THE RELATIONSHIP OF BOUNDARY SPANNING ACTIVITY TO HIERARCHICAL LEVEL, PERCEIVED ENVIRONMENTAL UNCERTAINTY, AND OTHER VARIABLES IN A UNIVERSITY SETTING: AN EMPIRICAL STUDY

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PREFACE

This study is concerned with the relationship between boundary spanning activity and other variables: hierarchical level, perceived environmental uncertainty, perceived role conflict, and perceived role ambiguity. The primary objective is to determine the nature of these relationships in a university setting. Correlation analysis is employed in this study, and multivariate techniques are utilized in a post hoc analysis.

I wish to express my appreciation to Dr. Michael A. Hitt for his guidance, encouragement, and friendship throughout this study. I also express appreciation to the other committee members, Dr. Wayne A. Meinhart, Dr. Thomas Karman, Dr. W. W. Stanton, and Dr. Ansel Sharp, for their invaluable assistance in the preparation of the final manuscript.

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CHAPTER I

INTRODUCTION AND NEED FOR THE STUDY

The term organization boundary role was coined by J. Stacy Adams in the late sixties to describe a unique and critical position in the operation of a social system. Organization theory views the organization as an open system, and in an open system there are boundaries which separate the organization from its environment, as well as subsystem boundaries which differentiate the organization internally (both horizontally and vertically (Kast and Rosenzweig, 1974). The boundaries of a social system are, for the most part, distinguishable from those in physical and biological systems because they consist of activities rather than physical structure, terrain, or location. As Katz and Kahn (1966) indicated, the organizational requirements dictate the performance of particular activities, which constitute the boundaries of an organization.

Organizational survival for open systems is contingent upon the organizations being able to effectively interact with their task environment. Current organizational literature demonstrates a growing dependence of the organization on its environment (Burns and Stalker, 1961; Emery and Trist, 1965; Katz and Kahn, 1966; Thompson, 1967; Terreberry, 1968; Lawrence and Lorsch, 1969; and Adams, 1976). The environment is seen through the constraints and contingencies it imposes as placing increasing demands on the adaptive subsystems of complex

organizations. These trends are causing attention to be focused on those organizational roles which are high in boundary relevance (Miles, 1976).

The integrity and survival of organizations are dependent on the activities typically performed by organizational members in special roles (labeled boundary spanning positions), differentiated from other organizational roles that do not include activities outside the department, division, or organization. As Organ (1971b) described, it is not really organizations that interact--it is people in the boundary spanning role. Individuals occupying these boundary roles have role-sets composed of a relatively high proportion of role senders located beyond the local organization boundary. They include the boundary role person, described by Adams (1976), who must transact across organizational boundaries, as well as the integrator (Lawrence & Lorsch, 1969), who must coordinate the activities of differentiated subsystems within an organization (Miles, 1976).

The boundary spanning agent functions as a representative of his group, department, division, or organization to external groups; a negotiator of agreements or solution of conflicts with these external groups; monitors the environment for his group; has responsibility for the transfer of technology and information across organizational boundaries; and protects the organization from pressures stemming from the environment. In general, the boundary spanner performs those essential functions which link organizational subunits, as well as linking the organization to its external environment.

The boundary spanning position has a higher probability of conflict than other internal positions. The active boundary spanning

agent is exposed to wide variations of expectations, goals, perceptions, values, ideologies, interests, and behaviors (depending upon the groups and individuals he must confront). If the boundary spanning agent is functioning as a negotiator or representative between these groups, the variables can be conflicting and confusing. The difficulty of this conflicting situation may be compounded by the lack of power or authority over these external groups. Since these contacts are often outside his functional area of authority, the boundary spanner cannot draw on formal authority and must use more informal (non-organizational) methods of influence. Therefore the boundary spanning role is critical to organizations but also fraught with complexities.

The structure of intra- and interorganizational linkages has implications for the behavior of boundary spanners and for the design, management, and performance of organizations (Adams, 1976). Several behavioral implications have been studied, including role conflicts, ambiguities, and stress (Miles, 1976b); marginality (Pruden, 1969); visibility (Organ, 1971b); and value systems (Miles and Perreault, 1976; and Organ, 1971a). Also implications of the structure of linkages for organizational design (Thompson, 1967), as well as management and performance of boundary spanners, will relate to other roles in an organization such as decision-making, long-range planning and others. Thus, further study of the boundary spanning position is necessary for a better understanding of this critical function in complex organizations. Additional study, investigating the relationships between boundary spanning activity and other organizational variables is needed. As described in the following chapters, some preliminary empirical work has been done providing the framework for the present study.

Chapter II entails a review of the pertinent literature which is related to and provides a foundation for the major topic of the study. The literature presented includes a balance of theoretical and empirical material.

Chapter III describes the theory which the study is designed to examine. The general relationships among the theoretical and empirical data supporting the study, and the questions examined by the study are posed and discussed.

Chapter IV provides a description of the research objectives and research design. The delineation of the research design involves description of the sources of data, the research instruments, the pilot study, the specific research methodology, research hypotheses and recognition of the problems and limitations inherent in the study.

Chapter V entails a discussion of the statistical means of hypothesis testing, the nature of the data the hypothesis tests and the findings of the study.

Chapter VI discusses the findings of the study presented in Chapter V. The discussion emphasizes unique and important findings of the study and provides possible explanations for findings that deviated from expectations. A summary of the important findings is provided.

Chapter VII provides a restatement of the research objectives and a brief summary of the major findings. Implications for organizational practices, limitations of the study and suggestions for future research are provided. Final concluding statements are made.

CHAPTER II

THEORETICAL FOUNDATIONS FOR THE STUDY

Development of the theoretical foundation of the proposed study described herein requires a review of several topic areas. Within this chapter, relevant parts of four major areas of literature are surveyed: the boundary spanning activity literature, the organizational hierarchy literature, the perceived environmental uncertainty literature, and the role theory literature. The literature on boundary spanning activity provides the primary basis for the study. In the present study the relationship of boundary spanning activity and organizational hierarchy will be examined; therefore, the organizational hierarchy literature is reviewed. Similarly, the study is designed to examine the relationship of boundary spanning activity and perceived environmental uncertainty, which necessitates review of the perceived environmental uncertainty literature. The final purpose of the present study is to determine whether there is a relationship between boundary spanning activity and role stress, requiring a review of the role theory literature. The boundary spanning literature, providing the foundation of the study, is presented first.

Boundary Spanning Activity

Organization theory views the organization as an open system. In an open system, there are boundaries which separate the organization

from its environment, and boundaries which differentiate the organization internally (both horizontally and vertically). The systems view of the organization is extensively discussed in a variety of studies (Aldrich, 1971; Brown, 1966; Ditz, 1964; Evan, 1966). However, only recently has research turned to a new concept of these organization-environmental studies: that of the individuals who must span the boundaries of these organizational systems--those who must handle the critical interorganizational and intraorganizational interfaces.

The Boundary Spanning Position

Kahn et al. (1964, p. 101) defined the concept of boundary spanning activity in terms of a boundary position. "A boundary position is one for which some members of the role set are located in a different system--either another unit within the same organization or another organization entirely." Kahn et al. acknowledge that "everyone" has an occasional contract outside his own work unit, but the "relevance" of the boundary spanning activity is of importance, and can be distinguished in two dimensions: the amount of time spent in business contacts with outsiders and the importance of those contacts (Kahn et al., 1964).

