes both increase or decrease in the significance level. A second criterion was the observation of a change of more than ten percent in the magnitude of a correlation coefficient (checked for all correlations significant at less than the .05 level). Thus, if either of these
criteria were observed in any cell of the respective matrix, the entire matrix of first-order partials was reported. For cases in which there was no change after controlling for other variables, it was believed reporting of such matrices was trivial. For each set of pairwise relationships, then, first-order partials were generated controlling individually for each of the remaining variables in the framework. In addition, partials were computed controlling for the set of alternative explanation variables. As noted and explained in Chapters Three and Four, these variables included: years in job, years with hospital, age, unit size, role preponderance, organization level and professional activity.

Of the potential pool, the data exhibited rare instances of significant deviation when controlling for the alternative explanation set, but frequent deviation when controlling for the remaining set of variables. Finally, for each proposition the $n^{th}$ order partial correlation matrix was presented, where $n$ represents the number of variables having a significant partialling effect on any cell of the matrix. In the case of the hospital sample, adequate sample size permitted this procedure to be accomplished using Pearson product-moment correlations and partial correlations. For the agencies, the small sample size (24) was judged to be inadequate for application of parametric statistics. Thus, Spearman rho correlation coefficients were used
to obtain cell entries in the observed correlation matrix. These observed rho's were compared to those entries in the hypothetical matrix. The small sample size also prohibited any control activities and thus partial correlations were not used in the sample. Proposition Four was tested in two ways, one test providing less confirmation, but with more confidence. First, the observed matrix of intercorrelations pairwise between each of the six possible interactions terms and each of the dependent variables was assembled and its deviations from the hypothesized values examined. This highly supportive, though less rigorous method of analysis was deemed inadequate and thus, regression results, using a standard, controlled procedure were employed to determine the level of significance of the contribution to multiple coefficients of determination found by adding the interaction term to explanatory equations. Following the procedure outlined by Kerlinger and Pedhazar (1973), twenty-four regression equations were constructed, corresponding to the twenty-four cells of the hypothesized correlation matrix. Each boundary activity dimension was used as an initial independent variable, along with each of the three contingent independent variables as a second variable. In this uniformly followed procedure, the boundary measure was forced into the regression first, the contingent independent variable second, and finally, the interaction term for the two. This procedure was followed to allow the most conservative
test of this proposition (i.e. that it is the interaction of boundary activity and lack of pattern discernibility that are associated with performance program characteristics). Boundary measures were thus given extra opportunity to account for variation in the dependent variable vector, since they were forced to enter the regression first. Many of the results found in analysis of the twenty-four regression equations duplicated earlier results in the partial correlation analyses. As the regression equations were designed to provide information on interaction term significance, only reported were the four equations in which the interaction increment to the multiple coefficient of determination was significant at less than the .10 level. For each, a full specification of each stage of the regression is presented. This includes step-by-step values of the multiple correlation, the coefficient of determination, the standard error of estimate, the overall significance of the regression, and the significance of each independent variable in the regression. Also included are the step-by-step estimates of the best linear unbiased estimates for regression parameters. In all four cases, the sample standard deviation of each dependent variable exceeds the standard error of estimate found in explaining variation for each variable. The final section of results includes a brief analysis of the relationships between some of the ancillary data discovered in further questions about boundary activity.
PROPOSITION ONE: RESULTS

We shall first briefly present results from the agencies sample, then those from the hospital sample.

Table 5-1 illustrates the observed intercorrelations of the set of contingent independent variables and the performance program structure, or depenent variables. All entries are Spearman rho correlation coefficients. For the balance of this study, the notation indicated in the list of symbols (noted prior to the first chapter) will be followed. This includes notation on levels of significance. All decimals are omitted.

This agency data matrix contains cell entries that are 91 percent in the appropriate directions. Of the twelve correlations, 67 percent are significant at less than the .05 level, lending support for this aspect of the theoretical framework. Of particular note is the formalization dimension, representing the degree of reliance on prestructured, standard sets of evoked responses to stimuli. As the data indicates, the greater the degree of inability to discern patterning in the stimuli experienced, the less the individual reports reliance on standard strategies that have been preset either by experience or organizational design specification. These results also help to confirm the theoretical frameworks suggested in much of the organization-environment literature and replicate the results of Duncan (1971), Sathe (1974), Delbecq and Van de Ven (1974) and Leifer (1975).
### TABLE 5-1
**AGENCIES SAMPLE**
Spearman RHO's For Testing Proposition One

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
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<td>*****</td>
<td>1467</td>
<td>4001</td>
</tr>
<tr>
<td>T. D.</td>
<td>-3498</td>
<td>****</td>
<td>3771</td>
<td>6006</td>
</tr>
<tr>
<td>Var</td>
<td>0544</td>
<td>*</td>
<td>0853</td>
<td>2336</td>
</tr>
</tbody>
</table>

n=24

*: p < .05  
**: p < .01  
***: p < .005  
****: p < .001

### TABLE 5-2
**HOSPITAL SAMPLE**
Matrix for Testing Proposition One

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unc</td>
<td>1366</td>
<td>-2210</td>
<td>-3259</td>
<td>0624</td>
</tr>
<tr>
<td>T. D.</td>
<td>-0263</td>
<td>****</td>
<td>-0150</td>
<td>2744</td>
</tr>
<tr>
<td>Var</td>
<td>-0482</td>
<td>-2028</td>
<td>3828</td>
<td>4268</td>
</tr>
</tbody>
</table>

n=145
As indicated in Chapter Three, developmental activity is often an alternative to formalization, appropriate when standard procedures and practices are not available or adequate. The data here represents this phenomenon clearly, as conditions of greater uncertainty and task difficulty for those in the agencies sample appear to require more developmental approaches or activity in which the goal is development of procedures. As noted above, this is an instance of what March and Simon (1958) term the development of performance strategies. This activity also appears appropriate when there is greater variety in perceived stimuli.

To a lesser degree, a similar relationship holds between the discernibility of pattern and the amount of discretion perceived in carrying out the role activities. There appears to be no meaningful relationship between the perceived variety of stimuli and the perceived amount of discretion.

In this sample, supervisory dependence (analogous to hierarchy of authority as dealt with in studies at higher levels of analysis) is closely linked to uncertainty and difficulty of the task performed.

Although unqualified support for the hypotheses in Proposition One has not been found, substantial replication of prior results and moderate evidence indicates we cannot reject the theoretical framework.
In the hospital sample, to which we devote greater attention below, the results are a bit more equivocal and in some cases, make aspects of the theoretical framework contingent still further on other conditions.

In many ways, the hospital results provide stronger data on which to make decisions regarding the credibility of the theoretical framework. The larger sample variation in the hospital allows us not only greater confidence in the scales, but also provides a base from which we can test a variety of alternative explanations. As we see below, the inability of most alternative explanations to reduce substantially or modify relationships, lends some support to their rejection and provides greater assurance of credibility in the theoretical positions from which the hypotheses were developed.

Two kinds of controls were established. First, alternative explanations outlined above (including experience in the role, age, unit size, level and the like) were measured via single items. Organizational level was measured by an organizationally supplied surrogate. Available to the researcher was classification by salary levels, suggested to represent an analogue of hierarchical level or magnitude of responsibility. Partial correlation results controlling for each were computed and will be reported on the basis of the decision rules outlined above.
We begin by viewing Table 5-2 that contains a depiction of the observed intercorrelations among the pattern discernibility and performance program dimensions for the hospital respondents. We compare these cell entries to the hypothesized relationships.

Of these cell entries, 75 percent are in the appropriate direction. As we see below, the remaining 25 percent of the coefficients, most of which are somewhat significant, provide some support for reinterpretation and modification of the theoretical framework. Initially, the most unequivocal support for the framework comes when viewing the linkage between the pattern discernibility variables and formalization and developmental activity. In the case of the latter two variables, all relationships are in appropriate directions, and five of the six correlations are significant at less than the .05 level. In the case of developmental activity, the greater the difficulty of tasks faced, the greater we find activity in the direction of developing newer strategies or approaches in solving problems. Here again, we see support for the framework of Van de Ven and his colleagues. The second Van de Ven dimension developed from the Perrow framework, that of variety, is also linked to greater developmental activity.
The strongest support for the theoretical framework is provided by the formalization data. All entries in the second column of the matrix represent significant findings in the hypothesized direction. They appear to indicate, as did the agencies sample, that the lesser the degree of discernibility in patterning of stimuli, the lesser the reliance on sets of rules procedures, or standard practices in order to respond to stimuli. This is especially true for more difficult tasks. As we shall observe later, even alternative explanations provide little reduction in this relationship.

Two sets of disappointing results are evident in the matrix. First, the supervisory dependence dimension, though not disconfirming our hypotheses about pattern discernibility, appears totally unlinked to difficulty of the task or variety in tasks faced.

The single most disturbing finding that strongly affects the credibility of the theoretical framework is the reported relationship between the uncertainty faced in the position and the level of discretion perceived. The strong negative relationship suggests that for most hospital employees, the greater the uncertainty faced in the job, the less the individual uses discretion or judgment in decision making.

As noted above, there exist in this study (as in any non-experimental, cross-sectional design) an infinite number of alternative explanations for the results obtained.
The larger the number of alternative explanations that can be rejected, the greater the confidence we can have in the construct validity of our concepts and the nomological net of which they are a part. From a short review of the literature above, we noted several alternative sources of variation that may have potentially generated spurious results. Among these are the number of years in the position, and/or number of years affiliated with the organization. These might be potentially causal explanations for many of the results obtained, as this set of intercorrelations referred to relationships among various components of stimuli experienced on jobs and characteristics of the sets of response to these stimuli. The longer an individual occupies a role, it may be argued, potentially, the less uncertainty, the easier the task, the greater the knowledge of procedures and responses. While plausible, controlling for both years in the position and years with the hospital produced no matrix entry changes as outlined in the decision rules above. Similarly, age of respondents had no common relationship in pairs of variables. One might suggest professional activity to possibly moderate certain of these relationships, for it provides individuals with more expertise and often reflects more intensive socialization processes (Hall, 1973). Here this was not the case, as professional activity (measured by summing questions 13 and 14) produced no significant changes.
Much of the macro literature (e.g., the Aston studies; Blau and Schoenherr, 1970) is filled with references to the important effect of size on organizational variables. Unit size, as measured by number in the unit, had no effect on the intercorrelations.

An additional potentially explanatory variable might be the degree to which the role is a significant part of the activities in the hospital. We might call this role preponderance and was measured by noting from organization charts how many individuals occupied each role. The results, when controlling for this variable, exhibit no significant deviation from the initially observed zero-order correlations.

An additional variable found in the literature (Thompson, 1967; Parsons, 1960) both theoretically and empirically complicates the picture. As these authors among others have noted, the level at which an individual finds himself in the organizational hierarchy may be informative, for it suggests a differentiation in terms of responsibility and typically compensation (Wyatt, et al, 1937). For Parsons, an entire theory of organizational structure and organization environment relationships is deeply embedded in the ideas of the three-tiered pyramid (institutional-managerial and technical). He suggests uncertainties and task complexities to be positively associated with hierarchical level, as is boundary activity. Thompson shared this perspective and incorporated it into
his understanding of the organization-technology-environment relationship. Even Perrow (1967) incorporated this distinction in hypotheses about structural properties of different suborganizations (levels).

From Table 5-3, we see the effects of controlling for organization level. As noted above, organizational level was not directly measured; rather, a surrogate was found available from study of organization charts—the measurement of job grade categories. Table 5-4 illustrates the intercorrelation of level with each set of variables. As we expected from the theory outlined in Chapter 3, level is directly related to boundary activity and lack of discernibility in pattern. It is strongly inversely related to supervisory dependence and formalization and directly related to discretion and development of activity.

Among the effects of controlling for level are a reduction in the relationships between task difficulty and formalization, task difficulty and developmental activity, and the correlations between variety and each of the performance program variables. These results are not hard to understand, when we consider how at least portions of the variation in these variables may be accounted for by the extent of responsibility or hierarchical position role incumbents.

Substantial components of the variance, especially for the performance program characteristics of supervisory dependence and formalization, appear to be common with
### Table 5-3
**Hospital Sample**
**Matrix for Testing Proposition One**

**First Order Partial Correlations Controlling for Level**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unc.</td>
<td>* 1440</td>
<td>*** -2229</td>
<td>**** -3557</td>
<td>0603</td>
</tr>
<tr>
<td>T.D.</td>
<td>0032 ****</td>
<td>05078</td>
<td>0689</td>
<td>2597 ****</td>
</tr>
<tr>
<td>Var</td>
<td>-0240 -1817</td>
<td>3678 ****</td>
<td>4171 ****</td>
<td></td>
</tr>
</tbody>
</table>

n=131

### Table 5-4
**Hospital Sample**
**Intercorrelations of Level and All Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Zero-Order Correlation with Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Activity: Informational</td>
<td>**** 3306</td>
</tr>
<tr>
<td>Boundary Activity: Interactional</td>
<td>1284</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>0189</td>
</tr>
<tr>
<td>Task Difficulty</td>
<td>1378</td>
</tr>
<tr>
<td>Variety</td>
<td>1165</td>
</tr>
<tr>
<td>Supervisory Dependence</td>
<td>**-2139</td>
</tr>
<tr>
<td>Formalization</td>
<td>**** -2352</td>
</tr>
<tr>
<td>Discretion</td>
<td>**** 3543</td>
</tr>
<tr>
<td>Developmental Activity</td>
<td>* 1449</td>
</tr>
</tbody>
</table>
variation in levels of responsibility of the hospital. As Table 5-3 indicates, controlling for level helps to clarify (increase) the relationship between uncertainty and each of the first three performance program variables. Obviously, as level accounts for some of the "error" variation found in measuring the performance program variables, controlling for this extraneous element improves our understanding of the theoretical linkage between uncertainty and characteristics of response sets.

Tables 5-5 and 5-6 respectively, indicate the observed matrix when controlling for the boundary activity informational and interactional dimensions. The results are similar, as we noted the high degree of intercorrelation between the two measures (.7336) in the hospital sample. From the tables, we see that controlling separately for each dimension of boundary activity lowers the correlations somewhat, except for the relationships between uncertainty and formalization.