Aiken and Hage (1972, p. 6) also stress the "relevance" of the boundary spanning activity in their definition of the boundary spanner. They stated that "those roles which link the focal organization with other organizations or social systems and are directly relevant for the goal attainment of the focal organization." Thus, a boundary spanning agent is an individual whose contacts outside his organization, department, or organizational level (hierarchy) occur repeatedly and are of

central importance for organizational activity and effectiveness.

Thompson (1962, 1967) indicated the importance of boundary spanning structures and components, when he examined face-to-face interactions across organizational boundaries and set them into four types of transaction structures, involving two dichotomized dimensions: (1) the specificity of organizational control over members; and (2) the degree of nonmember discretion. Evan (1966) discussed the complex relations which occur between focal organizations and the organization-set, with particular emphasis on boundary personnel. He pointed out that the phenomena and problems of inter-organizational relations are part of the general class of boundary-relations problems confronting all types of social systems, including formal organizations; and, all such boundary relations tend to be enormously complex.

Lawrence and Lorsh (1967a, 1967b) discussed the role of the "integrator" to help organizations profit from the specialty of differentiation of units and still maintain a tight integration among the units. Wren (1967) described and demonstrated the problems of interorganizational coordination--the importance of the organizational interface and the need for focusing managerial effort at the point where systems meet. He stressed that as society grows and becomes more interdependent, there is a need for organizational theory to provide research and understanding of the interface problems. Galbraith (1973) extended the work of Lawrence and Lorsch in a discussion of lateral relations, when he stated that the response of the organization to the concern for decision quality is to create new roles in the organizational structure, called integrating roles.

More recently, Organ (1971) described the nature of boundary

positions and a boundary agent's "profile." He stressed the role of a boundary spanner as the linking pin between the organization and the environment.

> ...such linkages take the form of organizational roles, acted out by 'boundary agents' who fill these roles. It is not really the organizations that interact--it is people. It is such roles as those of salesman, purchasing agent, labor negotiator, credit manager, liaison personnel, lobbyist, and so forth that constitute the interorganizational linkages (p. 74).

Leifer (1974) presented a theoretical model of boundary spanning activity and nine propositions relating to the boundary spanner, as derived from his model. Aldrich and Herker (1977) discussed boundary spanning roles as one of the most obvious but also most neglected aspects of the structure of complex organizations. They limited the functions of boundary roles as either information processing or external representation, with particular attention being paid to the environmental and technological sources of variation in the structure of boundary roles. Eleven hypotheses are also proposed which integrate the material reviewed in this article and are amendable to empirical tests. There are numerous other articles which refer to the boundary spanning role and/or activity (Levine and White, 1961; Litwak and Hylton, 1962; Miller and Rice, 1967; Rice, 1969; Bennis, 1966, Bolan, 1969; Crozier, 1964; Kast and Rosenzweig, 1974; Dietz, 1964; Brown, 1966; and Kochan, 1975).

Boundary Spanning Research

A number of recent studies have attempted to empirically test many of the concepts, propositions, and theories presented in earlier literature. There is still a paucity of good research available, but signs

indicate the importance of research in this area is being recognized. The following empirical studies will be examined in groups delineated by the major variable being studied in conjunction with boundary spanning.

Marginality. Some researchers have studied "marginality" as an appropriate personality orientation of a boundary spanner.

> The marginal man is a person who stands on the boundary between two or more groups. He does not belong to any of them, or at least he is not certain about his belongingness; he occupies an intermediate position ... the marginal component of personality has a close correspondence to the communications demands of integrative management positions (Ziller, Stark, and Pruden, 1969, p. 488).

Pruden (1969) emphasized marginality, focusing on industrial salesmen as interface managers linking employer with customers. The linking process behavior of salesmen as an approach to interorganizational coordination was examined. Pruden failed to substantiate that as interorganizational conflict increased, interorganizational linking process ("ILP" ... communications, balance, and decision making engaged in by salesmen) would increase. However, he did find a modest relationship in support of the proposition that as interorganizational linking process increased, interorganizational exchange would increase ("exchange" being a measure of productivity).

In an extension of this research, Pruden and Reese (1972) studied the outside salesman as engaging in power, authority, and status interactions to coordinate an exchange relationship, and these relationships were seen as determining his performance and satisfaction. The salesman is continually placed in the position of serving two masters, his customers and his supervisor, each representing different organizations

and each having goals which may be conflicting. Pruden and Reese found that the salesman's performance seemed to increase as a result of asserting some independence from his employer and identifying with his customers, but this maneuver also served to place the salesman in a marginal role with heightened cross-pressures and tensions.

In conjunction with the articles by Pruden (1969) and Pruden and Reese (1972), three other articles have directly addressed the concept of marginality. Ziller, Stark, and Pruden (1969) compared the marginality of salesmen, teachers, principals, students, and foremen. There was a higher level of marginality among salesmen and foremen (usually considered marginal in industry) compared with the three control groups. In a follow-up communication, Pruden and Stark (1971) examined marginality, productivity, and satisfaction. Although the results of this study were somewhat mixed, there was a significant association between marginality and productivity. In the study of marginality Liddell (1973) hypothesized that since marginality implies no strong commitment to a specific group, one would expect that marginal individuals would be more successful in reconciling opposing viewpoints than would non-marginal individuals; that is, the marginal decision-maker would propose integrative solutions. This was tested with college students solving the Maier Changing Work Procedure Case, and the hypothesis was supported. Liddell also suggested that this data provides additional support for the belief that marginal individuals are more effective in integrative management positions.

In general, the authors discussed above contend that the undesirable, negative aspects of the boundary spanners' role have been overemphasized. They pointed out that these "marginal persons" possess the

characteristic of "marginality" to handle the stress of boundary spanning.

Chapel Hill -- Visibility, Negotiation, and Others. Individuals at the University of North Carolina at Chapel Hill have been actively investigating various aspects of the boundary spanning role. Organ (1971) studied the effect of perceived visibility of a bargainer's behavior to his constituents and the perceived degree of confidence placed in the bargainer by the constituents; the main dependent variable was the bargainer's deviation from the constituency norm. In this laboratory study, visibility was found to be significant, but confidence was not. Organ and Greene (1972), in a similar study of visibility of the boundary spanner, discovered that if the boundary spanner's activities are not visible to his constituents, he will display less compliance with constituency role senders than will persons in a non-boundary position.

Also at Chapel Hill, Wall and Adams (1974) studied the effects of three factors (outputting effectiveness, outsider receptiveness, and salesman obedience) on a constituent's evaluation of a salesman and his behavior toward him. In this laboratory study, the subjects served as a constituent and the experimentor played the roles of salesman and buyer. Outputting effectiveness (successfully fulfilling the functional task) and salesman obedience were good predictors of constituent's evaluation of behavior to the salesman. Outsider receptiveness had no appreciable effect. Other researchers at Chapel Hill have been studying boundary roles and the conflicting influences exerted on a boundary spanner by his constituents and outsiders. The work of Adams (1976b),

Frey (1971), Frey and Adams (1972), Holmes (1971), and Organ (1971a) have demonstrated that the constituent's evaluation of and behavior toward the boundary spanner can have significant influence on the boundary spanner's behavior.

Role Stress -- Job Satisfaction. While the emphasis at Chapel Hill is primarily on the boundary spanner as negotiator, others have researched role stress and job satisfaction of boundary spanning roles (particularly with R & D organizations). Keller and Holland (1974, 1975) investigated research and development organizations and found boundary spanning activity to be related to lower levels of role ambiguity and higher job satisfaction, which they suggest may be due to the unique nature of the R & D boundary spanning. That is, the inter-organizational goals (of the R & D organization and the universities) were relatively compatible; the R & D organization needed the technology and information supplied by the universities and contractors to solve its ambiguous problems, and the universities and contractors wanted to publicize their research findings. Thus, boundary spanning roles in this sample serve to transfer technology and information to solve problems. Keller, Szilagyi and Holland (1975) studied boundary spanning in a large manufacturing company through a sample of managers, engineers, and supervisors. Their findings were not consistent with earlier theorizing (Kahn et al., 1964). They found that BSA was unrelated to role conflict and ambiguity and positively related to job satisfaction (the same results as Keller and Holland, 1974, 1975). BSA was also found to be positively related to a number of job characteristics (variety, autonomy, task identity, feedback, dealing with others, and friendship opportunities). Occupational level appeared to have very strong impact, as marked differences occurred in BSA and its

relationship with other variables by occupational level. In a similar study, Keller and Szilagyi (1976) investigated boundary spanning activity and roles and their longitudinal effects on role conflict and ambiguity, and job satisfaction in a large manufacturing organization. Boundary spanning activity was found not to be related to role conflict and ambiguity. Positive relationships were shown, however, between BSA and work, promotions, co-worker and overall job satisfaction.

Robert Miles has also examined role conflict and ambiguity in boundary spanning roles (in R & D organizations). Miles (1975a, 1976b) focused on the identification of predictors of stress in R & D organizations. Boundary relevance (extent of integration and BSA) was found to be the best predictor of experienced role conflict. Role conflict also appeared to be more sensitive than role ambiguity to differences in role requirements--which he suggested may be due to the unusual nature of the R & D organizations. In further research, Miles (1976a) extended the previous research by testing the possible moderating effects of individual differences in a model of organizational role stress. The individual differences (self-assurance, need for occupational achievement, and supervisory ability) did not generally moderate the relationship between boundary relevance and experienced role conflict; the only exception was for persons with high needs for occupational achievement who appeared to be more reactive or sensitive to boundary relevance. Individual differences considered in this study appeared to be more effective as indicators of coping effectiveness to role conflict and ambiguity, than as indicators of sensitivity to boundary relevance. Miles and Perreault (1976) examined the linkages and underlying structure of a comprehensive model relating role conflict to

its antecedents (role requirements and characteristics of role set) and consequences (job-related tension and satisfaction, perceived effectiveness, and attitudes toward role senders). The results led to three findings: (1) individuals vary considerably in the nature of role conflict they experience; (2) while some role requirements do not, by themselves, lead to conflict, they assume much more importance when they are considered in conjunction with other major demands placed on a focal person; and (3) intraorganizational boundary spanners appear to have more unfavorable work-related outcomes as a result of conflict than interorganizational boundary spanners. Miles (1977a) discussed the role-set configuration as a predictor of organizational role stress experienced by research and development professionals. The dimensions of the role set included the organizational distance and relative authority of role senders. These dimensions were found to be important predictors of specific types of role conflict and role ambiguity, respectively.

Other Variables. As mentioned previously in this section, Leifer (1974) offered a theoretical model of boundary spanning activity and nine propositions relating to individuals engaged in boundary spanning activity. Leifer and Wortman (1976a) studied boundary spanning and several variables in a research and statistics organization in a large state agency. Specifically, boundary spanning was found to be slightly related to hierarchical level. Boundary spanning was also positively related to: routineness of job, formal role, and a number of individual variables (e.g., age, frequency of job change, etc.). There was no relationship between boundary spanning activity and: participation

in decision making, and professional and educational levels. Finally, a negative relationship was found with respect to job satisfaction. Leifer and Wortman attribute these results to the routine nature of boundary spanning in this specific organization. In a similar study Leifer and Wortman (1976b) studied boundary spanning activity of low echelon workers in a health and welfare organization. In this work, boundary spanning activity was positively related to: non-routineness of job, formal role, stress, participation in decision making, professional and educational levels, and individual difference variables. There was no relationship to job satisfaction. The differences between the two studies is attributed to the routineness of boundary spanning (routine in the former, non-routine in the latter).

Leifer and Huber (1976) attempted to determine whether the frequency of boundary spanning was related to either perceived environmental uncertainty or organization structure. They found that structure influenced boundary spanning activity to a greater degree than perceived environmental uncertainty. Also, it appeared that boundary spanning mediated the relationship between structure and perceived environmental uncertainty.

This section has reviewed the literature on boundary spanning activity, which will serve as the basis for the study described herein. The review has established the concept of boundary spanning activity and summarized the growing body of research. The study described herein purposes to examine the relationships, if any, between boundary spanning activity and several variables. Doing so necessitates a review of the literature on those variables; the first variable for review is organizational hierarchy.

Hierarchy

In the modern, complex organization, the structure of relationships is typically--if not universally--hierarchical. Perrow (1972) discussed the hierarchical nature of several types of organizations (universities, hospitals, law firms, etc.) and concluded that all groups with a division of labor will be hierarchically structured. Emery (1969) and other authors have emphasized that people can seemingly understand and cope with their complex worlds only by viewing it in terms of a hierarchy of components. "Man universally thinks in hierarchical terms as a way of whittling down his complex world into a more comprehensive form" (Emery, 1969, p. 3).

The organizational hierarchy is established by the vertical differentiation of the managerial structure. Lawrence and Lorsch (1967, p. 15) define differentiation as "the state of segmentation of the organizational system into sub-systems, each of which tends to develop particular attributes in relation to the requirements posed by its relevant external environment." Therefore, the vertical division of labor determines the hierarchy and the number of levels in the organization. As Mackenzie (1974) suggested,

> A hierarchy is essentially a concatenation of wheel subgroups; spokes on the second level interact with the one person at the top level in a wheel. Those spokes, in turn, become hubs to their subordinates on level three, and so on (p. 231).

This is somewhat different from Emery's (1969, p. 8) definition of a hierarchy as an "entity composed of subentities which, in turn, are composed of still lower-level subentities." The process of hierarchical subdivision continues until ultimately some lowest level elementary subentity is reached.

Hare (1974) offered a hierarchy of systems levels to demonstrate the differences and complexity by level. Table I indicates the increase in complexity and uncertainty, as one progresses to higher levels in a system. Hare emphasized the changing type of standards, data, logic, overall situation, planning, and other variables with level changes. As Hare indicated, the change in operations, responsibilities, and control is distinct and considerable between the three levels. Although his purpose was to discuss communications and information systems, the classification scheme aids in a general understanding of hierarchy.

The next section will address the hierarchical differences in the organization, emphasizing the conceptual works of organization theorists.

Organizational Hierarchical Differences

There are differences inherent by hierarchical level. By moving up the hierarchy, one usually finds substantial rewards, as the position in the vertical dimension frequently determines the authority and influence, privilege, status, and rewards enjoyed by the incumbent. Thus, when referring to hierarchy, one usually means the hierarchy of authority or power. (See Blau, 1968). This is the traditional chain of command; "the differentiation of superiors from subordinates, cardinals from bishops, professors from assistant professors, division heads from department heads, and commissioned officers from noncoms" (Leavitt, Dill, and Cyring, 1973, p. 189). Several authors have addressed the differences of hierarchical level. Parsons (1960, p. 59) theorized that there are "qualitative breaks in the continuity of line

TABLE I

A HIERARCHY OF SYSTEMS LEVELS

A. Operations. Standards fixed. Mostly deterministic data, deterministic logic. Stable situation. Little or no prediction or choice needed. Single plan of action, although many sub-conditions and options may be possible. Corresponds to application program in data processing.