Considering the evidence above, the most important matrix for establishing the credibility of hypotheses is Table 5-7. This matrix contains third-order partial correlations controlling for level, and both measures of boundary activity. The results here may be deflated just a bit, as the substantial correlation between the two measures of boundary activity may result in excessive reduction in magnitude of partial correlations. In spite of this, the results offer support for most elements of
### TABLE 5-5
**HOSPITAL SAMPLE**
Matrix for Testing Proposition One

**FIRST ORDER PARTIAL CORRELATIONS CONTROLLING FOR: BA-INFO**

<table>
<thead>
<tr>
<th>VAR</th>
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<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
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<td>-2827</td>
<td>1128</td>
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<td>-5159</td>
<td>-0830</td>
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<tr>
<td>Var</td>
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<td>-1845</td>
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<td>3739</td>
</tr>
</tbody>
</table>

n=131

### TABLE 5-6
**HOSPITAL SAMPLE**
Matrix for Testing Proposition One

**FIRST ORDER PARTIAL CORRELATIONS CONTROLLING FOR: BA-INT**

<table>
<thead>
<tr>
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<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
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<td>-2345</td>
<td>-2931</td>
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</tr>
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<td>-0205</td>
<td>-5188</td>
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<tr>
<td>Var</td>
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<td>-1943</td>
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<td>4105</td>
</tr>
</tbody>
</table>

n=131
### TABLE 5-7
**HOSPITAL SAMPLE**
Matrix for Testing Proposition One

**THIRD ORDER PARTIAL CORRELATIONS CONTROLLING FOR: BA-INFO, BA-INT; LEVEL**

<table>
<thead>
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<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
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<td>***</td>
<td>****</td>
<td>1053</td>
</tr>
<tr>
<td>T.D.</td>
<td>0082</td>
<td>****</td>
<td>-5101</td>
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</tr>
<tr>
<td>Var</td>
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<td>*</td>
<td>2941</td>
<td>3799</td>
</tr>
</tbody>
</table>

n=131

### TABLE 5-8
**AGENCIES SAMPLE**
Spearman RHO's for Testing Proposition Two

<table>
<thead>
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<th>T.D.</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
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<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>4857</td>
<td>3568</td>
<td>3548</td>
</tr>
<tr>
<td>BA-Int</td>
<td>**</td>
<td>2806</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>4771</td>
<td></td>
<td>5510</td>
</tr>
</tbody>
</table>

n=24
the theoretical framework, incorporating the revision in hypothesized relationship between uncertainty and discretion for hospital employees, discussed in the next chapter. The least equivocal support comes by viewing the correlations of pattern discernibility and the formalization and developmental activity variables. These results, highly supportive of the framework in Proposition One, appear to support the Weick (1969), Duncan (1971), Sathe (1974) perspectives and that supplied by the law of requisite variety. Additionally, the Merton, Selznick and Gouldner models of bureaucratic dysfunction as examined in March and Simon (1958) and Bobbitt, et al (1974) appear to have been confirmed. Further supportive data may be noted in the predicted and actual relationship of variety to discretion. The negative evidence found for the supervisory dependence data may in fact be due to the hierarchical decision-making processes prevalent in hospitals. The links between supervisory dependence and the Perrow dimensions are virtually meaningless. Experiencing a variety of stimuli, the data seems to indicate, implies little clear relationship with one's supervisor. As with task difficulty, this data suggests that depending upon other conditions (i.e. other organizational or interpersonal characteristics), the relationships may differ. Future research considering this relationship should include measures of processes commonly found in much of the leadership research (Kerr, Schriesheim,
Murphy and Stogdill, 1974; Graen, Dansereau and Minami, 1972). Of interest, as Graen and his colleagues have discussed, are the role making processes emerging from superior-subordinate interactions over time.

PROPOSITION TWO: RESULTS

From the data above, we have seen that the theoretical links between stimuli and response characteristics in organizational positions have been partially confirmed.

This data only answers portions of the questions raised in this research. For the balance of this study, our focus shifts to a consideration of performance program characteristics and the discernibility of pattern in organizational positions that are differentially boundary-spanning. Previously, we saw the hypothesized lack of relationships between boundary activity and the pattern discernibility variables. Following a full consideration of the literature in Chapter Two, we suggested that much of the boundary literature had mistakenly attempted to create a tautology between environmental conditions and uncertainty. As a result, we hypothesized no relationship between boundary-spanning activities of either an informational or interactive nature and the degree of discernibility of pattern in stimuli perceived in the position. The results are most interesting, for they provide a much more useful picture of the impacts of boundary-spanning activity.
Table 5-8 provides data that strongly disconfirm the hypotheses subsumed under Proposition Two. In five of the six cases, there is a significant positive relationship between boundary-spanning activities of both an informational and interactional nature and the lack of discernibility in pattern. This provides some support for the Kahn, et al (1964) and Leifer (1974) frameworks that suggest the greater difficulties and equivocality in dealing with environmental representatives or information. Unfortunately, the small sample size here forbids us from controlling for alternative explanations (e.g. level, performance program characteristics, experience, and others.) In this limited piece of data, the theoretical framework already begins to be somewhat shaken. Results of the hospital sample, analyzed in greater depth below, help to clarify what aspects of the framework are most substantially weakened.

Initial zero-order correlations for the hospital sample appear in Table 5-9. These results also fail to provide support for the theoretical framework, and in several cases seem almost anomalous. Of the six correlations, five are significant at less than the .05 level, immediately showing deviation from our predictions. These deviations, though informative, are equally explainable and add considerably to our knowledge of boundary spanning. These results are discussed in Chapter Six.
### TABLE 5-9
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Two

**ZERO-ORDER PARTIAL CORRELATIONS**

<table>
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<th>Var</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
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<td>1108</td>
<td>2862</td>
</tr>
</tbody>
</table>

n=132

### TABLE 5-10
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Two

**FIRST-ORDER PARTIAL CORRELATIONS CONTROLLING FOR LEVEL**

<table>
<thead>
<tr>
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<th>T.D.</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>3305</td>
</tr>
<tr>
<td>BA-Int</td>
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<td>0948</td>
<td>2754</td>
</tr>
</tbody>
</table>
As before, partial correlations were computed, controlling individually for the list of control variables. The only variable that generated any deviation from predictions was again the level variable.

Table 5-10 illustrates observed correlations among the boundary spanning and pattern discernibility variables when controlling for level. The common variation that level shares with both task difficulty and variety is reflected in the reduced magnitude of the correlations in the second and third columns of the matrix. These results are far from major significance, and only the relationship between informational boundary activity and task difficulty disappears substantially with this control. The relationship of boundary activity to uncertainty becomes somewhat more clear when controlling for organizational level, but the magnitude of this increase is still small.

Thus, we note that alternative explanations for the seemingly disconfirming results found in the original zero-order correlations matrix cannot account for these findings. As noted above, the recognition that substantial intercorrelation exists between each of the three variable groups demands we control for the third set whenever correlating any pair of variable sets. We begin by noting how significantly each individual control for the performance program dimensions will be in understanding the relationship between boundary activity and pattern discernibility.
### TABLE 5-11
**HOSPITAL SAMPLE**  
Matrix for Testing Proposition Two

**FIRST ORDER PARTIAL CORRELATIONS** CONTROLLING FOR: FORM

<table>
<thead>
<tr>
<th>VAR</th>
<th>Unc.</th>
<th>T.D.</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>**</td>
<td>1303</td>
<td>3389</td>
</tr>
<tr>
<td>BA-Int</td>
<td>*</td>
<td>0939</td>
<td>2805</td>
</tr>
</tbody>
</table>

n=132

### TABLE 5-12
**HOSPITAL SAMPLE**  
Matrix for Testing Proposition Two

**FIRST ORDER PARTIAL CORRELATIONS** CONTROLLING FOR: DISC

<table>
<thead>
<tr>
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<th>Unc.</th>
<th>T.D.</th>
<th>Var</th>
</tr>
</thead>
<tbody>
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<td>*</td>
<td>2349</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0749</td>
<td>1211</td>
<td>1931</td>
</tr>
</tbody>
</table>

n=132
Controlling for supervisory dependence generated no meaningful deviations from the zero-order correlation matrix (as defined in the criteria above). Thus, it was removed from further controls in this analysis. Many of the results found when controlling for the remaining three performance program dimensions appear interesting. As an example, Table 5-11 presents the matrix generated when controlling for formalization. Controlling for formalization in positions has the effect of slightly changing the relationship between boundary activity and variety. These results are far from any empirical or theoretical significance. Controlling for formalization also helps to wash out the limited significance of the relationship between informational boundary activity and difficulty in the task. The most interesting results are those in which controlling for formalization increases the relationship between boundary activity and uncertainty. Thus, when controlling for levels of variation in formalization of the hospital position, the conceptual framework discussed above seems still more evident. Without allowing formalization to share variation with boundary activity or uncertainty, we find that greater boundary activity provides lesser uncertainty and greater information for the organization. Though this new evidence deviates even further from our predictions, it does help to reinforce the revisions made above. Most significantly, it casts great doubt on the suggestion in much of the boundary literature (Leifer,
1974) that boundary spanning is inherently uncertain or requires dealing with uncertain elements of the organization's environment. In fact, as noted above, it appears more likely that boundary spanners, because of their informational activities, provide information and eliminate uncertainty for others in the organizations.

When we focus on the two remaining performance program characteristics, discretion and developmental activity, the results are still more striking and Table 5-12 exhibits the substantial changes in the matrix when controlling for discretion in the position. Of most importance is the extent of the common variation both boundary activity and uncertainty share with discretion. In fact, discretion presents itself to be a crucial moderating variable in understanding these inconsistent results. Now, when controlling for each variable's linkage to discretion, we see no relationship between boundary activity and uncertainty. This helps to confirm our original hypothesis. The discretionary component in both boundary activity and confrontations with uncertainty is obviously pervasive. As we discover below, this observation is due to the strong positive relationship between boundary activity and discretion. In fact, this result discussed later, is one of the strongest conclusions of the study, as it helps to clarify important implications of boundary-spanning activity. As we discover later, even when controlling for pattern discernibility as external sources of variation,
boundary activity can be understood as highly discretionary. The boundary spanner at least for hospitals, is the individual with greater leeway and flexibility. As we discuss below, it may be that organization designers perceive the need for flexibility in positions which deal with external stimuli, and thus, activity in this role, helps to reduce uncertainty not only for the boundary spanner but for the entire organization. The results add credibility to these assertions, by suggesting that the link between uncertainty and boundary spanning can only be understood relative to the discretionary nature of the boundary spanner’s performance program.

Other interesting data from Table 5-12 show how discretion is important in understanding the relationship between boundary activity and variety in stimuli. Controlling for the discretionary component in boundary activity somewhat reduces the perceived variety in the boundary activity. Again, understanding the implications of boundary spanning for pattern discernibility and eventually uncertainty absorption returns us to a need for considering the importance of discretion.

Controlling for discretion, however, does not reduce the difficulty of boundary activities. This control must increase the meaningful variability and suggests that aside from the discretionary components of the position, boundary spanning is somewhat more difficult than non-boundary spanning. This provides some confirmation for
the Kahn, et al (1964) and Adams (1972) positions. The results, when controlling for developmental activity (shown in Table 5-13) show some divergence from zero-order correlations, but in between the extreme effects of controlling for discretion or formalization. As was the case with formalization, developmental activity accounts for extraneous sources of variation and intensifies the link between boundary activity and uncertainty. It totally washes out relationships between boundary activity and difficulty of the task, and provides a substantial reduction in the magnitude of the relationship between variability and boundary activity.

Developmental activity, then, has an impact on both boundary spanning and variability and accounts for part of their common variation.

All these results come together in the third-order partial correlation matrix shown in Table 5-14. This matrix presents the relationships among boundary activity and pattern discernibility, when controlling for the three performance program variables that individually affect the relationships. This is the most useful matrix for testing Proposition Two, as it clarifies relationships with considerable confidence that confounding or extraneous sources of variation have been removed.

On balance, we see moderate evidence for rejection of our initial hypotheses. The only clear support comes from understanding that no clear relationship exists
### TABLE 5-13
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Two

**FIRST ORDER PARTIAL CORRELATIONS CONTROLLING FOR: DEV**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Unc</th>
<th>T.D.</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BA-Info</strong></td>
<td>-2019</td>
<td>0938</td>
<td><strong>2754</strong></td>
</tr>
<tr>
<td><strong>BA-Int</strong></td>
<td>* 1761</td>
<td>0793</td>
<td><strong>2581</strong></td>
</tr>
</tbody>
</table>

n=132

### TABLE 5-14
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Two

**THIRD ORDER PARTIAL CORRELATIONS CONTROLLING FOR: FORM, DISC, DEV**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Unc</th>
<th>T.D.</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BA-Info</strong></td>
<td>-0833</td>
<td>1863</td>
<td><strong>2060</strong></td>
</tr>
<tr>
<td><strong>BA-Int</strong></td>
<td>-0807</td>
<td>1442</td>
<td>* 1979</td>
</tr>
</tbody>
</table>

n=132
between boundary activity and uncertainty. Rather, we found this to be more a function of discretionary activity. As some of the literature suggests, boundary activity appears to be inherently more difficult and provides a greater number of stimuli with which to deal. It may also be possible that the latter result is an artifact of the operationalizations developed in this study. The measure of boundary activity was in terms of frequency of activities. It is not surprising, then, that greater numbers of externally oriented stimuli are related to higher levels of variety.

PROPOSITION THREE: RESULTS

In much the same way that the data from the agencies sample disconfirmed Proposition Two, so the data appears to argue for a rejection of Proposition Three from the agencies sample. Again, the small sample size limits us to only briefly viewing- zero-order correlations without any mechanism for controlling other sources or variation. The results, however, do provide some confirmation for other approaches in the boundary literature. Table 5-15 presents Spearman rhos summarizing the relationship between boundary activity and performance program characteristics in the agencies sample. As the data indicates, the informational aspect of boundary spanning is closely related to all four performance program characteristics. Increasing boundary activity implies less dependence on supervisors and formalized rules and procedures, with
### TABLE 5-15
**AGENCIES SAMPLE**
Spearman RHO's for Testing Proposition Three

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-3734</td>
<td>6063</td>
<td>4007</td>
</tr>
<tr>
<td>BA-Int</td>
<td>0531</td>
<td>-2699</td>
<td>2713</td>
<td>3650</td>
</tr>
</tbody>
</table>

n=24

### TABLE 5-16
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Three

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-1090</td>
<td>-0874</td>
<td>3872</td>
<td>2513</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0543</td>
<td>-0592</td>
<td>3035</td>
<td>1282</td>
</tr>
</tbody>
</table>

n=133
greater reliance on discretion and developmental activity. For this sample, the relationships originally hypothesized by Leifer (1974; 1975) are given credibility, and the frameworks arguing that boundary spanning is inherently more uncertain are consistent with this data. The data for Propositions One, Two and Three, appear to indicate that boundary activity, which is inherently more uncertain and entails greater equivocality, will have consequent effects on the nature of performance programs that are employed to deal with the sets of stimuli experienced. In fact, this evidence from the agencies sample weakens our argument that boundary activity linkages to performance program characteristics are contingent upon pattern discernibility. The rejection of our hypothesis that boundary activity bears no relationship to either pattern discernibility and performance program characteristics reinforces this lack of evidence for our contingent dynamics proposition. The nature of small size forbids us from proceeding further with analysis of Proposition Four in this sample. The limited evidence to this point suggests a lack of credibility for Proposition Four in at least the agencies sample.

In the hospital sample, on the other hand, we shall see substantially greater support for the theoretical framework, although the issue of discretion in the performance program demands some further modification of our original hypotheses.
Table 5-16 presents the observed zero-order correlation matrix for relationships among the boundary activity and performance program dimensions. The most obvious support for Proposition Three comes from viewing the first two columns of the matrix. As the zero-order data indicate (and our original hypotheses suggest) there is no statistically significant relationship between boundary activity and either the degree of formalization or degree of supervisory dependence in roles. This confirms our assertion that demands of boundary-spanning activity either in terms of informational transmission or interactions, do not necessarily imply anything about the formalization of positions or dependence upon the supervisor. As Thompson (1962) suggested, there are various types of boundary spanning, with differentially appropriate levels of formalization. At no time (as we note below) when controlling for other sources of variation, do we ever see any significant relationship between boundary activity and either of these first two performance program dimensions. When controlling for uncertainty, as indicated in Table 5-18 below, we observe a moderate negative correlation between boundary activity and formalization; while this confirms the result found in the agencies sample, the magnitude of the correlation is too small to be treated as important.
TABLE 5-17  
HOSPITAL SAMPLE  
Matrix for Testing Proposition Three

FIRST ORDER PARTIAL CORRELATIONS  CONTROLLING FOR: LEVEL

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-0415</td>
<td>-0105</td>
<td>*****</td>
<td>**</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0277</td>
<td>-0301</td>
<td>*****</td>
<td>1116</td>
</tr>
</tbody>
</table>

n=133

TABLE 5-18  
HOSPITAL SAMPLE  
Matrix for Testing Proposition Three

FIRST ORDER PARTIAL CORRELATIONS  CONTROLLING FOR: UNC

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-0867</td>
<td>-1324</td>
<td>*****</td>
<td>****</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0323</td>
<td>-0998</td>
<td>*****</td>
<td>1408</td>
</tr>
</tbody>
</table>

n=133
The more important issue addressed by this data and explored in depth below is the seemingly disconfirming evidence that boundary activity is strongly related to discretion and somewhat to developmental activity.