B. Tactics. Standards involve some uncertainty. Data subject to error. Logic involves complexity beyond capability of brute force methods. Selection and simplification required. Analytical techniques may, or may not, be available. Tactical objectives subject to change. Possible instability in processing, or in priorities, values, or goals. Many alternate plans may be available in memory. Short-range prediction or choice needed. Corresponds to supervisory control programs in data processing.

C. Strategy. Standards, values, goals, depend on personal or political choice in addition to fixed constraints. Almost infinite choice combinations to consider. Selection problems at all points predominate. Rational logic and stability cannot be assumed. May innovate not only alternate plans of action but also goals and values used to evaluate plans. May be removed from reality by intermediate filtering of (or time delays in) lower-level information feedbacks or scans of environment. May be overloaded by information volume and variety. Possible pathological, self-destructive choices and actions. Lower-level systems may have to be bypassed to maintain external and internal realism. Long-range prediction and choice needed--combined with wide scan and awareness while present plans are fixed. Corresponds to human development of new programs, both application and supervisory (including redesign of total information system), in data processing.

Source: V. C. Hare, Jr., "Communications and Information Systems," in J. W. McGuire (Ed.), Contemporary Management: Issues and Viewpoints (1974).

structure"; that one could break down the hierarchical aspect of a system of organization into three distinct decision making levels: the technical system, the managerial system, and the institutional system. Other support for the existence of these three levels may be found in Brown (1966) and Evan (1966); however, Boulding (1956) did propose a nine-level hierarchy for classifying systems in general. Boulding (1964) also offered that the hierarchical structure of organizations can largely be interpreted as a device for the resolution of conflicts, as each level of the hierarchy specializes in resolving the conflicts of the level beneath it.

Thompson (1967, p. 59) similarly suggested that it was "unfortunate the term hierarchy had come to stand almost exclusively for degrees of highness or lowness, for this tended to hide the basic significance of hierarchy for complex organizations." He felt each level was not simply higher than the one below, but is a more inclusive clustering or combination of interdependent groups, handling those aspects of coordination and control which are beyond the scope of any of the levels below it. Emery (1969) added that:

> The hierarchical character of organization stems from deeper roots than merely authority relationships; it stems, rather, from the need to reduce the apparent complexity of the system. Organizations, like all systems, have a hierarchical structure that results from factoring global objectives into a hierarchy of more manageable subobjectives (p. 18).

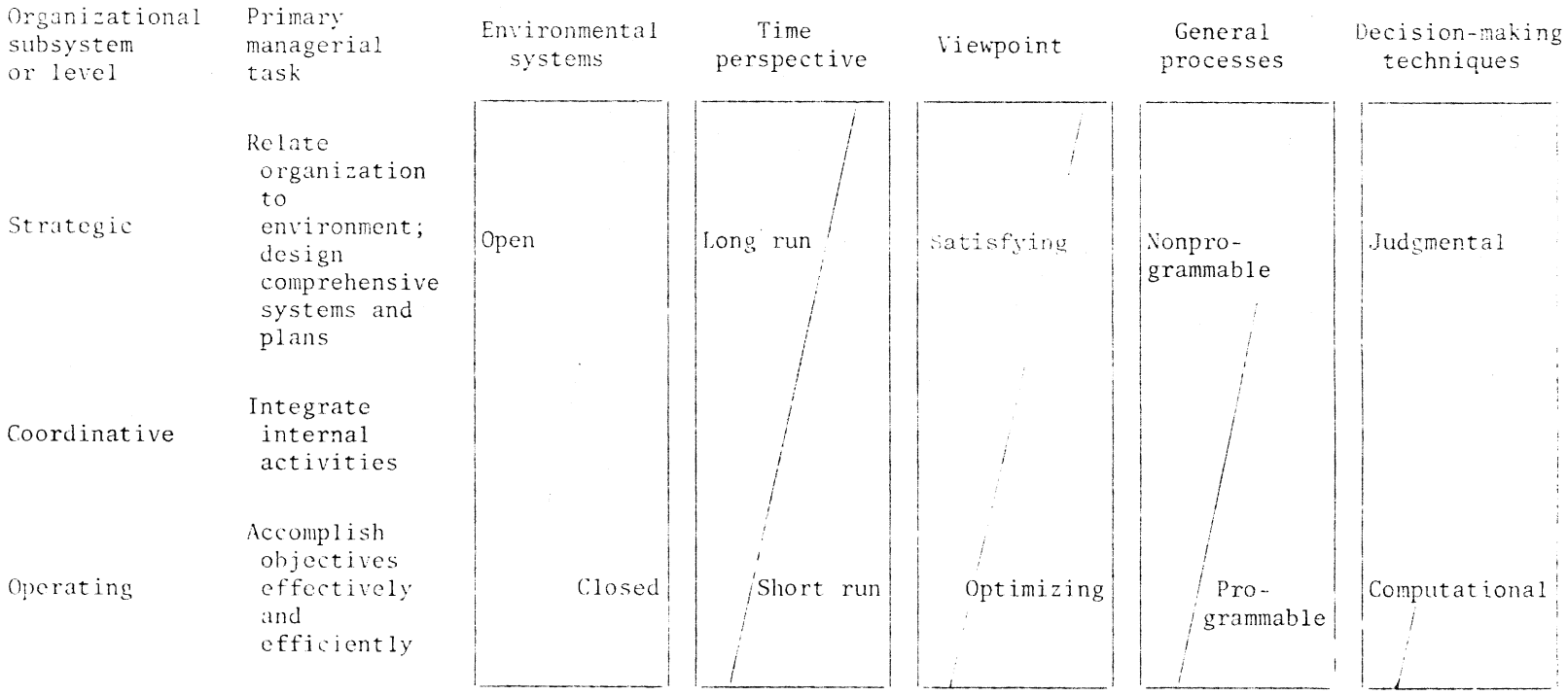
Galbraith (1973) viewed the hierarchy as an array of managerial roles, designed to handle the informaticn collection and decision making tasks necessitated by uncertainty. Therefore, the hierarchy is a mechanism of planning, decision making, and control, as well as a hierarchy of authority and reward power.

Kast and Rosenzweig (1974) examined the difference in managerial "tasks" at the various organizational levels in terms of the environmental system (open vs. closed), time perspective (long run vs. short run), viewpoint (satisying vs. optimizing), general processes (non-programmable vs. programmable), and decision-making techniques (judgmental vs. computation). As Figure 1 indicates, Kast and Rosenzweig theorized that as one advanced in the organizational hierarchy, he would find the primary managerial task changing from task accomplishment, to integration of activities, to representative and strategic design functions. With this change in task, other characteristics change accordingly: the task environment becomes more open; the time perspective becomes longer; one's viewpoint adapts to satisying the immediate requirements and demands; and in general one's task becomes less programmable, as decision making becomes more subjective.

The literature is consistent regarding hierarchical differences. The literature suggests that these differences should be considered in organizational research. As such, the next section will explore hierarchical differences as a research variable.

General Hierarchical Research

Recently, several researchers have examined the impact and importance of hierarchy in organizational studies. Hamner and Tosi (1974) suggested the importance of organizational level in an attempt to reconcile the contradictory findings in role stress research. They advocated that people at the lower levels of an organization generally know how to perform their jobs, and their jobs are well defined for them. Thus, role ambiguity is probably not a major problem for the lower level



Source: F. Kast and J. F. Rosenzweig, Organization and Management: A Systems Approach (1974).

Figure 1. The Managerial Task: Strategic, Coordinating, and Operating

members. They are, however, likely to face conflicting role demands from others and experience higher degrees of role conflict. Higher level occupants, especially managerial positions, may have more stress due to lack of clarity in their jobs. Hamner and Tosi argued that the effects of higher ambiguity are more important determinants of satisfaction than are conflicting role pressures for these higher level occupants.

Schuler (1975) also examined organizational level to reconcile inconsistent results of prior research in role stress. He administered questionnaires to employees of a large manufacturing firm, dividing the sample into three organizational levels; higher level (upper-level managers and professional employees), middle-level (middle level managers and entry-level professionals), and lower-level (clerical, tradesmen, technicians, and lower skilled blue-collar maintenance men). As hypothesized, role ambiguity and role conflict have negative relationships with job "satisfaction" at all three levels. However, the hypothesized relationships between role conflict, role ambiguity, and "performance" were unsupported and indicated that role conflict and ambiguity are most detrimental to performance at the lower level of the organization. Schuler suggested that employees who are in higher levels of an organization are better able to perform with role conflict and ambiguity. In a follow-up study, Schuler (1977) added the moderating effects of participation in decision making and organizational level in studying the impact of role stress on employee satisfaction with work. The results were analogous to the earlier study.

Szilagyi and Sims (1975) used multiple occupational levels in a hospital setting (medical center) to investigate the postulate that an

individual's performance-to-reward subjective probability is influenced by the individual's belief in internal versus external locus of control. They maintained that the more a person is oriented toward "internal control", the more he will feel that his performance will lead to desired outcomes, while the more he is oriented toward "external control", the less likely he is to have high performance-to-outcome expectancy. Respondents were classified into five occupational groupings: administrative, professional, technical, clerical, and service; and, the results provided strong support to the postulate that internals perceive higher performance-to-reward expectancies than do externals. Szilagyi, Sims, and Keller (1976) further examined the data from the previous study (with additional data from a manufacturing firm) investigating the interrelationships among role conflict and ambiguity, locus of control, and subordinate satisfaction and performance. Emphasis was given to examining the relationships of role dynamics across multiple occupational levels. In general the results revealed that the role variables made a greater contribution to explained variance in satisfaction and performance than did locus of control; role "ambiguity" was predominant at lower occupational levels.

Klonglan, Warren, Winkelpleck, and Paulson (1976) explored the nature of interorganizational relations of health-related organizations in a mid-western state. Their objective was to assess the generalizability of the measurement of interorganizational relations across hierarchical levels of social service organizations (the hierarchical level was defined as state, district, and county units of an organization). The measurement of interorganizational relations (IOR) was comprised of seven scales: director awareness, director acquaintance, director

interaction, information exchange, resource exchange (bargaining), overlapping boards or councils (cooperations), joint programs (coalition), and written agreements. Klonglan et al. found that some measures of IOR, such as director awareness, acquaintance, and interaction, overlapping boards, and written agreements, are consistently ordered empirically (frequency of positive responses) across organizational hierarchies. Other measures, such as information and resource exchange and joint programs, differ in order between levels of organizations. These results suggested that the phenomena of interorganizational relations differs qualitatively according to hierarchical level, and that researchers should be cognizant of the limited generalizability of interorganizational relations measures between organizational levels.

Hierarchy and Boundary Spanning Activity

Drawing on the work of Thompson (1967), Keller, Szilagyi, and Holland (1976) suggested that boundary spanning activity, defined as interpersonal transfer of information across organizational boundaries, occurs most often at the higher levels of the organization, where management is interacting with the environment, while those employees at lower levels in the technical core are usually buffered from environmental factors. Keller et al. studied three occupational levels: top and middle-level managers, engineering personnel, and first-level supervisors. They found boundary spanning activity a desirable position component at higher level occupational levels, but positively related to role conflict at lower-level jobs.

Leifer (1974, p. 13) offered a series of propositions about

boundary spanning and proposed that "the content of boundary spanning activity will differ depending on whether the boundary spanner is high, medium, or low in the organizational hierarchy." In other words, Leifer (1975) and Leifer and Huber (1975) suggested that, since Leifer's work sampled only the lower levels of a large institution, hierarchically related differences could be occurring. Leifer and Wortman (1976a) found boundary spanning to be slightly related to hierarchical level, but emphasized that: (1) boundary spanning in this organization, a research and statistics organization in a large state agency, is more routine than tasks that do not require boundary spanning; and (2) their data came from the lowest three levels of a tall hierarchy and may not be sampling high enough in the hierarchy to demonstrate hierarchical differences in reasons and content of boundary spanning. In a similar study, Leifer and Wortman (1976b) examined the same variables as above in a health and welfare organization. In this organization, however boundary spanning was described as non-routine; and, the amount of boundary spanning did increase by hierarchical level. In both studies by Leifer and Wortman, it should be pointed out that since there were fewer respondents in the upper level, it was collapsed into the second. Leifer and Wortman (1976b, p. 5) state that "hierarchical level was controlled for by limiting analysis to the lowest hierarchical level."

Miles (1976a) has attempted to determine the extent to which relationships (usually role conflict and role ambiguity and boundary spanning) varied with the type of organizational role occupied by the focal person. All of the research by Miles dealt with five occupational levels: integrator, division managers, group leaders, applied

scientists and engineers, and basic scientists and engineers drawn from nine governmental research and development directorates. He did find a positive relationship between boundary relevance and hierarchical level, but added that his sample was somewhat unique and urged that similar research he pursued in more conventional work settings.

Hierarchical Classification

Finally, researchers have examined methods of classifying hierarchies. McQuitty (1960, p. 57) discussed hierarchical linkage analysis to classify a group of individuals (or institutions) into hierarchical categories of that "the members of every category have a maximal number of common characteristics and in such a manner that the minimal number of categories are required."

Evan (1963, p. 468) pointed out that both structure-functional theory of social stratification and organization theory postulate that the hierarchical organization is functionally necessary. Evan offered the alternative formulation that "different degrees of hierarchical organization have different consequences for total and partial social systems." With this postulate in mind, he inquired into the problem of measuring organizational hierarchy by selecting three central dimensions of an organization: the hierarchy of "skills," the hierarchy of "rewards," and the hierarchy of "authority." For each dimension, he attempted to develop and document one or more indicators, such as time in formal training or the spread of the percentage distribution of skill or training time levels for the hierarchy of skills dimension. Evan also discussed the question of empirical application or the indicators of the hierarchical dimensions and considered some problems of

index construction, analysis of structural change, analysis of causes and consequences of variation in degree or organizational hierarchy, and of comparative research (cross-national, cross-organizational, or experimental in character). Evan (1977) added a fourth dimension of hierarchy: distribution of organizational information. He then proposed several hypotheses interrelating hierarchical structure with work alienation, organizational commitment and organizational effectiveness.

Johnson (1967, p. 242) demonstrated procedures which, when applied to such an array of similarity measures, constructs a hierarchical system of clustering representations, "ranging from one in which each of the n objects is represented as a separate cluster to one in which all n objects are grouped together as a single cluster." Also, Mackenzie (1974) has discussed the need for an index of hierarchy, emphasizing that developing a measure of hierarchy would allow the researcher to follow the evolution of structure and processes during a group's existence. Mackenzie added that a measure of hierarchy would also be useful in analyzing relationships between structure and process and measures of effectiveness and/or efficiency.