For the balance of discussion in connection with this proposition, we shall focus our attention on three correlation coefficients (i.e. the three disconfirming relationships). These are the relationship of boundary informational activity and boundary interactional activity each with discretion and the relationships between the first boundary activity dimension and developmental activity. Since the correlation of interactional boundary activity and developmental activity never reaches even the .05 level of significance, these results, although available for inspection, will not be discussed.

In the initial matrix, we find informational boundary activity explaining no more than 15 percent and interactional, 10 percent of the variation in discretion. In addition, about 7 percent of the variation in developmental activity is explained by informational boundary activity.

Further observations of the data provide greater confirmation for the original Proposition Three and gradually weaken the strong relationship between boundary activity and discretion. Controlling for time in position, time with the hospital, role preponderance, size of organizational unit, age or professional activity never change any matrix entries to any significant magnitude. As
before, the pervasive effects of organizational level change the entries enough for us to examine the results. Table 5-17 shows the first order partial correlations observed when controlling for level. As the data indicate (and the theory supports), the variation level has in common with boundary activity and the discretionary and developmental aspects of the performance program reduce somewhat the significant data we observed in the earlier matrix.

Similarly, as Table 5-18 indicates, controlling for the uncertainty measure of pattern discernibility reduces the intercorrelations, leading us to believe the uncertainty link to each variable is important. A somewhat different phenomenon is the case when controlling for task difficulty. Table 5-19 shows how the greater boundary activity is more strongly linked to discretion, when the difficulty of the task is partialled out. For developmental activity, on the other hand, the difficulty of the task absorbs some of the common variance and reduces the correlation. The largest reductions of the boundary activity-discretion/developmental activity relationships appear when stimuli variety is removed. Substantial amounts of discretion or developmental activity may be attributed to variety which also bears a link to boundary activity. The most informative matrix appears in Table 5-21, where fourth order partial correlations are presented, controlling for all four sources of extraneous and common variation.
### TABLE 5-19
HOSPITAL SAMPLE
Matrix for Testing Proposition Three

FIRST ORDER PARTIAL CORRELATIONS CONTROLLING FOR: TD

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-1062</td>
<td>0070</td>
<td>****</td>
<td>***</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0517</td>
<td>-0017</td>
<td>****</td>
<td>3071</td>
</tr>
</tbody>
</table>

n=133

### TABLE 5-20
HOSPITAL SAMPLE
Matrix for Testing Proposition Three

FIRST ORDER PARTIAL CORRELATIONS CONTROLLING FOR: VAR

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-0985</td>
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<td>****</td>
<td>2931</td>
</tr>
<tr>
<td>BA-Int</td>
<td>-0423</td>
<td>-0013</td>
<td>***</td>
<td>2191</td>
</tr>
</tbody>
</table>

n=133
TABLE 5-21
HOSPITAL SAMPLE
Matrix for Testing Proposition Three

FOURTH ORDER PARTIAL CORRELATIONS CONTROLLING FOR: UNC., TD, VAR & LEVEL

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sup</th>
<th>Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-Info</td>
<td>-0068</td>
<td>0931</td>
<td>*</td>
<td>1771</td>
<td>0931</td>
</tr>
<tr>
<td>BA-Int</td>
<td>0027</td>
<td>0462</td>
<td>*</td>
<td>1695</td>
<td>-0066</td>
</tr>
</tbody>
</table>

n=133
This matrix exhibits how all significant relationships are nearly totally washed out by controlling for both the pattern discernibility and level variables. The only relationships that retain even minimal significance are those between the boundary activity dimensions and discretion. The balance of the matrix confirms our original prediction, but with the modification suggested above that sees discretion as a component of boundary-spanning activities. Even when controlling for four sources of significant variation, we cannot totally eliminate what appears to be a definite relationship between boundary activity and discretionary components of performance programs.

PROPOSITION FOUR

To some degree, the force of Proposition Four has been diminished by many pieces of evidence suggested in testing Propositions One, Two and Three. In particular, the data from the agencies sample has indicated the variety of direct relationships among the three sets of variables, and appears to leave little room for a consideration of the issues of whether performance programs are a joint, interactive function of pattern discernibility and boundary activity.

Below, we present two sets of data. The first set presents two dozen correlations obtained after creating six interaction terms—one for each possible pairwise combination of the boundary activity (independent) variables and each of the pattern discernibility (contingent
independent) variables. Each was correlated with each of the four performance program (dependent) variables, in an attempt to see the magnitude of relationship between terms that simultaneously combine the effects of both the independent and contingent independent variables on the dependent variable set. The results, while interesting, far overstate the case and later are moderated with a more conservative statistical technique.

Table 5-22 presents this matrix. Refer back to Table 3-6 for the hypothesized relationships suggested if the contingent dynamics framework were to be operating.

The first observable result is that interaction of each of the independent and contingent independent variables has no relationship to the supervisory dependence dimension of the performance program. Obviously, the contingent dynamics have no application in terms of the conditions they might create for dependence on one's supervisor. For the remaining three dimensions, 100 percent of the observable correlations are significant at less than the .05 level and all are in the appropriate direction. This result is actually an inaccurate portrayal of the true relationships among these variables, as a variety of variance is shared with the variables from which these interactions were initially built.

A much more appropriate and conservative test for the significance of interactions (Kerlinger and Pedhazar, 1973), Kmenta (1968) is careful, controlled use of
### TABLE 5-22
**HOSPITAL SAMPLE**
Matrix for Testing Proposition Four

<table>
<thead>
<tr>
<th>Interaction Term: Boundary Activity-</th>
<th>Supervisory Dependence</th>
<th>Formalization</th>
<th>Discretion</th>
<th>Developmental Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational</td>
<td>-0423</td>
<td>-2531</td>
<td>2312</td>
<td>2895</td>
</tr>
<tr>
<td>X Uncertainty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>-0997</td>
<td>-3562</td>
<td>2980</td>
<td>3480</td>
</tr>
<tr>
<td>X Task Difficulty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>-0810</td>
<td>-1623</td>
<td>4440</td>
<td>3568</td>
</tr>
<tr>
<td>X Variety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactional</td>
<td>0004</td>
<td>-1998</td>
<td>1713</td>
<td>1677</td>
</tr>
<tr>
<td>X Uncertainty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactional</td>
<td>-0552</td>
<td>-3169</td>
<td>2543</td>
<td>2827</td>
</tr>
<tr>
<td>X Task Difficulty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactional</td>
<td>-0380</td>
<td>-1648</td>
<td>3836</td>
<td>2803</td>
</tr>
<tr>
<td>X Variety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n=147
regression analysis. The procedure is familiar, especially in economics, where interactive effects are often found among variables. The following procedure was used. Twenty-four regression equations were created, corresponding to the 24 cells in the matrix of Table 5-22. Each equation consisted of three steps, applied uniformly to present the most conservative and accurate test of the interaction hypotheses. For each of the four dependent variables, a three stage process was used to build a set of six regression equations (one corresponding to each row of the matrix in Table 5-22). For example, regression equations with supervisory dependence as a dependent variable were constructed for each possible combination of each of the two independent and each of the three contingent independent variables. Equations were not constructed using more than one boundary measure or more than one contingent independent variable, as a result of multicollinearity within variable sets. In the first stage, the boundary measure was forced into the equation. This was done purposefully to allow the boundary dimension to absorb the largest potential amount of variation in the dependent variable vector. The second step consisted of entering the respective contingent independent variable. As might be expected, these regression results are an alternate way of visualizing the data presented above. Appropriately, significant regressions and increments were discovered corresponding to the entries in the matrices
above. For the present analysis, the third stage was most important. At this point, the respective interaction term was forced into the already constructed regression equation. Now, hypothesis testing consisted of testing for a significant increment in the multiple coefficient of determination ($R^2$) after adding the interaction terms. Of the twenty-four regression equations, no interactions were significant at less than the .10 level on the supervisory dependence dimension. Of the eighteen remaining regression constructions, significance for the interaction term at less than the .10 level was found in only four cases. For each of the four cases, full details on all stages of the regression procedure appear in Tables 5-23 through 5-26.

One interaction was found to be significant at less than the .10 level. In this case, presented in detail in Table 5-23, we find that after entering the boundary interaction dimension and the uncertainty dimension, the interaction between boundary activity and uncertainty combines significantly to add to the potential for explaining the formalization dimension of the performance program. The resulting equation, which explains at best only 8 percent of the formalization variation, has a standard error of estimate exceeding the standard deviation of the dependent variable. As a result, we might argue the equation has some utility. More important, is recognizing
TABLE 5-23
HOSPITAL SAMPLE
Proposition Four

REGRESSION RESULTS

INTERACTION SIGNIFICANT WITH F = 3.759 (p < .10)

DV: FORMALIZATION (y)
IV₁: BOUNDARY INTERACTION (x₁)
IV₂: UNCERTAINTY INTERACTION (x₁x₂)

STEP ONE EQUATION:

\[ y = 2.793 - .041 x₁ \]

R: .0590
R²: 0.035
Standard Error: .5811

F(MS Reg/MS Reg): .5100 (NS)

STEP TWO EQUATION:

\[ y = 3.2721 - .0689 x₁ - .3372 x₂ \]

R: .2415
R²: .05832
S.E.: .5669

Overall F: 4.459 (p < .05)
F(x₁): 1.449 (NS)
F(x₂): 8.382 (p < .01)

STEP THREE EQUATION:

\[ y = 2.8278 + .2616 x₁ - .0113 x₂ - .2508 x₁ x₂ \]

R: .28713
R²: .0824
S.E.: .5615

Overall F: 4.2829 (p < .05)
F(x₁): 2.12 (NS)
F(x₂): .003 (NS)
that the effect of combining both extreme levels of uncertainty and boundary activity has some association with the degree to which the position entails the application of rules and procedures.

Two interactions were found to be significant at the .05 level. In the first, the interaction between uncertainty and this time, boundary activity of an interactional nature was found to add significantly to our potential for explaining variation in the discretion variable. Table 5-24 illustrates the summary of regression parameters and data for each of the three stages in the construction of this equation set. Here, we see how the final regression equation, including the interaction of boundary interactional activity and uncertainty generates a potential for explaining 25 percent of the variation in the discretion variable. This regression equation, besides being highly consistent with the framework above, provides a considerable potential for explanation. Interestingly, as an examination of the regression parameters in the final regression equation indicates, the interaction term offsets (with a positive value) the negative contributions made by boundary activity and uncertainty in focusing on successively increasing levels of discretion.

The other interaction significant at this level involved that between interactional boundary activity and task difficulty in explaining variation in developmental activity. The final regression equation, as indicated in Table 5-25,
### TABLE 5-24
HOSPITAL SAMPLE
Proposition Four

**REGRESSION RESULT:** INTERACTION SIGNIFICANT WITH $F = 5.102$ (p < .05)

| DV: DISCRETION | (y) |
| IV₁: BOUNDARY INFORMATION | (x₁) |
| IV₂: UNCERTAINTY | (x₂) |
| INTERACTION | ($x₁x₂$) |

**STEP ONE EQUATION:**

$$y = 1.3894 - .4012x₁$$

R: .3872  
R²: .1499  
S.E.: .6098  
Overall F: 25.57 (p < .01)

**STEP TWO EQUATION:**

$$y = 2.0017 + .3520x₁ - .4261x₂$$

R: .4667  
R²: .2178  
S.E.: .5851  
F Overall: 20.1 (p < .01)  
F ($x₁$): 20.56 (p < .01)  
F ($x₂$): 12.51 (p < .01)

**STEP THREE EQUATION:**

$$y = 2.5988 - .1713x₁ - .8865x₂ + .4156x₁x₂$$

R: .4948  
R²: .2448  
S.E.: .5769  
Overall F: 15.45 (p < .01)  
F($x₁$): .493 (NS)  
F($x₂$): 14.12 (p < .01)
TABLE 5-25
HOSPITAL SAMPLE
Proposition Four

REGRESSION RESULT: INTERACTION SIGNIFICANT WITH F = 5.134 (p < .05)

DV: DEVELOPMENTAL ACTIVITY (y)
IV₁: BOUNDARY INTERACTION (x₁)
IV₂: TASK DIFFICULTY (x₂)
INTERACTION (x₁x₂)

STEP ONE EQUATION:

\[ y = 1.2428 + .0785 x₁ \]

Overall F: 2.42 (NS)

R: .1282

R²: .0164

S.E.: .5062

STEP TWO EQUATION:

\[ y = .9004 + .0606 x₁ + .2796 x₂ \]

Overall F: 6.688 (p < .05)

R: .2915

R²: .0850

S.E.: .4899

F(x₁): 1.52 (NS)

F(x₂): 10.79 (p < .01)

STEP THREE EQUATION:

\[ y = 1.3406 - .2409 x₁ - .0481 x₂ + .2197 x₁x₂ \]

Overall F: 6.30 (p < .05)

R: .3416

R²: .1167

S.E.: .4830

F(x₁): 2.896 (p < .10)

F(x₂): .083 (NS)
shows how these two variables, in conjunction with their interaction, have the potential for explaining 12 percent of the variation in the dependent variable vector. The combination of task difficulty and degree to which the role involves boundary spanning of an interactive nature can thus help us understand when to expect variation in developmental activity. Once again, we see how the interaction effect offsets somewhat the effect of the two independent variables in generating predicted scores for the developmental activity dimension.

The most significant interaction involved that between boundary informational activity and uncertainty in explaining variation in formalization. As Table 5-26 indicates, the final regression equation explains more than 11 percent of the variation in formalization. Here, the interaction effect also offsets somewhat the positive coefficients found for the two independent variables. The evidence from this set of regression equations adds convergence to that found earlier in which uncertainty was found to interact significantly with the interactional aspect of boundary spanning in generating an explanation for variation in formalization.

The limited results for the twenty-four regression equations do not add great support to the hypotheses in Proposition Four. The support we do find, however, is limited to specific cases. As an example, the variety dimension in pattern discernibility gives us little evidence
TABLE 5-26
HOSPITAL SAMPLE
Proposition Four

REGRESSION RESULT: INTERACTION SIGNIFICANT WITH F = 6.895 (p < .01)

DV: FORMALIZATION (y)
IV1: BOUNDARY INFORMATION (x1)
IV2: UNCERTAINTY (x2)
INTERACTION (x1x2)

STEP ONE EQUATION:

\[ y = 2.8270 - .0799 x_1 \]

R: .0874 Overall F: 1.115 (NS)
R^2: .0076
S.E.: .5799

STEP TWO EQUATION:

\[ y = 3.3261 - .1201 x_1 - .3473 x_2 \]

R: .2560 Overall F: 5.048 (p < .01)
R^2: .0655
S.E.: .5647
F(x1): 2.508 (p < .10)
F(x2): 8.919 (p < .01)

STEP THREE EQUATION:

\[ y = 2.6602 + .4635 x_1 + .1663 x_2 - .4636 x_1 x_2 \]

R: .3294 Overall F: 5.801 (p < .01)
R^2: .1085
S.E.: .5535
F(x1): 3.922 (p < .01)
F(x2): .540 (NS)
of it building interactively upon the boundary variable, while stronger evidence exists that uniquely discernible results can be anticipated when boundary spanning implies a particular level of uncertainty. This was especially true in connection with the discretion variable, one found earlier to clarify the relationships among boundary activity and pattern discernibility. Task difficulty also had limited but potential impact as a source from which boundary activity intensifies its dynamics.

Ancillary Data: Impacts of Boundary Spanning

There is an additional area of data analysis that remains appropriate for this chapter as it deals with other suggested characteristics of boundary spanning.