No exceptionally good methodology for the measurement of hierarchy currently exists. Seemingly, one of the better measurement approaches for research purposes is through the classification into distinct hierarchical levels, where such clear distinction exists. This study utilizes such a measurement of hierarchical level, and is thoroughly discussed in Chapter IV.

This section has presented a review of the literature of organizational hierarchy; specific attention was given to the growing body of

literature which emphasizes hierarchical level as an important variable in organizational research. The next section will examine the concept of perceived environmental uncertainty.

Perceived Environmental Uncertainty

In organization theory there is a growing awareness of the impact of environmental forces on the organization, as an open system. Particular attention has recently been given to "perceived environmental uncertainty" (PEU), the uncertainty in the environment that is perceived by the organizational member.

The Environment

Several authors have addressed the concept of environment. Emery and Trist (1965, Bennis (1966), Thompson (1967), and Terreberry (1968) have generally agreed there is increasing evidence that the environment is becoming more dynamic and uncertain. Emery and Trist have suggested that the environments of organizations are moving from situations where goals and harmful factors were relatively stable and randomly distributed, to situations in which considerable variance is due to the environment itself in addition to variance caused by the interaction of systems. This increasing turbulence was also addressed by Terreberry. She emphasized that organizational change is increasingly externally induced, and that organizational adaption to this turbulence is a function of the ability to learn and perform according to changes in the environment.

Duncan (1972, p. 314) more inclusively defined the environment as the "totality of physical and social factors that are taken directly

into consideration in the decision-making behavior of individuals in the organization." Duncan identified two dimensions of an environment: the simple-complex dimension, defined as the number of factors taken into consideration in decision making; and the static-dynamic dimension, defined as the degree to which these factors in the decision unit's environment remain basically the same over time or are in a continual process of change. This twofold dimensionality is based on the conceptual work of others (Emery and Trist and Terreberry) and was developed from a semantic analysis of semistructured interviews on the concept of uncertainty. Duncan's results indicated that individuals in decision units experiencing "dynamic-complex" environments experience the greatest amount of uncertainty in decision making.

Dill (1950) distinguished the "task environment" as the more specific forces which are relevant to the decision making and transformation processes of the focal organization, and he emphasized that forces in the general environment are continually coming into the task environment of specific organizations. Thus, the major importance of the environment is found in the manner in which it affects the individual in the organization. Of particular importance is the degree of perceived uncertainty of the environment. The next section discusses perceived uncertainty.

Perceived Uncertainty

The concept of uncertainty has been discussed and defined in several manners; Duncan (1972) has identified three basic definitions in the literature. "Information theorists" defined the concept in a narrow fashion, such as the "uncertainty of an event is the logarithm

of the number of possible outcomes" (Garner, 1962, p. 23); "decision theorists" defined uncertainty in terms of the mathematical probabilities of a risk situation; and from a more macro perspective, Lawrence and Lorsch (1967c) state that uncertainty consists of three components: the lack of clarity of information, the long time span of definitive feedback, and the general uncertainty of causal relationships. Duncan found the first two types of definitions much too narrow and abstract for managers; yet, he felt the Lawrence and Lorsch definition was too broad and vague.

In his research previously mentioned in this section, Duncan used verbalized responses to derive his definition of uncertainty. He delineated three components of uncertainty: lack of information regarding the environmental factors associated with a given decision-making situation; not knowing the outcome of a specific decision in terms of how much the organizations would lose if the decision were incorrect; and the inability to assign probabilities with any degree of confidence with regard to how environmental factors are going to affect the success or failure of the decision unit in performing its function. This definition is a combination of the Lawrence and Lorsch version and the mathematical definitions.

Downey and Slocum (1975, p. 567) specify that "... uncertainty, as a counterpart to information, should be considered as perceptually based." They added that uncertainty can be thought of as an attribute of an individual's behavioral environment, rather than an attribute of the physical environment--that uncertainty is, at least partly, based on individual cognitive processes. Downey and Slocum pointed out that restricting the concept of uncertainty to a perceptual concept does

contain the inherent problem of variations in uncertainty being related to characteristics of the individual. It does not, however, preclude the expectation that uncertainty also is related to environmental attributes. Duncan (1972) stressed that uncertainty and the degree of the complexity and dynamics of the environment should not be considered as constant features in an organization. Rather, they are dependent on the "perceptions" of organization members and can vary in their incidence to the extent that individuals differ in their perceptions.

Measurement of Perceived Environmental Uncertainty

Using both questionnaires and interviews, Lawrence and Lorsch (1967c) collected data from top executives and developed an instrument to measure environmental uncertainty. The questionnaires consisted of subscales to evaluate the degree of certainty of three different organizational subsystems (research, marketing, and production). The Lawrence and Lorsch instrument is composed of three subdimensions: a lack of clarity of information; general uncertainty of causal relationships; and time span of feedback about results. The respondent is asked three questions (tapping the three subdimensions) about each of the subsystems. The responses to the questions are evaluated using a Likert-type scale, and are summed for each subsystem, resulting in three subsystem and one total uncertainty score for each respondent.

However, the adequacy for this instrument has been questioned by Tosi, Aldag, and Storey (1973). Tosi et al. (1973, p. 30) pointed out that "there is only cursory mention of any effort to establish the reliability and/or validity of the instruments"; and, when reliabilities

are computed for each of the subscales, only one fits the suggested 0.50 level for research instrument reliability (Nunnally, 1967). The total scale appeared to have marginally adequate internal ccnsistency. Tosi et al. (1973, p. 33) also performed a factor analysis on the responses of the subjects; instead of three factors matching the Lawrence and Lorsch subdimensions, four factors were extracted which were "not interpretable in a manner similar to that proposed by Lawrence and Lorsch." Finally, Tosi et al. developed volatility measures for each industry and firm represented. The subject's responses to the Lawrence and Lorsch instrument items were correlated with the volatility measures; the correlations were "low and inconsistent ... in some cases ... were signifcantly negative" (Tosi et al., 1973, p. 31). These results led Tosi et al. to conclude that the Lawrence and Lorsch instrument is not methodologically adequate, and that the search must be undertaken for better measures.

Downey and Slocum (1975) point out that the Tosi et al. analysis does not provide "answers," and that there are several problems in the Tosi et al. analysis. The use of coefficients of variation to measure volatility is questioned; there was no report of central tendencies and dispersions of variables, nor report of techniques used in the correlational analysis; Tosi et al. used middle and upper level managers, whereas Lawrence and Lorsch used only upper level managers; and the "objective" measurement of volatility indices is perhaps, not an adequote criterion measure of "perceived" uncertainty.

Duncan (1972) devised a semistructured interview focusing on the nature of the decision unit's environment and the decision making process. From his research a list of environmental components was

constructed, comprising a decision unit's internal and external environment. Duncan delineated three dimensions of perceived uncertainty.

The Duncan instrument consists of twelve items. The respondent initially checks those factors (from a list of 25 potential factors, grouped into components by their degree of similarity), which are important to him in a decision making situation. The respondent then is asked to identify the three most important factors of those already checked and then is asked several questions about these three, important factors.

The first two dimensions, lack of information and lack of knowledge about a specific decision, are measured by Likert-type questionnaire items (six questions on the former, five questions on the latter). The third dimension, ability to assign probabilities, is measured by a single, two-part questionnaire item. The respondents are asked how sure they are (measured between 0 and 1.0) about how each of the factors is going to affect the success or failure of the unit in carrying out its task. Also, the respondent indicates the range being considered in assigning the probability value. Next, the first score is multiplied by one minus the range, this produces a degree of ability to assign probabilities score for each factor.