As suggested above in especially Chapter Two, boundary activity is often assumed to be difficult, as it positions boundary spanners from the focal organization between the opposing demands of their constituency and those of the other organization. Because the boundary spanner is often unable to obtain information or compel activities on the part of non-organizational members within the authority network of the focal organization, it might be expected that boundary activities would make positions difficult. Table 5-27 reports intercorrelations among seven single item measures of possible job outcomes (e.g. difficulty in getting knowledge of outside conditions) and the nine variables which emerged from the theoretical framework and were subjected to hypotheses testing above. In some
# TABLE 5-27
## HOSPITAL SAMPLE
**Correlations of Ancillary Data with Boundary Activity and Contingent Independent Variables**

<table>
<thead>
<tr>
<th>Question No.</th>
<th>Content</th>
<th>BA-Info</th>
<th>BA-Int</th>
<th>Unc</th>
<th>T.D.</th>
<th>Var</th>
<th>Sup Dep</th>
<th>Form</th>
<th>Disc</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>024</td>
<td>Problems getting necessary information from outside</td>
<td>1031</td>
<td>-0956</td>
<td>1164</td>
<td>2438</td>
<td>-0446</td>
<td>-0350</td>
<td>-2892</td>
<td>1307</td>
<td>1378</td>
</tr>
<tr>
<td>027</td>
<td>Problems obtaining outside resources</td>
<td>****</td>
<td>*</td>
<td>***</td>
<td>****</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>030</td>
<td>Work hindered because non-personnel don't cooperate</td>
<td>*</td>
<td>1486</td>
<td>0273</td>
<td>2317</td>
<td>1675</td>
<td>1270</td>
<td>-0876</td>
<td>-1460</td>
<td>0015</td>
</tr>
<tr>
<td>041</td>
<td>Know what to expect in dealings with non-hospital personnel</td>
<td>****</td>
<td>****</td>
<td>***</td>
<td>*</td>
<td>***</td>
<td>*</td>
<td>0683</td>
<td>2282</td>
<td>0082</td>
</tr>
<tr>
<td>043</td>
<td>Non-hospital personnel make job difficult</td>
<td>3789</td>
<td>3225</td>
<td>1263</td>
<td>2937</td>
<td>1442</td>
<td>0506</td>
<td>-2431</td>
<td>0493</td>
<td>2018</td>
</tr>
<tr>
<td>045</td>
<td>Know who to contact on outside</td>
<td>3892</td>
<td>2993</td>
<td>-2821</td>
<td>0406</td>
<td>2981</td>
<td>-1148</td>
<td>0712</td>
<td>3397</td>
<td>1139</td>
</tr>
<tr>
<td>082</td>
<td>Authority in dealing with non-hospital personnel</td>
<td>****</td>
<td>****</td>
<td>****</td>
<td>****</td>
<td>**</td>
<td>-0691</td>
<td>5291</td>
<td>2788</td>
<td>****</td>
</tr>
<tr>
<td>097</td>
<td>Contact well regulated</td>
<td>2770</td>
<td>2829</td>
<td>-1467</td>
<td>-0560</td>
<td>0355</td>
<td>1106</td>
<td>2207</td>
<td>0074</td>
<td>0424</td>
</tr>
</tbody>
</table>
ways, many of the results are informative vis-a-vis the results obtained above. These results are discussed in Chapter Six below.
CHAPTER SIX
DISCUSSION

The previous chapter reviewed the basic results of the study and indicated substantial support for the first proposition, with limited support for the third and less for the second and fourth.

This chapter consists of several sections, one corresponding to each of the four propositions. Clarifications and explanations for deviation from prediction are treated in this chapter. We conclude this chapter with a final section that reviews interesting results found in viewing the ancillary data.

PROPOSITION ONE

In the agencies sample, the lack of relationship between the perceived variety of stimuli and the perceived amount of discretion is of interest. This may be an important finding, considering the nature of variety. Diversity in stimuli may in fact not require great amounts of discretion. In some jobs, it may be that a diverse variety of activities are performed, and performed so frequently that the role incumbent relies more on developing strategies without using excessive amounts of individual judgment. However, when tasks are difficult to solve,
Judgment plays an important part, for often it is the special experience, socialization, or professional ability of the individual that is necessary for solutions to these types of problems. The data reflect this; at the same time, it provides weak support for the notion that greater uncertainty will require greater amounts of discretion.

We have also noted the strong inverse relationship of supervisory dependence to uncertainty and difficulty of the task performed. When there is great lack of knowledge or ability to discern pattern (as suggested by the task difficulty and uncertainty measures), there appears to be greater effort toward allowing individuals to develop strategies from their personal experience and professional background than to suggest dependence on the superior for direction. Individuals facing more uncertain situations are more apt to attack these problems themselves. When there is greater variety in stimuli however, there is no great need for either discretion and in some situations, supervisors are consulted, while in others they are not. This is reflected in the lack of relationship between variability and supervisory dependence.

Of greater interest for discussion and analysis are the results in the hospital sample. Here, the greater variation facilitates controlling for other sources of explanation. At the same time, variables at higher levels of analysis complicate the results.
In terms of our sampling frame, we saw the hospital sample as representing a broad cross-section of organizational positions or sets of stimuli and responses evoked. However, at a different level of analysis (not directly intended as part of our sampling framework) other dynamics are operating. Because this sample was not a random cross-section of stimuli/response sets, but a convenient sample, we must be willing to modify our interpretations of results, incorporating variables which affected sampling at a higher level of analysis. As an example, although we sampled from throughout the hospital, at an organizational level of analysis we were still sampling from an organization that employs an intensive technology which consistently must monitor and evaluate stimuli to insure patient safety and fulfillment of legal responsibility. In many areas of the hospital, especially those associated with patient care (e.g. nursing services, the intensive care unit) patient states are often critically important and must be dealt with according to basic principles and regulations. This organizational level variable suggests a need for great precaution in generalization of these results.

In the hospital setting, as we see, when there is great variety in stimuli faced, individuals are permitted not only to develop their own approaches, but to use their judgment in making decisions about the nature of response. Individuals may often perform a variety of functions; because of this, it is possible that individuals are
permitted to utilize their individual judgments in making decisions when facing a diverse variety of tasks. For the professional employees of the hospital (especially those in therapeutic, nursing services and other areas of direct patient contact) this explanation seems most plausible. Professional training and experience in handling a variety of situations obviously permit greater reliance on individual decisions about sets of responses.

The relationship between uncertainty and supervisory dependence although emerging in the final matrix as insignificant, is intriguing. From the theoretical framework, we argued that confrontations with uncertainty demanded greater discretion and use of each individual's judgment. The results confirm this. However, we also argued that conversely, uncertain conditions would require little reliance on supervisors. This does not appear to be the case. Rather, the weak positive relationship between uncertainty and dependence on the supervisor may suggest an important alternative relationship, predominant in organizations such as the hospital. The operationalizations of uncertainty suggested at this point in the literature (and borrowed in this study) often involve a lack of understanding cause and effect relations and a lack of information. In this regard, we might view the special case of many individuals in nursing service whose activities are patient-centered. Often, patient states create uncertainties for nursing staff who must make
decisions about resource allocation, and treatment within general ranges of activity (Banasik, 1973). For many of these decisions, uncertainties are reduced by reliance on the judgment of physicians who act in a supervisory capacity. The wording of the questions in the supervisory dependence scale in fact, incorporates any type of dependence on hierarchically superior persons. As Table 5-3 indicates, when we view this relationship by categories of responsibility or level, the correlation gets even stronger. At this point, these results are far too inconclusive to provide answers to questions of this type. However, later studies which will include internal analysis of the data may help to provide more clarity on these issues. The lack of relationship between task difficulty and dependence on one's supervisor may reflect the possibility that for some, difficult tasks may be brought to the supervisor's attention, while others may be solved alone.

We have noted the strong inverse relationship between uncertainty and discretion perceived. While we might consider this finding to be disturbing, in fact, it may actually provide us with useful information. An explanation for this significant and seemingly inappropriate relationship may lie in the nature of the tasks and uncertainties faced by many role incumbents in the hospital setting. For those whose responsibilities include patient care, uncertainties may often imply possibly undesirable or dangerous patient conditions. In the face of uncertainties
of a potentially damaging nature, we would expect effective health care institutions to minimize the need for discretion in decision making. As an example, we might consider a patient whose previous states or instabilities have created great uncertainty for hospital staff by inhibiting predictability. For this type of patient condition, the appropriate strategy is not to allow for wide variation in alternatives—in fact, other organizational design variables (e.g. policy) may limit alternatives and proscribe great leeway. In a sense, hospital decision making may reduce much of the equivocality present. From the data found in Table 5-2, we see the relationship with discretion explaining twice the variation in uncertainty than formalization. This suggests that while there may not be single prescribed routes for all decision making under uncertainty (thus the inverse relationship between the two as we expect), it is important to discourage purely discretionary behavior. This is also reflected in the lack of relationship between uncertainty and developmental activity. Further complementary evidence appears as we have noted above that a weak positive relationship exists between uncertainty and dependence on supervisors. As we suggested, hierarchy may eliminate at least some of the uncertainties faced in patient-care related occupations.

Still other alternative explanations can be proposed. In a sample of eighty-six organization units from a diverse variety of organizations, Ford (1975) citing preliminary
results, has noted a similar phenomenon emerging. In this case, a significant inverse relationship was discovered between perceived uncertainty and perceived participation in decision making. Ford suggests the following explanation, which relies on a departure from more traditional organization-environment explanations. Participation, as Ford sees it, provides individuals with an opportunity to receive information; since information (as Weick, 1975, suggests) is the opposite of equivocality or uncertainty, it would then be consistent to find lesser levels of uncertainty associated with higher levels of participation in decision making that provide information. Cross-sectional studies of this type hardly provide the answer to such an intriguing question; the most desirable route would be a future laboratory experiment which manipulates the variables in question.

With these exceptions, our basic proposition relating pattern discernibility remains intact. This data provides support for many contemporary viewpoints on organization-environment relationships, but contributes at a different level of analysis. Besides observing congruence at the organization level (Burns and Stalker, 1963), at the unit level (Duncan, 1971, Sathe, 1974), we have convergence at the individual level of analysis.
Our first observation is that in the hospital sample, as in the agencies sample, boundary spanning is strongly, directly related to variety in the stimuli perceived on the job. For those with the greatest amount of either interactions or informational processing in connection with external sources, there is greater diversity in the tasks faced on the job. More different kinds of activity appear prevalent in boundary roles.

Similarly, as the Adams (1973) framework suggests, boundary spanning carries with it a greater probability of facing difficult situations than non-boundary spanning. Both the hospital and agency data confirm this. These observations are especially strong in the case of boundary spanning that is of an informational processing nature. It appears greater difficulty is observed in dealing with information than dealing with persons.

The most challenging finding is that relating boundary activity to uncertainty. If the theoretical frameworks suggested in Chapter Two enjoy validity, then we should have expected at least a moderate positive correlation between uncertainty and boundary-spanning activity. This was the case in the agencies sample, in which external sources (clients, and other outsiders) are dealt with either by telephone or briefly in interactions. In contrast, for hospital staff (especially those in the patient care associated positions), the primary external
source of interaction is the patient. In fact, the organization chart for the hospital given to the researcher during interviews with the director of nursing services illustrates the patient as the focal point of the entire organization and shows the degree of direct and indirect linkage each hospital position bears to the goal of patient care. This viewpoint is important, for it suggests the need to consider an additional source of literature for purposes of explanation. We can explain some of these findings by relying on Goffman's (1961) theory of the total organization. This viewpoint represents one aspect of the problem Thompson (1967) has termed the processes of buffering or achieving closure over crucial sources of uncertainty for the organization. Goffman's suggestion (incorporated by Thompson) is that whenever possible, the organization will attempt to bring within its physical boundaries the raw material it works on. For manufacturing organizations, this might imply vertical integration or purchasing of supplier firms. For the total organization (hospital, prison, school), the organization incorporates within its organizational space (Katz and Kahn, 1966) the individuals that are the focus of its attention in fulfilling organizational objectives. This viewpoint is compatible with that contained herein, except for its seeming contradiction in our conceptualization of the organization boundary. In the original formulation, it was argued that organizational boundaries exist between those who on the one hand participate in
organizational processes as a result of an inducements/contribution balance, and those who are the focus of these activities by organizational employees. What this framework suggests is the lack of an isomorphism between the conceptualization of organizational boundary contained herein and that which relies on the more direct consideration of organizational space or property. In this interpretation, all persons present within, for example, any part of the hospital property are within the organization, and everyone else without. While this resembles the difficulty explored by Starbuck (1973), it leads us in conceptually trivial directions. As an example, the chief administrator of the hospital, when meeting with officials in the local City Hall, would not be considered within the physical boundaries of the organization, while the researcher picking up survey envelopes or the floral delivery man would be. This differentiation is of little theoretical or empirical import. The critical variables of the organization are its processes and information flows (Cyert and March, 1963; Galbraith, 1969; 1971). As such our conceptualization of boundaries in terms of information and interaction provides a much more theoretically and empirically useful approach. Our resolution of this dilemma comes by understanding that we have not sacrificed our conceptualization or operationalization because of this difficulty in distinguishing between an organization's physical and conceptual boundaries. Rather,
the operationalizations, consistent with the theoretical framework, insured that respondents visualize patients as environmental elements and not as a part of the hospital. In fact, the observed negative relationship between boundary activity and uncertainty suggests that while patients are critical environmental elements, because they are in close physical proximity to organizational processes, they can be more fully monitored and understood.

These results, in fact, help to provide further support for the organization-environment studies currently in vogue (Downey and Slocum, 1975). The notion of environmental elements as sources of uncertainty comes partially from the phenomenon of proximity to the organization's processes and activities. Starbuck's (1973) distance from the organization center model may be expressing this viewpoint, if we understand distance in terms of the ease of, or ability to, monitor environmental conditions which may become potentially uncertain or provide the organization with equivocality. From the Weick (1969) framework, we can see how incorporation of the patient into direct continuous linkage to organizational processes gives us greater control over alternatives and thus, reduces equivocality. The greater the activity of this nature, the greater we are capable of preventing the emergence of equivocality. As an example, intensive care units are intricately constructed to monitor patient states and provide for elimination of equivocality. Individuals interacting with patients in such
a setting will find details on patient conditions minimally equivocal, for the organizational needs for monitoring and information have resulted in the application of technological solutions to the problem of monitoring and uncertainty reduction.

We must also justify the relationship between boundary activity of an informational nature and its inverse link to uncertainty. Since the predominant focus of external information in the hospital involves further research and new developments in technology and procedures for facilitating patient therapy and recovery, the greater the informational processing activity from external sources, the greater the predictability, understanding and control over patient conditions. As an example, the more medical information a therapist receives from external sources (colleagues, reports, research studies, journal articles, and the like), the more information which can potentially be used to reduce the equivocality associated with patient care.

Note, however, that these implications of boundary spanning are not without further costs. Though uncertainties about patient care are reduced in informational boundary activity, this type of activity adds a substantial component of difficulty to the role. Although uncertainties may be reduced (e.g. simply by following a new procedure), there may be difficulty in understanding the procedure and applying it. Additionally, difficulty as operationalized
by Van de Ven (1974, 1975) carries with it a substantially time consuming, cognitive component. It may be that reducing uncertainty by obtaining information will demand greater amounts of thinking time and effort. The results are supportive of this, but the distinct weakness of the Van de Ven scale (its internal inconsistency) make this argument very exploratory and highly speculative.

Three sources contribute to understanding why Proposition Two may not be supported. First organization design consideration (especially expressed in the buffering of organization clients) help to eliminate uncertainties. Even in intensive technologies, the greater the closure which can be achieved over the material worked on, the greater potential for reducing uncertainty or discerning pattern.

Other considerations are aspects of the Kahn, et al (1964), Leifer (1975) and Adams (1972) frameworks. These authors make important arguments for explaining why boundary spanning can be difficult. The bargaining/role conflict dynamics which position boundary spanners between two competing organizational configurations may lead to perceptions of difficulty in positions.

Finally, in constructing the boundary scale, the artifact created at least partially taps the diversity of environmental elements. As such, its relationship to perceived variety may be expected.
PROPOSITION THREE

A major result noted in the previous chapter was the strong relationship between boundary spanning and discretion/developmental activity. From the knowledge gained in the prior analyses, we see one explanation for this phenomenon. Above, we learned it was through the information processing and interaction activities of hospital employees that information is obtained and greater knowledge developed about phenomena. Thus, boundary spanning has the effect of reducing uncertainty, as it provided greater amounts of information. Now we discover that boundary activity is linked closely with discretion. Thus, the hospital designers and supervisors appear to realize how valuable boundary spanners are in the initial stages of uncertainty absorption or equivocality reduction. It seems they either allow greater discretion to those in these positions, or over time, individuals in these positions find that by relying on professional expertise, experience, socialization processes or other aspects of their individual judgment, they are able to more adequately reduce the uncertainties of stimuli to which they respond. The argument here can still be understood as consistent with the theoretical framework. Though the cross-sectional design forbids us from coming to any causal or temporal conclusions, plausible and consistent explanation does exist.
One perspective might see the boundary spanner as being placed into a position at the organizational boundary to convert that which is uncertain or equivocal for the organization into that which is useful information for transmission to others in the organization. Those at the boundary are allowed to use discretion, judgment and rely on experience and training to monitor environmental conditions, interpret these as stimuli for which response is demanded, and provide sets of evoked response, consistent with their understanding of the situation. Thus, while we expect uncertainty at the boundary level of the organization, we have it, but only at the organizational level of analysis. Studies conducted to date have suggested the organization as facing uncertainty, for which it responds by differentiation and appropriate allocation of resources and personnel. This seems to be the case for the hospital. Aspects of the environment which, for the organization may in fact be uncertain, have large components of equivocality reduced by individuals at the boundary who are equipped to face these conditions and generate usable information. For the individual boundary spanner, stimuli are not uncertain or equivocal, as they are continually engaged in the sequential processes of equivocality confrontation, reduction and information transmission. The only way in which a more conclusive confirmation of this framework could be obtained would be an experimental design, in which we might observe cyclical information processing activities as reducing equivocality over time.
The observation that discretionary and developmental activities are reported more by those who are high in boundary-spanning activities suggest this sequential process continues on and rarely reaches a stage where formalized procedures replace patterns of judgment and flexibility in evoked sets of response.

One conclusion potentially evident from these results is the need to examine uncertainty and its absorption by understanding units of analysis in the organization. At the level of the total organization or the unit, uncertainty may be a characteristic of internal or external environment. Because the organization through historical change or conscious design processes incrementally differentiates into units, subunits and eventually linked sets of stimuli/response, total uncertainty may be reduced.

This process occurs because organizations attack uncertainties at their source and assign individual positions the responsibilities for reducing limited amounts of uncertainty. This may be done by equipping individuals with appropriate training and experience so that discretionary performance programs can be developed in which the individual faces only limited spheres of activity which he or she can more readily understand. Thus, for the individual engaged in enaction with various stimuli, there may be little uncertainty; in fact, because pattern discernibility exists for the individual with respect to a limited set of stimuli, the organization may no longer be equivocal on this issue.
As an example, the hospital, may at the organization level, suggest it experiences uncertainties from patient states and stimuli from these sources. However, at the level of nursing services personnel assigned to a particular patient, there may be little equivocality or uncertainty, since proper diagnosis and therapy on the part of others, combined with continued capability to monitor patient states reduces variation or alternatives. As a result, pattern is more easily discernible.

PROPOSITION FOUR: CONTINGENT DYNAMICS

Perhaps the most disappointing part of this study are the results found which give marginal support to pieces of the contingent dynamics framework. Of the twenty-four potential pieces of evidence, only sixteen percent contribute any support for the proposition.

This is not surprising, for the entire contingent dynamics framework was predicated on assumptions portrayed in the first three propositions. The inability of Proposition Two to withstand empirical testing severely weakened the theoretical foundation on which the contingent notion was developed. As we have noted above, at least in these two convenient samples, boundary spanning was linked to components of pattern discernibility and thus may be explored in future studies as a potential contributor to this construct.
Nevertheless, as the results indicate, the strongest linkage to explaining variation in performance program structural characteristics are not the boundary activities so much as the pattern discernibility. Future studies of these causal relationships should be undertaken in order to determine the potential impact of boundary-spanning activity on the discernibility of pattern. In this respect, the contradictory literatures of boundary studies (e.g., Leifer, 1975) and that linking understanding to frequency of interaction can be reconciled.

ANCILLARY DATA

Interesting results were noted at the end of the previous chapter in viewing relationships between several conditions in boundary spanning and all remaining variables in the framework.

For the question of difficulty in obtaining information from the outside, we found no clear relationship to boundary activity. We also saw how this difficulty (somewhat trivially) was positively related to overall job difficulty and negatively related to formalization.

Problems in getting outside resources were associated with informational boundary activity, interactional boundary activity, and somewhat with all three pattern discernibility dimensions. This problem was inversely related to formalization and positively related to developmental activity.
Non-organizational member cooperation was weakly linked directly to boundary informational activity and was somewhat capable of obscuring the discernibility of pattern in stimuli. This lack of cooperation appears somewhat associated with developmental activity.

The questions of knowing expectations of non-organizational persons are similar to the battery of questions used in measuring a component of uncertainty. It comes as no surprise that it is inversely related to uncertainty. Among the interesting linkages of this question are its strong direct relationships with boundary activity. In fact, this helps to confirm one social psychological phenomenon often overlooked in studies of boundary spanners. Among the scores of studies on interpersonal activity, interactions and attraction, Lott and Lott (1965) and Homans (1950) suggest that attraction and familiarity are a function of frequency of interaction. Thus, frequent interaction with either groups or particular individuals in connection with boundary spanning helps the focal person understand and gain better knowledge of expectations for the behavior of these foci of interaction. As an example, the greater the familiarity with a sales representative of a supplying organization, the greater the procurement boundary spanner can predict action on the part of the supplier.
The question on knowledge of appropriate source is especially interesting. First, it illustrates how frequency of externally focused information gathering or interaction highly improves one's understanding of whom to deal with for particular purposes. Also, as knowing whom to obtain information from is an aspect of uncertainty reduction, we see an inverse relationship with uncertainty and a direct relationship with discretion.

Authority in boundary spanning also seems to come as a function of the amount of boundary spanning one performs. In addition, the greater the authority to conduct boundary spanning, the lesser the uncertainty and the greater variety perceived in tasks. At the same time, the greater the authority to do boundary spanning, the lesser the dependence on the supervisor and the greater the use of discretion and developmental activity.

This latter piece of data appears to indicate that when organizations grant more legitimacy to the boundary-spanning activities, more individual judgment and developmental activity can be used, which has the potential for reducing uncertainty even in the face of variability.

The final aspect of this ancillary information shows how the hospital regulates in some manner those who have a greater boundary-spanning component in their positions. This would be consistent with the explanation above that organizational designers seek to place boundary spanners
in organizational areas where their individual expertise and experience can be used to reduce equivocality and provide information.
CHAPTER SEVEN

IMPLICATIONS AND RECOMMENDATIONS FOR
THEORY, RESEARCH AND PRACTICE

The study described below may be viewed as a single limited contribution to the developing discipline of organization behavior theory. We have developed an integrated theoretical position based on theory below and have seen parts of this framework supported and others rejected in an empirical test. Certainly, these results suggest substantial caution in either generalization or conclusions regarding relationships. In some ways, theoretical questions are far from fully resolved and the stage is set for further testing, refinement and development.

As with any study, methodological/theoretical costs and benefit calculations guided strategic decision making relevant to content and procedures. One outcome of this process tied closely to the analysis and modification of this project in its various stages is the understanding that studies of this type create far more than just matrices of summary statistics and interpretation. Accompanying the development of the model and plan for its testing, a number of major issues were attacked on
several fronts. These issues at times were analyzed in some depth; at other times, were suggested as ripe for future study. This chapter briefly focuses on several of these issues, illustrating how aspects of the study may be linked further to additional research based activity. We discuss these issues by noting potential implications and recommendations on three fronts: theory, empirical research, and actual organizational application.

THEORY

A major attempt in the study was to conceptualize variables at several levels of abstraction (Shapiro and McNaul, 1974). In pursuing the literature review, we observed potential explanation of the chosen organizational phenomena at several levels. As an example, the constructs of variety and difficulty in tasks were seen to be moderate in level of abstraction, while the idea of pattern discernibility in stimuli was suggested at a more abstract level. The use of definitional transformations between levels of abstraction also facilitated an understanding of the foci of the study. These approaches aided in the development of a parsimonious theoretical position which could be used to explain a variety of organizational phenomena. This approach may have implications for future theory, as theorists in the organizational sciences often approach problems from a variety of perspectives. The idea of pursuing conceptualization at varying levels of abstraction may help in developing more parsimonious future positions.
A second future path for theoretical development involves further conceptualization of the constructs developed in the study and gleaned from the literature. In some ways, the constructs lack maximum precision and would benefit greatly from future study. As an example, the notion of discernibility in pattern holds great promise, as the question of discerning stimuli links or clusters is of great importance in a theory of organizational activity. Appropriate for future theoretical considerations would be such issues as clustering, sequencing and interdependence among stimuli. In some ways, the lower order constructs of uncertainty (equivocality) or task difficulty and variety supply part of the solution. Nevertheless, the construct is in need of more intensive conceptualization.

One area of deficiency in the framework above is the relationship between stimuli patterns and cognitive structures and processes of individual perceivers. The question of individual information processing capacities, personality or other similar variables was intentionally designated as beyond the boundaries of this study. Future efforts must deal with this critical issue, for organizational performance is potentially explained through understanding congruence between individual capabilities and stimuli patterns (Porter, Lawler and Hackman, 1975). As Bobbitt (1975) and others have suggested in different veins, understanding organizational
outcomes in facing uncertainty or equivocality depend only partially on the performance programs assigned to or learned by individuals. Often, tolerance for ambiguous or uncertain situations on the part of individuals will determine whether particular individuals may be most successful in the organizational configuration. In particular, as Bobbitt points out, the organization designers should have cognitive structures appropriate to process information on stimuli and linkages, necessary for the development of others' performance programs.

The boundary literatures were shown to be often ambiguous and divergent in focus and conclusions about boundary spanning. One purpose of the study (only partially fulfilled) was to demonstrate theoretically that boundary positions or boundary-spanning activity have no direct link to uncertainty absorption. In fact, the study demonstrated a more complex link between boundary activity and the process of uncertainty absorption. What we observed were not particularly unique performance programs for boundary spanners, but rather a relationship between performance programs developed for differentially boundary-spanning activity and their link to uncertainty absorption. We saw how extensive boundary activity was linked to structural programs necessary for reduction of varying amounts of equivocality. For many positions, the inherent discernibility of stimuli patterns requires that organizational designers provide highly structured
performance programs and thus facilitate the input, limited transformation and movement of simple information to other locations in the organization. Whether near the boundary or far from the boundary, performance programs could always be viewed as appropriate in the chain of information/artifact transfer for purposes of uncertainty absorption.

Although one's location in the organization relative to the overall organizational boundary was found to have limited explanatory power, we should not relegate the construct to a secondary place in the organizational literature. In fact, the literatures on role conflict, negotiation and boundary spanning discussed in Chapter Two suggest the construct to be quite important in explaining differential organizational performance. This study did not intend to examine organizational performance, but simply perceptions of structure in activities. A study of the linkage between extent of boundary spanning and organizational performance should be undertaken. The limited ancillary data discussed at the conclusion of Chapter Five suggests this to be appropriate. While the difficulty of boundary spanning is important, we must remain aware of the potential relationship between frequency of interpersonal interaction and familiarity suggested by Adams (1972). These positions, as well as employing the dimensional analysis suggested for boundary activity are worthy of study.
A further boundary around this study avoided focus on inter-unit boundary spanning. Future considerations of the boundary spanning concept should include focus on differential (or similar) impacts of inter-unit vs. inter-organizational boundary spanning.

Related to these questions is the construct of boundary proximity, suggested by McNaul, et al (1974). In their limited explanation, these authors briefly defined a potentially important construct, but were unclear about the possible tautological link between boundary positions and uncertainty. With the theoretical framework above in mind, it might be possible to further clarify this variable, dimensionalize it more abstractly, and link it to other organizational variables (e.g. locus of power and locus of uncertainty). The organizational center construct of Starbuck (1973) may be integrated with this idea.

A final theoretical implication of this study is the efficacy of pursuing further refinement along the lines suggested in the conceptual framework. In building an integrated position from a variety of sources, the theoretical position relied heavily on an information processing view of the organization. As part of this view, the organizational configuration idea of interdependent stimuli/response sets was emphasized. These ideas, though far from original, have been shown to have great theoretical import and should be expanded in further studies. A second limited literature is that of systems, utilized only superficially in this
study, but its considerations of information flows, transformations, input and output (Katz and Kahn, 1966) can be used to further conceptualize organizations and understand organization design.

**RESEARCH**

At a more empirical level, this study has expanded several current research paths and added somewhat to operationalization of several major constructs in the literature. First, the boundary activity informational and interactional scales developed from the Zeitz-Leifer measures were shown to have considerable internal consistency, and considering the high intercorrelation of these two dimensions with each other relative to other measures, they enjoy limited convergent/discriminant validity. Future studies validating these dimensions should be conducted, correlating these perceptual responses to actual observations of behavior. As examples, monitoring of phone calls, mail, or personal face-to-face interactions would help to demonstrate validity for these scales. This scaling effort has helped to suggest little usefulness for studies employing dichotomous distinctions between boundary spanning and non-boundary spanners in organizations. The range and variance observed in these scales suggests greater emphasis be placed on the degree of boundary-spanning activities present in an organizational position.
Similarly, the scales developed to measure the pattern discernibility dimensions of task variety and the four performance program dimensions all enjoy sample independent internal consistency. The uncertainty and task difficulty dimensions must be explored further and should be examined by viewing the multi-dimensional attributes of these scales. Many of the results demonstrate construct validity for these two scales, and suggest internal consistency may be an inappropriate criterion for judging reliability or consistency. One important impact on future research builds on Bobbitt's (1975) understanding of the invalidity of the Van de Ven (1975) task "variability" dimension. Although conceptualized as variability by Perrow (1967) and interpreted by Van de Ven and Delbecq (1975) as variability, Bobbitt suggests the items to potentially enjoy face validity in measuring task variety. The results add credibility to this position, and we see how the scale enjoys some construct validity.

Methodologically, two procedures employed are worthy of note. First, the use of alpha factor analysis was appropriate considering the criterion of maximum internal consistency for the scales. This technique involved a different orientation to factor analysis and avoided many of the difficulties with arbitrary criteria in rotation. Its use should be considered in further scale building by social scientists.
A second scaling consideration has potential usefulness for future researchers. Building on the need to test interaction terms, the issue of level of measurement was quite important in this study. Although we far from achieved the goal of building scales at the ratio level, the use of easily quantified and interpreted response categories, coupled with reliance on categories developed using the Tilton overlap statistic, helped us to create scales with much greater confidence in their interval attributes.