In Duncan's work, the three dimension scores were summed for a total uncertainty score. However, Downey et al. (1975) stress that the subscale scores should be standardized, giving the three dimensions equal weight. Also, the ability to assign probabilities should be given a negative weight, otherwise it is a dimension of certainty being summed with two measures of uncertainty.

Duncan also identified and operationalized two measures of the

environment. "Dynamism," the degree to which the respondent perceives the environment as static or dynamic, is measured by two questions. The first concerns the static or dynamic nature of the three, selected factors. Its average is added to the response of a question concerning the frequency of new factors being considered in decision making, this produces a score of perceived environmental dynamism. The perceived "complexity" of the environment is measured by multiplying the number of checked factors by the square of the number of components in which the factors fall. The number of components is squared because of the assumption that variance between components is greater than variance between factors within the same component.

Downey, Hellriegel, and Slocum (1975) examined the conceptual and methodological adequacy of both Duncan's and Lawrence and Lorsch's uncertainty scales. They also compared the two uncertainty instruments, and replicated Duncan's analysis of his complexity-dynamism hypothesis. Using internal reliability as a criterion, both scales appeared to be methodologically adequate for basic research; however, neither scale met the more stringent requirements of Nunnally (1967) for research instruments. The total uncertainty scales did not correlate highly with any of four criterion measures (Department of Commerce change in projections of volatility; perceived degree of competition; perceived, detrended volatility of division's prices; and perceived, detrended volatility of division's sales), except the Lawrence and Lorsch instrument and perceived sales volatility. The observed Pearson correlation coefficient between the Duncan and Lawrence and Lorsch instruments was not statistically significant, indicating that the basic dimension in the two instruments are different. Finally, the replication of

Duncan's complexity-dynamism experiment produced contradictory results, which Downey et al. suggest may be attributable to Duncan's incorrect summation of his instrument's subdimension.

In summary, Downey et al. (1975) emphasized that

> ...these results do not mean that contingency theory must wait for the development of the one meaning of uncertainty. The findings and discussions presented, however, should serve to place the researcher on guard against at least some potential pitfalls involved in current uncertainty conceptualizations and their applications (p. 628).

Organizational Structure and PEU

Several authors have investigated the aspects of contingency theory which suggests that perceived environmental uncertainty affects structure. Theoretically, the perceptions of uncertainty in one's task environment will lead the administrator to alter the organization structure to better respond to the environment and survive.

Thompson (1967) proposed that organizations facing heterogeneous task environments (complex) seek to identify homogeneous segments and establish structural units to deal with each. Thompson (1967, p. 146) advocated that the technical core of the organization must be protected from the contingencies or uncertainties in the environment; that is, "the protection necessary to enable achievement by technical cores may be afforded by domain maneuvering or by modifications in organizational design."

Defining uncertainty as the difference between the amount of information required to perform a task and the amount of information already possessed by the organization, Galbraith (1973) observed uncertainty appeared to make a difference in the type of organization structures

that were effective. Organizational designers may utilize slack resources, self-contained tasks, vertical information systems, or lateral relations (or some combination) to deal with this perceived uncertainty. Several others, Burns and Stalker (1961), Chandler (1962), Emery and Trist (1965), Lawrence and Lorsch (1967), Neghandi and Reiman (1973), and Osborn and Hunt (1974) have advocated the PEU and structure relationship.

However, recently the reverse argument has been advanced by several researchers. In a laboratory study, Huber, O'Connell, and Cummings (1975) manipulated the structure of three-man teams playing a simulation military game and found that structure and other variables explained variance in the criterion variable of perceived environmental uncertainty. Specifically PEU was related to information overload, organization structure, background of subjects, duration of participation in experimental task, and an environmental dimension. Their results suggest that perceptions of the environment are influenced by factors both external and internal to the organization; therefore, this research indicated that structure affects PEU. As a practical note, Huber et al. suggested that some of the variables that were found to affect PEU, e.g., structure and information load, at least to some degree are administratively controllable. If perceptions of environmental uncertainty can be controlled, they suggest that modification of PEU may be a mechanism for changing a number of organizational characteristics and possibly outcomes.

Leifer and Huber (1976), using a seven-item questionnaire to measure PEU, found a positive relationship between PEU and organicness of structure which disappeared when the frequency of boundary spanning was

partialled out. They suggested that boundary spanning mediates the relationship between structure and PEU, such that the amount of boundary spanning activity may determine the amount of perceived environmental uncertainty. In accordance with Huber et al., Leifer and Huber suggested that structure influences PEU and again emphasized that since structure is an administratively controlled variable, the amount of PEU admitted at the boundary of an organization is also administratively controllable. This agrees with March and Simon's concept (1958) of "uncertainty absorption," as those individuals at the boundaries or organizations are in direct contact with crucial information. Thus, these boundary personnel can relay, interpret, or transmit "selected" portions of this information at their discretion; thus absorbing quantities of uncertainty.

As this review of the literature indicated, there is need for considerable research in the PEU construct. In general, there are many questions left unanswered in the study of perceived environmental uncertainty, as the complexity and importance of this construct are just being realized. All of the researchers investigating perceived environmental uncertainty have called for additional study in several areas specific to this study. Leifer and Huber (1975) encouraged the study of different organizational (hierarchical) levels, particularly middle and upper level executive officers, in the relationship between boundary spanning and PEU.

This section has presented a review of the literature of perceived environmental uncertainty. Only recently has attention been given to this construct, as indicated by the paucity of research. The next section will present a review of the literature concerning role theory.

Role Theory

The concept of "role" is integral to the study and understanding of organizations as open, social systems. In describing an organization as a system of roles, norms, and values, Katz and Kahn (1966) used the role concept as the major means for linking the individual and organizational levels of research and theory. They emphasized that the concept of role is the building block of social systems and the summation of the requirements with which such social systems confront their members as individuals. Therefore, Katz and Kahn integrated the individual orientation of psychology with the group and organizational orientation of sociology.

Role Defined

Ralph Linton (1936) stressed the concepts of status and role in social theory. He defined "status" as a position in a particular pattern of social behavior; a "role" represents the dynamic aspects of a status (position) and occupies it with relation to other statuses. When he puts the rights and duties which constitute the status into effect, he is performing a role. Using similar terms, Katz and Kahn (1966) described an office as a relational concept, defining each position in terms of its relationship to others and to the system as a whole. Associated with each office is a "set of activities" or expected behavior, these activities constitute the role to be performed. Gross, Mason, and McEachern (1958) also defined role as a set of evaluative standards applied to an incumbent of a particular position by the incumbent him/herself, by other members of the organization, by specific

role senders beyond the organization's boundaries and by society-at-large.

Role Set and Multiple Roles

Merton (1958) defined role set as the complement of role relationships which focal persons have by virtue of occupying a particular status (position) in an organization. The activities which define a role are maintained through the expectations of members of this role set, and these expectations are communicated or "sent" to the focal person.

Snoek (1966) examined role strain in diversified role sets. Both Merton (1957) and Goode (1960) had theorized that any role set possesses a potential for conflict to the extent that members of the set occupy different social positions. Snoek studied the role strain of workers, and his data supported the conclusion that one important source of strain in work roles is the requirement of maintaining working relationships with a wide variety of complementary roles. He summarized that role set diversification is likely to be a significant aspect of role, in industrial as well as in other types of organizations.