The translation of the March and Simon (1958) performance program idea into an analogue of individual organizational position structure presents great possibilities for future research. Considering the effects of aggregation on measurement (Shapiro and McNaul, 1974), the level of analysis investigated may be an important determinant of empirical results. In studies to date in which these constructs were investigated, the organizational decision unit has served as the referent. This approach is fine if two conditions can be met. First, measures should focus on the unit (not individual activities in the unit) and second, there should be little variation (i.e. there should be greater convergence) around some value of central tendency. To date, most studies employing this level of analysis violate both of these assumptions. First, they frequently rely on perceptions which mix the unit and individual as referent. They also rely on a divergence
of opinion with often substantial range and eliminate all meaningful data by aggregation. As Sidman (1960) notes, the result may be an artifact of questionable utility. This study has demonstrated the extreme variability found in organizational positions and suggests that investigations of individual perceptions, when aggregated to form a composite picture of unit activities, may be losing important variation and assuming away useful data as error. Rather, the approach of Sathe (1974) in viewing the intra-unit variance seems of interest. Unless there is great within-unit convergence, the aggregation procedure seems questionable. This methodological issue will be explored in further research.

**PRACTICE**

While intended as a further step in the direction of theory building and hypothesis testing, this study may have some implications for actual organizational activities. We must beware, however, of suggesting these results will generalize to other samples or organizations. It was the intention in this study to sample a wide variety of organizational positions. This objective was partially fulfilled, as variance was obtained, but the sample remains a convenient one and limits generalizability.

Rather than generalize (and develop prescriptions) based on limited empirical data in these organizations, we might suggest that the conceptual frameworks from which this study emerged, as logically developed positions,
are of some use to those in actual organizational positions. In fact, as Kurt Lewin has observed, practicality may be the very focus of theory-building. We may suggest how the position developed above has implications for individuals involved in the process of organization design or organization change.

Of critical importance is an understanding on the part of the organization designer that no one single structure is appropriate for organizations or individual positions in organizations. The key concept in the conceptual frameworks above (and consistent with the ideas of current contingency theory) is that structural attributes of organizations should be congruent with conditions faced by the organization. Constraints imposed by technology, contingencies imposed by the environment and the uncertainties of organizational activity all generate stimuli for individuals in organizational positions. It is the task of the organizational designer to structure performance programs for individuals to allow each to respond effectively to appropriate stimuli. If responses can be linked to the stimuli and successful coordination or integration across positions achieved, the organization should affect functional outcomes and experience success. If however, designers impose either mismatches between level of equivocality in conditions faced and the perpetration of a highly structured or highly organic structure based on principle, the organization may suffer.
As an example, we might consider the research and development unit of a manufacturing organization. With highly professional employees who confront great uncertainty or equivocality (alternatives for action) and whose stimuli lack discernibility, imposition of a highly bureaucratic or structured system for control may be foolish and quite dysfunctional. When facing conditions of this type, considerable discretion may be needed and there may exist no way in which responses can be anticipated before these uncertain events occur. A problem in many organizations where this mismatch exists is one in which executives, enamored of either an alleged "need for control" or adherence to principles of bureaucracy, impose structure when it is inappropriate.

Equally inappropriate and potentially dysfunctional is when an organization faces great stability and responds by being needlessly organic. As an example, consider the technical core of a commercial or savings bank. The organization operates in a mediating technology, supplying classes of clients with limited transactions on a frequent basis (Thompson, 1967). In the last decade, behavioral science consultants have emerged with very humanistic perspectives (Bennis, 1967) and suggested the need for organizations to be especially organic, allowing more freedom, discretion and flexibility to organizational members. Although these approaches may be functional in terms of individual need structures which require such
Job attributes for satisfaction of intrinsic needs (Porter, Lawler and Hackman, 1975), they may be dysfunctional when applied as principles in organization design. To allow bank tellers or clerks great freedom, discretion and flexibility in responding to stimuli or choice about appropriate stimuli would destroy the bank's potential for closing the technical core. At the same time, the great range of governmental regulations supply constraints on banking activity and this creates greater certainty about transactions, procedures and methods. The bank would be quite incapable of fulfilling many of its service goals if an organic approach were permitted in its technical core.

In both cases, the mismatch is evident and dysfunctional. Our prescription is one that requires organization designers to actively assess and reassess environmental conditions, information needs and objectives. If this is accomplished, performance programs can be determined which provide for maximally functional organizational outcomes. If the designers can remain aware of environmental dynamics and incorporate these into their continuing organizational plan, performance programs could be designed to provide the tools necessary for information input, transformation and transfer.

If the designers also remain cognizant of individual need structures, they can match job characteristics to the preferences of individuals. As an example, Thompson
(1961) discusses bureaupathology, or the situation in which an individual's cognitive limitations or intolerance of uncertainty and need for rigidity make them ineffective in highly dynamic or uncertain situations. With these considerations in mind, organizational designers can better facilitate the uncertainty absorption and information processing activities of the organization.

This may be especially true at the boundaries, where especially in a mediating technology, the homogeneity or limited sphere of possible transactions creates great certainty and makes highly structured response appropriate (Thompson, 1962).
APPENDIX A

PRETEST QUESTIONNAIRE
On the next several pages are a number of questions which are designed to help us learn more about the nature of work in organizations. We would like your help in this effort. It is important that you think carefully about each question and give answers which you feel most accurately describe your job, and both the work unit and organization in which you work.

This is not a test. There are no right or wrong answers and no time limits. Do not write your name anywhere in this booklet. Please read all directions carefully and answer all questions.

Each question has three parts. In Column "A" of every response, you will be asked to give your impression of the job you occupy. In the space below, write down the name of your job, how long you have worked in this position, how long you have worked with this organization, and a short description of the job.

NAME OF JOB:_________________________________________
EMPHIS ON JOB:_______________________________________
CONTACT WITH ORGANIZATION:___________________________
DESCRIPTION OF JOB:_________________________________
ARE YOU A PART TIME WORKER OR FULL TIME?__________

In column "B" you will be asked to respond to the same questions, but this time with reference to the workers in the work unit you are a part of. Your work unit is the group of individuals you work with, all of whom report to your immediate supervisor. Thus, if you are one of ten clerks who all report to the same supervisor, your work unit is composed of ten people. If you are the only one in your work unit (i.e., no one else reports to your supervisor but you), then your responses in Columns "A" and "B" will be the same. In the space below, write the name of your work unit; the number of people in it. If the number changes from time to time, write down the average number of individuals in your work unit. Also please jot down a brief description of the basic work done by those in the unit, and note how many workers do the same job as you.

NAME OF WORK UNIT:_________________________________
NUMBER IN YOUR WORK UNIT:___________________________
DESCRIPTION OF WORK DONE BY UNIT:__________________
NUMBER IN WORK UNIT WHO DO SAME JOB AS YOU:_________

Column "C" below asks you to respond to the same questions, but this time with reference to your entire organization or company.

Thus, there will be a series of questions, each of which is to be answered three times, once each in Columns "A", "B", and "C". You will choose one of five responses for each answer.
PART I

The first set of questions below asks you to indicate your best impression of how much of a particular property exists in your job, for workers in your work unit and for workers in your organization. Thus, for each question, you will respond three times:

In Column "A", CIRCLE that single number which corresponds to the word or phrase which best expresses how much exists in your job (think of yourself as "the worker" in the question).

In Column "B", CIRCLE that single number which corresponds to the word or phrase which best expresses how much exists in the jobs of workers in your work unit (when the question talks about "the worker" think of all the workers in your unit). REMEMBER: Your work unit is composed of all those workers who report to the same supervisor as you.

In Column "C", CIRCLE that single number which corresponds to the word or phrase which best expresses how much exists in the jobs of all workers in your entire organization or company (when the question says "the worker," think of all workers in the company).

AS A KEY TO WHAT EACH OF THE NUMBERS AND ITS CORRESPONDING WORD OR PHRASE MEANS, USE THE DIAGRAM AS INDICATED BELOW:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>SOME</td>
<td>QUITE A BIT OF</td>
<td>AN EXTREME AMOUNT OF</td>
<td>ALL</td>
</tr>
</tbody>
</table>

Example:

How much of a worker's time is spent away from the company premises?

A: For his/her job, this worker felt he/she was never away from the company premises, thus an "0" was circled in "A".

B: This individual felt some of the time people (other workers in the work unit) in his/her work unit are away from the company premises; thus a "1" was circled in Column "B".

C: This individual felt quite a bit of the time that people in the organization were away from the premises and thus circled "2" in Column "C".

PLEASE ANSWER THE FOLLOWING QUESTIONS BY CIRCLING THOSE RESPONSES WHICH YOU FEEL BEST REPRESENT YOUR IMPRESSION. REMEMBER, FOR EACH QUESTION, CIRCLE ONLY ONE NUMBER IN EACH COLUMN AND BE SURE TO CIRCLE A RESPONSE IN EACH OF THE COLUMNS. USE THE KEY AT THE TOP OF THE NEXT PAGE.
<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Described Your Job</td>
<td>Described Your Work Unit</td>
<td>Described Your Company</td>
</tr>
</tbody>
</table>

1. How much of what a worker does is recorded by the organization to use in measuring performance?
   - 0 1 2 3 4

2. How much ability must a worker demonstrate in order to get a job?
   - 0 1 2 3 4

3. How much responsibility does a worker have in deciding how his/her job is to be carried out?
   - 0 1 2 3 4

4. How much of what a worker does on the job is based on his/her allegiance to the authority of the supervisor?
   - 0 1 2 3 4

5. How much of what is done depends upon a knowledge of rules, policies, procedures and standard practices?
   - 0 1 2 3 4

6. How much of the work done is routine?
   - 0 1 2 3 4

7. How much variety does a worker encounter in a day?
   - 0 1 2 3 4

8. How much of what a worker does is done because the company rules must be obeyed?
   - 0 1 2 3 4

9. For how much of what a worker does on his/her job is it important that the chain of command be respected?
   - 0 1 2 3 4

10. How much of the job is repetition of a single set of procedures?
    - 0 1 2 3 4

11. How much education is required for success on the job?
    - 0 1 2 3 4

12. How much of what a worker does consists of finishing a job and passing it on to someone else?
    - 0 1 2 3 4

13. How much friendship is shown to those outside the organization while on the job?
    - 0 1 2 3 4
<table>
<thead>
<tr>
<th></th>
<th>COLUMN A</th>
<th>COLUMN B</th>
<th>COLUMN C</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. How much time does it take before a worker knows his/her work effort is successful?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. How much control does a worker have over how the job is done?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. How much leeway does a worker have in deciding exactly how to do the work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17. How much variety is there in the events that cause the work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18. How much of what a worker does is left up to him/her?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19. How much of what a worker does on the job is based on his/her allegiance to the rules of the company?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. How much of the work done requires an understandable sequence of steps to be followed?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. How much of a worker's time is spent trying to solve specific, difficult problems that are not immediately solvable?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. How much of what a worker does must await approval from his/her boss?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23. How much of the work done on a job is of different types or kinds?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24. How many decisions can a worker make without consulting his/her supervisor?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25. How much special training is required for special effective performance on the job?</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
PART II

This section consists of a number of questions which ask you to indicate how frequently various things happen in your job, the jobs of workers in your work unit and in the jobs of people in your organization. You will respond to each question three times:

In Column "A", circle that single number which corresponds to the word or phrase which best expresses how frequently this occurs in your job.

In Column "B", circle that single number which corresponds to the word or phrase which best expresses how frequently this occurs in the jobs of workers in your work unit. Remember, your work unit is all those workers who report to the same supervisor as you.

In Column "C", circle that single number which corresponds to the word or phrase which best expresses how frequently this occurs in the jobs of workers in your organization.

USE THE KEY BELOW TO SEE WHAT WORD OR PHRASE EACH NUMBER CORRESPONDS TO:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEVER</td>
<td>OCCASIONALLY</td>
<td>MANY TIMES</td>
<td>VERY OFTEN</td>
<td>ALWAYS</td>
</tr>
</tbody>
</table>

EXAMPLE:

How often does a worker speak to his/her supervisor?

A: For his/her job, this worker felt he/she spoke to the supervisor always; thus a "4" was circled in Column A.

B: For the jobs of people in his/her work unit, this worker felt workers very often speak to the supervisor; thus, a "3" was circled in Column B.

C: For the jobs of workers in the entire organization, this worker felt workers speak to their supervisors very often; thus, a "3" was circled in Column C.

Please go on to the next page and answer the following questions by circling those responses which you feel best represent your impression. Remember, for each item, circle only one number in each column and be sure to circle a response for each.
<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NEVER</strong></td>
<td><strong>OCCASIONALLY</strong></td>
<td><strong>FREQUENTLY</strong></td>
<td><strong>VERY OFTEN</strong></td>
<td><strong>ALWAYS</strong></td>
<td></td>
</tr>
<tr>
<td>26. How frequently does a worker participate in the decision to hire new staff?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. When a new type of decision is to be made, how often must approval be obtained from a worker's boss?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. How often is &quot;going through proper channels&quot; stressed?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. How frequently do instructions come from a worker's boss when existing rules and procedures are not adequate to make a decision?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30. How often are the same steps followed in processing work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31. How frequently is the worker asked to participate in decisions that involve his/her job responsibilities?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32. How frequently does a worker exchange ideas and information with people outside of his/her unit as an official part of the job?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33. How often does a worker associate with fellow workers off the job?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>34. How frequently is it a worker's job to find out about changes in social, economic, political or technological conditions outside his/her unit?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35. When a decision is to be made for which rules and procedures do not exist, how often does a worker act without referring the matter higher up?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36. How often does a worker treat some workers more favorably than others because of friendships?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>NEVER</td>
<td>OCCASIONALLY</td>
<td>FAIRLY</td>
<td>VERY OFTEN</td>
<td>ALWAYS</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>--------</td>
<td>------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td><strong>37. How often are problems handled adequately by following a standard procedure?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>38. How often are procedures available for effectively dealing with problems on the job?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>39. When an unusual situation is encountered, how frequently may a worker go ahead without checking with his/her boss?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>40. How often does a worker refer to a manual of rules and regulations to learn how jobs are to be done?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>41. How often are written orders from above followed without question?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>42. How often are the same procedures followed by a worker during the day?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>43. How frequently does a worker participate in decisions on the promotion of staff members?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>44. How often does a worker deal with persons outside his/her department as part of the job?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>45. How often is the worker evaluated?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>46. How often does a rules manual cover what is being worked on?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>47. How often does a worker gather information from outside the work unit as part of his/her job duties?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td><strong>48. How often are the activities or acts... followed in the work the same for dealing with a full variety of situations?</strong></td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Column A</td>
<td>Column B</td>
<td>Column C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. How often does the supervisor check to see if a worker is violating the rules?</td>
<td>never</td>
<td>occasionally</td>
<td>rarely</td>
<td>very often</td>
<td>always</td>
</tr>
<tr>
<td>50. How often does a worker seek the advice of persons in his/her unit who have knowledge about decisions being made?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51. How often can employees arrive late for work and not be reprimanded?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52. How frequently are decisions related to a worker's job responsibilities made without his/her involvement?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. How often does a worker find something new happening in his/her job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. How often does a worker go to someone else for aid in handling something unknown?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55. How often does a worker's boss make decisions related to someone's job without consulting the worker?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56. How often does a worker come across specific difficult problems that are not immediately solvable?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57. How often must a worker ask permission before he/she can leave the work area?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58. How often is a rule or manual referred to when doing the job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59. How often are a worker's suggestions encouraged for decisions that relate to the job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60. How often must a worker ask his/her boss before doing a job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Never</td>
<td>Occasionally</td>
<td>Fairly Often</td>
<td>Very Often</td>
<td>Always</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>61. How frequently does a worker participate in decisions on the adoption of new policies?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>62. How often does a worker get ahead by &quot;knowing somebody higher up?&quot;</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>63. How often is a worker forced to keep up with changes in the nature of work done?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>64. How often does a worker get his/her orders from higher up?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>65. How often does a worker exchange information with those in his/her work unit who are doing different work?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>66. How often is a worker unable to discuss his/her decisions with others in the work unit who make similar decisions on the job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>67. How often are the same kinds of problems encountered in work?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>68. How frequently is a worker's work checked by his/her superior?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>69. How often does the worker take an active part in decisions that concern his/her job?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>70. How often can a worker predict and anticipate the events that cause his/her work?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>71. How often does a worker have something different to do?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>72. How often must a worker adapt different methods or procedures to get work done?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>73. How often is a worker permitted to use his/her own judgment as to how to handle problems?</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
<td>0 1 2 3 4</td>
</tr>
</tbody>
</table>
### Part II

This section consists of a number of questions which ask you to indicate a particular percentage for things in your job, the jobs of your work unit, and the jobs of everyone in your organization. You will respond to each question three times:

**A:** In Column A, circle that single number which corresponds to the range in which you find the percentage of times this occurs in your job.

**B:** In Column B, circle that single number which corresponds to the range in which you find the percentage of times this occurs in the jobs of your work unit.

**C:** In Column C, circle that single number which corresponds to the range in which you find the percentage of times this occurs in the jobs of all people in your organization.

### Questions

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUR</td>
<td>YOUR</td>
<td>YOUR</td>
</tr>
<tr>
<td>WORK UNIT</td>
<td>WORK UNIT</td>
<td>WORK UNIT</td>
</tr>
<tr>
<td>COMPANY</td>
<td>COMPANY</td>
<td>COMPANY</td>
</tr>
</tbody>
</table>

1. How frequently can a worker rely on a clearly defined body of knowledge in doing his/her work? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

2. How often does a worker express work-related opinions to others in his/her work unit who are involved in similar work? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

3. How often does a worker exchange ideas and information with those in his/her work unit who do similar work? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

4. When problems arise, how often must a worker go to his/her boss for an answer? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

### Part III

Use the key below to see what range of percentages is indicated by each of the numbers:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0 to 20%)</td>
<td>(21 to 40%)</td>
<td>(41 to 60%)</td>
<td>(61 to 80%)</td>
<td>(81 to 100%)</td>
</tr>
<tr>
<td>Column A</td>
<td>Column B</td>
<td>Column C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DESCRIBE</td>
<td>DESCRIBE</td>
<td>DESCRIBE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YOUR JOB</td>
<td>YOUR WORK UNIT</td>
<td>YOUR COMPANY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What percentage of time is spent not working?

A: For his/her job, this person felt 0 to 20% of the time was spent not working; thus, a "0" was circled in Col. A.

B: This person felt people in his/her work unit spend 21 to 40% of the time not working; thus a "1" was circled in Col. B.

C: This person felt people in the entire organization spend 21 to 40% of the time not working; thus a "0" was circled in C.

Please answer the following questions by circling those responses which you feel best represent your impression of the appropriate percentages. Remember, for each item, circle only one number in each column and be sure to circle a response for each in all three columns. Use the key at the top of this page.

79. What percentage of job duties are specified? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

80. What percentage of decisions made on the job are the same type? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

81. What percentage of time is a worker certain of the results of his/her efforts? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

82. What percentage of the tasks done by a worker must be done before someone else in another unit can do their job? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

83. What percentage of specific duties performed on the job change from one day to the next? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

84. For problems that cannot be handled with available instructions, what percentage are reported in a standard way? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

85. What percentage of the decisions made on the job are handled with existing procedures? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4

86. What percentage of the problems that arise on the job are handled by following written and verbal instructions which were previously given? 0 1 2 3 4 0 1 2 3 4 0 1 2 3 4
37. What percent of the tasks connected with a worker's job depends upon someone else in another unit doing his/her job? 

3. What percent of the tasks connected with a worker's job depends on someone else in his/her unit doing their job first? 

PART IV

What is your age? _______ Sex: M F Years of Schooling: ________

How many immediate people from outside your unit must you depend on to do their jobs before you can do yours? 

How many people in your unit must depend upon you to do your job before they can do their jobs? 

How many times per week must you discuss with your supervisor matters that have occurred in other units and that are important to your job? 

How many immediate people from outside your unit must depend on you to do your job before they can do theirs? 

How many hours per week do you spend in meetings in person or talking on the phone to others outside your unit? 

How many people in your unit must do their jobs before you can do yours? 

Thank you for your cooperation.
APPENDIX B

MEMO TO HOSPITAL ADMINISTRATIVE STAFF
MEMO TO: Hospital Department Heads and Administrative Staff
RE: Participation in Ohio State University Survey

A doctoral student in Ohio State University's program in organizational behavior recently requested our cooperation in an effort to gather information on the relationships among job characteristics. His particular interest is in hospitals, considering the wide variety of skills, professional training, levels, and activities found here. We have agreed to let Mr. Shapiro select various job categories in a variety of departments for study. However, the choice of individuals to complete the questionnaire (within each job category) will be made by the researcher at random, and all responses will be anonymous.

There are no time demands being made on any department head; we hope you will help simply by providing Mr. Shapiro with the chance to distribute the questionnaires at some time in the next week. No individuals will be interviewed.

The questionnaire contains directions which are self-explanatory and normally takes about thirty to forty-five minutes to complete. The questions all deal with individual job characteristics. They are all answered simply by circling a response. No extensive thought or writing is required.

As all questionnaires are anonymous, no individual responses will be traceable to any employee. The researcher's main objective is to sample a variety of positions and levels within each department to obtain a composite picture. Data summaries for each department will be provided for department heads and central administration. Mr. Shapiro has indicated he would be available to speak to any administrators with further interest in this study or the general area of organizational behavior.

Questionnaires will be returned to a current location via hospital mail and will be picked up by Mr. Shapiro and others on the OSU research team.

Thank you for your cooperation.
APPENDIX C

HOSPITAL QUESTIONNAIRE
TO: 

The administration of Hospital has agreed to cooperate with the research staff of the Ohio State University in a study of work arrangements. We would appreciate your help in this research project, as your position is one of several dozen that have been chosen at random for study. We do not want to know your name; thus please do not put your name on any pages of this booklet. Previous research has shown that most individuals find these questions interesting: at the same time, they provide a chance for you to think about the things you do in your job. Please answer all questions in this booklet either by writing answers in the spaces provided or by circling the number which best represents your response. If you wish, you may take this booklet home to complete it. Your completing this questionnaire within the next week will greatly help our research effort.

It is important for you to answer each question based on your own opinion; there are no right or wrong answers, as each job has different characteristics. Some questions may look similar but deal with different aspects of jobs, so please try not to skip any questions. This is not a test of consistency or ability. Its only purpose is to have you describe the work arrangements for your job as accurately as possible. However, do not spend too much time on any one question. After reading each question, think for a few seconds about the answer, write it down as directed, and move quickly on to the next question. It takes about thirty to forty-five minutes to complete the questionnaire.

Some of the questions below ask you about your dealings with non-hospital personnel. Consider as non-hospital personnel those people who are not employed by Hospital. Examples of non-hospital personnel would be: patients, suppliers, government employees, and others not on the Hospital payroll.

All responses will be held by the Ohio State University in strictest confidence. Under no circumstances will any administrator of the hospital ever see your individual responses. Please ignore the column on the right edge of each page. This will be used by the research team for confidential coding of all responses.

WHEN YOU HAVE FINISHED AND HAVE CHECKED TO SEE THAT ALL QUESTIONS HAVE BEEN ANSWERED, PUT THE COMPLETED FORM BACK IN THE ENCLOSED ENVELOPE (MARKED ADMIN.), SEAL IT, AND DEPOSIT IT IN THE HOSPITAL MAIL. ADMINISTRATIVE STAFF HAVE BEEN DIRECTED TO PLACE ALL QUESTIONNAIRES IN A SEALED BOX, WHICH WILL ONLY BE OPENED BY RESEARCH STAFF MEMBERS.

THANK YOU FOR YOUR COOPERATION.

M.B. Shapiro
Teaching Associate
PART I

1. What is the official name of your department?
   ________________________________________________

2. What is your official job title?
   ________________________________________________

3. Are you presently (check one):   ___ Part Time or   ___ Full Time
4. Are you (check one):   ___ Paid by the Hospital or   ___ A Volunteer
5. For how many years have you held your present job? _____________________
6. How many other positions have you held at Hospital? _____________
7. Altogether, for how many years have you worked at ______________
8. What shift (hours) do you normally work? _________________;_____________
9. Please indicate with a check the highest level of education attained:
   ____ Some High School    ____ Some College    ____ Some Master's Work
   ____ High School Grad.   ____ Bachelor's Deg.   ____ Master's Degree
   ____ Doctoral Work or Degree
10. What is the title of your chief supervisor? _____________________
11. How many people do you supervise directly?  *
12. How many different supervisors do you have? 1  2  3  4  5 or more
13. Are you a member of a professional association?   ___ Yes   ___ No
14. Do you regularly attend meetings of a professional association?___ Yes ___ No
15. On the average, how long is it before you know whether you work effort
    is successful?
       ____ Know immediately   ____ Know within minutes   ____ Know within hours.
       ____ Know within a week   ____ Know within several weeks or more
16. What is your age? ________________
17. Are you at  ___ or ___
18. Do you hold any other job besides your position at  ___ Yes  ___ No
INSTRUCTIONS:

This section consists of a number of questions which ask you to indicate how frequently various things happen in your job. Please answer each question by circling only one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is:

0 1 2 3 4
NEVER OCCASIONALLY FAIRLY MANY TIMES VERY OFTEN ALWAYS

Example

How often do you speak to your supervisor? 0 1 2 3 4

If you feel you speak to your supervisor very often, you would have circled 3 as above. If you felt you talk to your supervisor only occasionally, you would have circled 1.

21. How often are you certain about which method would be best for dealing with problems that arise on your job? 0 1 2 3 4

22. How often can you tell whether you have met the expectations of those you deal with as part of your job? 0 1 2 3 4

23. How often do you develop new standard operating procedures yourself? 0 1 2 3 4

24. How often do you have problems getting necessary information from outside the organization? 0 1 2 3 4

25. In your contacts with non-hospital personnel (i.e., people who are not official hospital employees, like patients, social workers, suppliers) how often do you request information? 0 1 2 3 4

26. How frequently do you participate in making decisions that involve your job responsibilities? 0 1 2 3 4

27. How often do you have problems in obtaining needed resources from other organizations? 0 1 2 3 4

28. How often are you in doubt about how to obtain the information needed for making decisions on your job? 0 1 2 3 4

29. How often are problems handled adequately by following standard procedures? 0 1 2 3 4

30. How often is your work hindered because staff members in other organizations do not cooperate? 0 1 2 3 4
<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. How often do you take an active part in decisions that concern your job?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>32. In your contacts with non-hospital personnel, how often do you provide these people with information?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>33. In your contacts with non-hospital personnel, how often do you work with others for planning or coordination?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>34. How often do you find something new happening in your job?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>35. How often do you fulfill legal requirements for the hospital by dealing with non-hospital personnel?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>36. When dealing with others on the job, how often are you certain about how they want the job done?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>37. How often are the same steps followed in doing your job?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>38. How often are your dealings with people in other organizations the result of formal agreements they have made with the hospital?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>39. How often do you need to gather information from outside the hospital to do your job?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>40. How often do you have personal contact with hospital personnel from outside your department?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>41. How often do you know what to expect in dealings with non-hospital personnel?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>42. How often is it difficult to determine if the method you used in dealing with a problem was effective?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>43. How often do non-hospital personnel make your job difficult?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>44. When unusual situations arise, how frequently can you go ahead without supervisor approval?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>45. How often do you know which person in another organization to talk to in solving a particular problem?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>46. How often must you ask your supervisor before doing a job?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>47. How often must you use trial and error methods in order to get the work done effectively?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td>48. How often are procedures available for effectively dealing with job related problems?</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>NEVER</td>
</tr>
</tbody>
</table>

49. How often are you uncertain about how to act to meet the expectations of those you deal with as part of your job? 0 1 2 3 4
50. How often are you permitted to use your judgment in handling problems? 0 1 2 3 4
51. How often is making contacts with other organizations part of your job? 0 1 2 3 4
52. How often does a rules manual cover what is being worked on? 0 1 2 3 4
53. How often must you develop new strategies for dealing with work related problems? 0 1 2 3 4
54. In your contacts with non-hospital personnel, how often do you work together with others on mutual problems? 0 1 2 3 4
55. How often do you follow the same procedures during the day? 0 1 2 3 4
56. How frequently are decisions related to your job made without your involvement? 0 1 2 3 4
57. How often must you adopt new methods for dealing with work? 0 1 2 3 4
58. How often do you believe the information from outside the hospital is sufficient for decision-making in your job? 0 1 2 3 4
59. How often do you have something different to do? 0 1 2 3 4
60. How frequently is it difficult to determine whether a decision you made was correct? 0 1 2 3 4
61. How often must you deviate from standard practices in order to be effective in solving work-related problems? 0 1 2 3 4
62. How frequently are normal procedures inadequate for accomplishing work? 0 1 2 3 4
63. How often do you have contact in person or by telephone with people from outside the hospital as part of your job? 0 1 2 3 4
64. How often do you get orders from higher up? 0 1 2 3 4
65. How frequently do you participate in the decision to hire new staff? 0 1 2 3 4
66. How frequently does your supervisor check your work? 0 1 2 3 4
67. How often do you encounter new or additional problems on your job? 0 1 2 3 4
68. When problems arise, how often must you go to your supervisor? 0 1 2 3 4
69. How often do you receive written materials such as reports, correspondence and the like from outside the hospital as part of your job duties?  
0 1 2 3 4

70. How frequently do you participate in decisions on the adoption of new policies?  
0 1 2 3 4

71. How often do you have all the information necessary for making decisions on your job?  
0 1 2 3 4

72. When a new type of decision is to be made, how often must you first obtain approval from your supervisor?  
0 1 2 3 4

73. During the course of your work, how often do you come across specific, difficult problems that you don't know how to solve immediately?  
0 1 2 3 4

74. In general, how much actual thinking time do you usually spend in trying to solve such problems?  
None Some A modest amount of A good deal A great amount

Please continue on to Part III.
PART III

INSTRUCTIONS:

This section consists of a series of questions which ask you to indicate how much of a certain property exists in your job. Please answer each question by circling one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is as follows:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>SOME</td>
<td>QUITE</td>
<td>AN EXTREME</td>
<td>ALL</td>
</tr>
<tr>
<td>A BIT OF</td>
<td>AMOUNT OF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example

How much of your time is spent off the hospital premises?

If you never leave the hospital premises in your job, you would circle 0 as was done above. If you spent all your time on the job off hospital grounds, you would have circled 4.

75. How much of your work is of different kinds?

76. How much control do you have over how the job is done?

77. How much variety is there among the types of non-hospital personnel you deal with in your job?

78. How much of your job-related activity consists of meetings or telephone conversation with people who are non-hospital personnel?

79. How much activity is done because rules must be obeyed?

80. How much of your job is repetition of a single set of procedures?

81. How much decision making on your job can be done without consulting your supervisor?

82. How much authority do you have in dealing with non-hospital personnel?

83. How much of your time is spent providing information, services or aid to non-hospital personnel?

84. How much are your job duties affected by social or political changes in the community?

85. How much are your job duties affected by economic changes in the community?

86. How much of what you do on your job is left up to you?
87. How much time does your job require you to spend in analyzing written information (reports, articles, correspondence) that enters from outside the hospital?

88. How much leeway do you have in doing your work?

89. How much of your time is spent in developing new procedures or patterns for accomplishing your work?

90. How much responsibility do you have in deciding how work will be carried out?

91. How much of your job related activity consists of personal meetings or phone conversation with hospital personnel from outside your department?

92. How much of your job activity depends upon the knowledge of standard procedures and practices?

93. How much variety is there in the events that cause your work?

94. How much of what you do on your job must await your supervisor's approval?

95. How much are your job duties affected by technological changes?

96. How much variety is there among the hospital personnel you deal with from outside your department?

97. How much of your contact with non-hospital personnel is regulated by written or well-understood rules and procedures?

98. How much variety do you encounter in a day's work?

Please continue on to Part IV.
PART IV

INSTRUCTIONS:
The questions in this part deal with the percent (%) of decisions, problems, duties, etc. on your job that are of a certain type. Please answer each question by circling only one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is as follows:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>(0 to 20%)</td>
<td>(21 to 40%)</td>
<td>(41 to 60%)</td>
<td>(61 to 80%)</td>
<td>(81 to 100%)</td>
</tr>
</tbody>
</table>

Example

What percentage of decisions you make are new to you? 0 1 2 3 4

If you feel between 21 to 40 percent of decisions you make are new to you, answer this question by circling '1' as done above.

99. What percent of your job responsibilities require you to develop new procedures over time? 0 1 2 3 4

100. What percent of your time on the job is spent dealing with hospital personnel from outside your department? 0 1 2 3 4

101. What percent of your job related activity consists of dealing with people who are not hospital personnel? 0 1 2 3 4

102. In some jobs, things are fairly predictable. In others, you are often not sure what the outcome will be. What percent of the time are you aware of what the results of your effort will be? 0 1 2 3 4

103. What percent of your job duties are specified? 0 1 2 3 4

104. What percent of decisions made on your job are handled with existing procedures? 0 1 2 3 4

105. What percent of your time is spent in obtaining or analyzing information which comes from outside the hospital in the form of reports, articles, and correspondence? 0 1 2 3 4

106. What percent of problems on your job are handled by following written and verbal instructions which were previously given? 0 1 2 3 4

107. What percent of your duties change from one day to the next? 0 1 2 3 4

108. For problems that cannot be handled with available instructions, what percent are reported in a standard way? 0 1 2 3 4
PART V

INSTRUCTIONS:

Each of the questions in this section asks you to indicate to what extent certain things occur or exist in your job. Please answer each question by circling only one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is as follows:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO NO EXTENT</td>
<td>TO LITTLE EXTENT</td>
<td>TO SOME EXTENT</td>
<td>TO MODERATE EXTENT</td>
<td>TO GREAT EXTENT</td>
</tr>
</tbody>
</table>

Example

To what extent are your job duties clear? 0 1 2 3 4

If you feel your job duties are clear only to some extent, you would circle '2' as above. If you felt they were clear to a great extent, you would have circled '4'.

108. To what extent is there a clearly defined body of knowledge or subject matter which can guide you in doing your work? 0 1 2 3 4

109. To what extent are you successful in solving job related problems by developing new approaches yourself? 0 1 2 3 4

110. To what extent must you depend upon others in your department to get their jobs done before you can get yours done? 0 1 2 3 4

111. To what extent do others in your department depend on you to get your job done in order to get theirs done? 0 1 2 3 4

112. To what extent do others in the hospital outside your department depend on you to get your job done before they can get theirs done? 0 1 2 3 4

113. To what extent is there an understandable sequence of steps that can be followed in doing your work? 0 1 2 3 4

114. To what extent do you depend on hospital personnel outside your department to get their jobs done before you can do yours? 0 1 2 3 4

115. If there is something that you don't know how to handle in your work, to what extent can you go to someone else for an answer to the problem? 0 1 2 3 4
SURVEY OF WORKING ARRANGEMENTS

The affiliated agencies of the Federation have agreed to cooperate with the research staff of the Ohio State University in a study of work arrangements. We would appreciate your help in this research project, as all individuals in the cooperating agencies will be asked to anonymously complete this questionnaire. Previous research has shown that most individuals find these questions interesting; at the same time, they provide a chance for you to think about the things you do in your job. Please answer all questions in this booklet either by writing answers in the spaces provided or by circling the number which best represents your response.

It is important for you to answer each question based on your own opinion; there are no right or wrong answers, as each job has different characteristics. Some questions may look similar but deal with different aspects of jobs, so please try not to skip any questions. This is not a test of consistency or ability. Its only purpose is to have you describe the work arrangements for your job as accurately as possible. However, do not spend too much time on any one question. After reading each question, think for a few seconds about the answer, write it down as directed, and move on quickly to the next question. It takes about thirty to forty-five minutes to complete the questionnaire.

Some of the questions below ask you about your dealings with non-agency personnel. Consider as non-agency personnel those people who are not employed by any of the federated agencies.

All responses will be held by the Ohio State University in strictest confidence. Under no circumstances will any administrator of your agency ever see your individual responses. Please do not put your name anywhere in this booklet. Please ignore the column on the right edge of each page. This will be used by the research team for confidential coding of your responses.

When you have finished and have checked to see that all questions have been answered, put the completed form in the envelope attached, seal it, and deposit it in the box marked OSU STUDY, located in the receptionist area of your building. This box is sealed and will be opened only by members of the research team.

Thank you for your cooperation.

M.B. Shapiro
Teaching Associate
PART I

1. What is the official name of your agency?

2. What is your official job title?

3. Are you presently (check one): ___ Part Time or ___ Full Time

4. Are you (check one): ___ Paid by the Federation or ___ A Volunteer

5. For how many years have you held your present job?

6. How many other positions have you held at this agency?

7. Altogether, for how many years have you worked here?

8. What shift (hours) do you normally work?

9. Please indicate with a check the highest level of education attained: ___ Some High School. ___ Some College ___ Some Master's Work ___ High School Grad. ___ Bachelor's Deg. ___ Master's Degree ___ Doctoral Work or Degree

10. Who is your chief direct supervisor?

11. How many people do you supervise directly?

12. How many different supervisors do you have? ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 or more

13. Are you a member of a professional association? ___ Yes ___ No

14. Do you regularly attend meetings of a professional association? ___ Yes ___ No

15. On the average, how long is it before you know whether you work effort is successful? ___ Know immediately ___ Know within minutes ___ Know within hours ___ Know within a week ___ Know within several weeks or more

16. What is your age?

17. Are you ___ permanent or ___ temporary?

18. Do you hold any other job besides your position here? ___ Yes ___ No
PART II

INSTRUCTIONS:
This section consists of a number of questions which ask you to indicate how
can you tell whether you have met the expectations
of those you deal with as part of your job? 0 1 2 3 4
23. How often do you develop new standard operating procedures
yourself? 0 1 2 3 4
24. How often do you have problems getting necessary information
from outside your agency? 0 1 2 3 4
25. In your contacts with non-agency personnel, how often do
you request information? 0 1 2 3 4
26. How frequently do you participate in making decisions that
involve your job responsibilities? 0 1 2 3 4
27. How often do you have problems in obtaining needed resources
from other organizations? 0 1 2 3 4
28. How often are you in doubt about how to obtain the information
needed for making decisions on your job? 0 1 2 3 4
29. How often are problems handled adequately by following
standard procedures? 0 1 2 3 4
30. How often is your work hindered because staff members in
other organizations do not cooperate? 0 1 2 3 4
<table>
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<th>1</th>
<th>2</th>
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<th>4</th>
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<tbody>
<tr>
<td>31.</td>
<td>How often do you take an active part in decisions that concern your job?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>In your contacts with non-agency personnel, how often do you provide these people with information?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>In your contacts with non-agency personnel, how often do you work with others for planning or coordination?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>How often do you find something new happening in your job?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>How often do you fulfill legal requirements for the agency by dealing with non-agency personnel?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>36.</td>
<td>When dealing with others on the job, how often are you certain about how they want the job done?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>How often are the same steps followed in doing your job?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>How often are your dealings with people in other organizations the result of formal agreements they have made with the agency?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>How often do you need to gather information from outside the agency to do your job?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>How often do you have personal contact with federation personnel from outside your agency?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>41.</td>
<td>How often do you know what to expect in dealings with non-agency personnel?</td>
<td>0 1 2 3 4</td>
<td></td>
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<td></td>
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<tr>
<td>42.</td>
<td>How often is it difficult to determine if the method you used in dealing with a problem was effective?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>How often do non-agency personnel make your job difficult?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>44.</td>
<td>When unusual situations arise, how frequently can you go ahead without supervisor approval?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>How often do you know which person in another organization to talk to in solving a particular problem?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>How often must you ask your supervisor before doing a job?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>47.</td>
<td>How often must you use trial and error methods in order to get the work done effectively?</td>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>How often are procedures available for effectively dealing with job related problems?</td>
<td>0 1 2 3 4</td>
<td></td>
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<td></td>
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</tbody>
</table>
49. How often are you uncertain about how to act to meet the expectations of those you deal with as part of your job?

50. How often are you permitted to use your judgment in handling problems?

51. How often is making contacts with other organizations part of your job?

52. How often does a rules manual cover what is being worked on?

53. How often must you develop new strategies for dealing with work related problems?

54. In your contacts with non-agency personnel, how often do you work together with others on mutual problems?

55. How often do you follow the same procedures during the day?

56. How frequently are decisions related to your job made without your involvement?

57. How often must you adopt new methods for dealing with work?

58. How often do you believe the information from outside the agency is sufficient for decision-making in your job?

59. How often do you have something different to do?

60. How frequently is it difficult to determine whether a decision you made was correct?

61. How often must you deviate from standard practices in order to be effective in solving work-related problems?

62. How frequently are normal procedures inadequate for accomplishing work?

63. How often do you have contact in person or by telephone with people from outside the agency as part of your job?

64. How often do you get orders from higher up?

65. How frequently do you participate in the decision to hire new staff?

66. How frequently does your supervisor check your work?

67. How often do you encounter new or additional problems on your job?

68. When problems arise, how often must you go to your supervisor?
69. How often do you receive written materials such as reports, correspondence and the like from outside the agency as part of your job duties?

70. How frequently do you participate in decisions on the adoption of new policies?

71. How often do you have all the information necessary for making decisions on your job?

72. When a new type of decision is to be made, how often must you first obtain approval from your supervisor?

73. During the course of your work, how often do you come across specific, difficult problems that you don't know how to solve immediately?

74. In general, how much actual thinking time do you usually spend in trying to solve such problems?

__None    __Some    __A modest amount of    __A good deal    __A great amount

Please continue on to Part III.
PART III

INSTRUCTIONS:

This section consists of a series of questions which ask you to indicate how much of a certain property exists in your job. Please answer each question by circling one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is as follows:

<p>| | | | |</p>
<table>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>NONE</td>
<td>SOME</td>
<td>QUITE</td>
<td>AN EXTREME</td>
</tr>
<tr>
<td>A BIT OF</td>
<td>AMOUNT OF</td>
<td>ALL</td>
<td></td>
</tr>
</tbody>
</table>

Example

How much of your time is spent off the agency premises? 0 1 2 3 4

If you never leave the agency premises in your job, you would circle 0 as was done above. If you spent all your time on the job off agency grounds, you would have circled 4.

75. How much of your work is of different kinds? 0 1 2 3 4

76. How much control do you have over how the job is done? 0 1 2 3 4

77. How much variety is there among the types of non-agency personnel you deal with in your job? 0 1 2 3 4

78. How much of your job-related activity consists of meetings or telephone conversation with people who are non-agency personnel? 0 1 2 3 4

79. How much activity is done because rules must be obeyed? 0 1 2 3 4

80. How much of your job is repetition of a single set of procedures? 0 1 2 3 4

81. How much decision making on your job can be done without consulting your supervisor? 0 1 2 3 4

82. How much authority do you have in dealing with non-agency personnel? 0 1 2 3 4

83. How much of your time is spent providing information, services or aid to non-agency personnel? 0 1 2 3 4

84. How much are your job duties affected by social or political changes in the community? 0 1 2 3 4

85. How much are your job duties affected by economic changes in the community? 0 1 2 3 4

86. How much of what you do on your job is left up to you? 0 1 2 3 4
<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>NONE</td>
<td>SOME</td>
<td>QUITE</td>
<td>AN EXTREME</td>
<td>ALL</td>
</tr>
<tr>
<td>A BIT OF</td>
<td>AMOUNT OF</td>
<td></td>
<td>331</td>
<td></td>
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</table>

87. How much time does your job require you to spend in analyzing written information (reports, articles, correspondence) that enters from outside the agency? 0 1 2 3 4

88. How much leeway do you have in doing your work? 0 1 2 3 4

89. How much of your time is spent in developing new procedures or patterns for accomplishing your work? 0 1 2 3 4

90. How much responsibility do you have in deciding how work will be carried out? 0 1 2 3 4

91. How much of your job related activity consists of personal meetings or phone conversations with federation personnel from outside your agency? 0 1 2 3 4

92. How much of your job activity depends upon the knowledge of standard procedures and practices? 0 1 2 3 4

93. How much variety is there in the events that cause your work? 0 1 2 3 4

94. How much of what you do on your job must await your supervisor's approval? 0 1 2 3 4

95. How much are your job duties affected by technological changes? 0 1 2 3 4

96. How much variety is there among the federation personnel you deal with from outside your department? 0 1 2 3 4

97. How much of your contact with non-agency personnel is regulated by written or well-understood rules and procedures? 0 1 2 3 4

98. How much variety do you encounter in a day’s work? 0 1 2 3 4

Please continue on to Part IV.
INSTRUCTIONS:

The questions in this part deal with the percent (%) of decisions, problems, duties, etc. on your job that are of a certain type. Please answer each question by circling only one of the numbers 0,1,2,3,4. The meaning of these numbers is as follows:

<p>| | | | | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>(0 to 20%)</td>
<td>(21 to 40%)</td>
<td>(41 to 60%)</td>
<td>(61 to 80%)</td>
<td>(81 to 100%)</td>
</tr>
</tbody>
</table>

Example

What percentage of decisions you make are new to you?

If you feel between 21 to 40 percent of decisions you make are new to you, answer this question by circling '1' as done above.

99. What percent of your job responsibilities require you to develop new procedures over time?

100. What percent of your time on the job is spent dealing with federation personnel from outside your agency?

101. What percent of your job related activity consists of dealing with people who are not agency personnel?

102. In some jobs, things are fairly predictable. In others, you are often not sure what the outcome will be. What percent of the time are you aware of what the results of your effort will be?

103. What percent of your job duties are specified?

104. What percent of decisions made on your job are handled with existing procedures?

105. What percent of your time is spent in obtaining or analyzing information which comes from outside the agency in the form of reports, articles, and correspondence?

106. What percent of problems on your job are handled by following written and verbal instructions which were previously given?

107. What percent of your duties change from one day to the next?

108. For problems that cannot be handled with available instructions, what percent are reported in a standard way?
PART V

INSTRUCTIONS:

Each of the questions in this section asks you to indicate to what extent certain things occur or exist in your job. Please answer each question by circling only one of the numbers 0, 1, 2, 3, 4. The meaning of these numbers is as follows:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO NO EXTENT</td>
<td>TO LITTLE EXTENT</td>
<td>TO SOME EXTENT</td>
<td>TO MODERATE EXTENT</td>
<td>TO GREAT EXTENT</td>
</tr>
</tbody>
</table>

Example

To what extent are your job duties clear?

If you feel your job duties are clear only to some extent, you would circle '2' as above. If you felt they were clear to a great extent, you would have circled '4'.

108. To what extent is there a clearly defined body of knowledge or subject matter which can guide you in doing your work?

109. To what extent are you successful in solving job related problems by developing new approaches yourself?

110. To what extent must you depend upon others in your agency to get their jobs done before you can get yours done?

111. To what extent do others in your agency depend on you to get your job done in order to get theirs done?

112. To what extent do others in the federation outside your agency depend on you to get your job done before they can get theirs done?

113. To what extent is there an understandable sequence of steps that can be followed in doing your work?

114. To what extent do you depend on federation personnel outside your agency to get their jobs done before you can do yours?

115. If there is something that you don't know how to handle in your work, to what extent can you go to someone else for an answer to the problem?
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