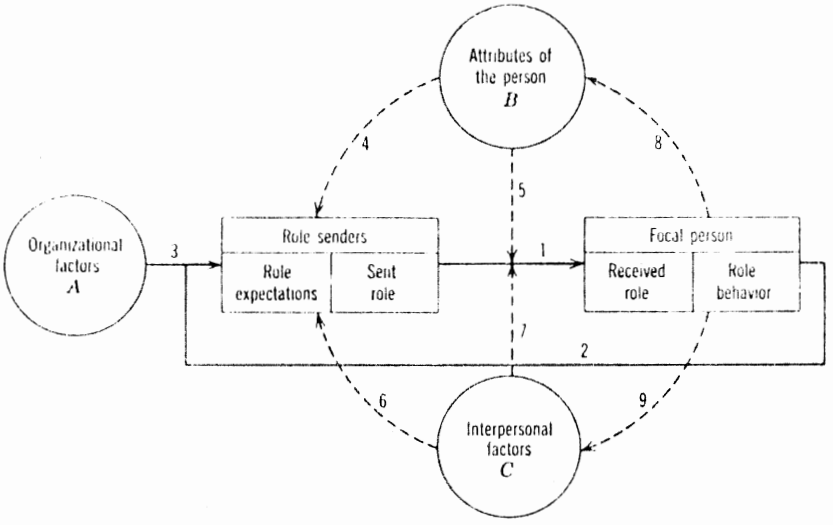
More recently, Miles (1977a) suggested that the objective characteristics of the role set provide clues for predicting the specific types of role stress a focal person will experience in trying to meet his/her role responsibilities. Taken together, these role set characteristics may be referred to as role set configuration (the mix of characteristics of role senders within the role set, and may include their location and status, especially with respect to the focal person and to themselves).

Merton emphasized that the role set differs from multiple roles as established by sociologists. Multiple roles refer not to the complex of roles associated with a single social status, but with the various social statuses in which people find themselves (for example, husband, father, professor, church elder, scoutmaster, and others). Merton suggested this complement of distinct statuses of a person, each of these in turn having its own role-set, could be designated a "status-set." Kast and Rosenzweig (1974) also pointed out the importance of understanding the difference between the concept of multiple roles and that of role set. The former refers to different roles in different organizational settings. Role sets, however, relate to the various orientations which a specific position in a particular organization may require.

In terms of multiple roles, Goode (1960) along with most role theorists has advocated that multiple relationships with diverse role partners is a source of psychological stress and social instability. Goode introduced the term "role strain" to signify the difficulty of performing multiple roles, asserting that the tendency toward strain is a normal feature of social life. However, Sieber (1974) offered a number of reasons that role accumulation (multiple roles) appears to be more gratifying than stressful. He did not deny the occurrence of role overload and conflict, but asserted that there are enough compensations (privileges, status, security, potential resources, and others) to consider not just the dysfunctions of multiple roles.

The Role Episode

Katz and Kahn (1966) offered a theoretical model of the events



Source: D. Katz and R. L. Kahn, The Social Psychology of Organizations (1966).

Figure 2. A Theoretical Model of the Role Episode

that constitute a role episode, providing a general orientation to the interactions of the major groups of variables.

Starting with the left-hand square, members of the role set (role senders) possess expectations of the focal person's behavior. These expectations exist in the minds of members of the role set and represent standards in terms of which they evaluate his performance. When these expectations are communicated to the focal person, they are deemed role pressures and are attempts at influence. The focal person experiences (perceives) the role sendings addressed to him, including those he sends himself. This received role is the immediate influence on his behavior and one of the immediate sources of his motivation for role performance; thus, the role behavior is the response of the focal person to the complex of information and influence he has received. The feedback loop is the degree to which a person's behavior conforms to the expectations held for him.

The role episode is confounded by three additional classes of variables: organizational, personality, and interpersonal. These are the enduring properties, the more or less stable characteristics, of the situation within which a role episode takes place. Some of these are properties of the organization itself; some will be traits of the persons involved in the process of role-sending and role-receiving; some will be properties of the interpersonal relationships which already exist between the actors in the role episode.

Summarily, the role episode is abstracted from a process of behavior which is cyclic and ongoing; the focal person perceives role pressures and responds to them. These responses are fed back to the role senders in ways that alter or reinforce them. The next role

sending of each member of the set depends on his evaluation of the response to his last sending; and thereby a new episode begins. Katz and Kahn (1966) emphasized that this model is in many respects oversimplified, but the model does clarify the concepts of a role episode.

There are problems for the focal person inherent in the role episode model. The remainder of this section will address these problems: role conflict and role ambiguity.

Role Conflict

The role episode model takes account of the fact that various members of the role set may hold quite different role expectations toward the focal person. As defined by Gross et al. (1958), any situation in which the incumbent of a focal position perceives that he is confronted with incompatible expectations is "role conflict." Kast and Rosenzweig (1974) pointed out that "conflict in this sense does not mean overt antagonism or violence. Rather, it involves the simultaneous occurrence of two or more role sendings for which the compliance with one precludes compliance with the others" (p. 292).

Kahn et al. (1964) distinguished several types of role conflict. The first is termed "intra-sender" conflict which develops when one sender transmits conflicting instructions or expects behavior which is impossible in the light of earlier instructions. A second type is "inter-sender" conflict: pressures from one role sender oppose pressures from one or more other senders. When various members of the role set have different expectations for a particular role, they transmit conflicting sendings. A third type of conflict is "inter-role" conflict. Here the role pressures associated with membership in one

organization are in conflict with pressures stemming from membership in other groups.

Fourth, "person-role" conflict occurs when the requirements of the role violate the needs, values, or capacities of the focal person. This type of conflict is generated directly by a combination of sent pressures and internal forces.

Kahn et al. do mention a fifth problem, role overload. Role overload can be regarded as a kind of inter-sender conflict in which various role senders may hold quite legitimate expectations that a person perform a wide variety of tasks, all of which are mutually compatible in the abstract. Yet, it may be virtually impossible for the focal person to complete all of them within given time limits. With the concept of role conflict in mind, attention will be turned to the second problem for the focal person, role ambiguity.

Role Ambiguity

Kahn et al. (1964) thoroughly discussed the concept of role ambiguity. Each member of an organization must have certain kinds of information at his disposal if he is to perform his job adequately. "Role ambiguity" is defined as lack of information regarding supervisory evaluation of one's work, about opportunities for advancement, scope of responsibility, and expectations of role senders. In other words, the focal person requires various sorts of means-ends knowledge. He also wants to know the potential consequences of his role performance or nonperformance for himself, his role senders, and the organization in general. Lack of information at a particular point in an organization can result from many causes; ambiguity in a given position may

result either because information is nonexistent or because existing information is inadequately communicated.

Research on Role Conflict and Ambiguity

In recent years, a number of studies have explored relationships between role conflict and role ambiguity and employee attitudes and behavior. Kahn et al. (1964) found that high levels of role conflict and ambiguity were related to low levels of job satisfaction, low confidence in the organization, and a high degree of job-related tension. Gross, Mason, and McEachern (1958) found a significantly negative correlation between perceived role conflict and three measures of job satisfaction. Tosi (1971) found that role conflict was positively related to job threat and anxiety and significantly related in a negative direction to satisfaction with the job. Greene and Organ (1973), Rizzo et al. (1970), and House and Rizzo (1972) all found a negative relationship between role conflict and job satisfaction and a negative relationship between role ambiguity and job satisfaction.

Rizzo et al. (1970) and Lyons (1971) both found a relationship to exist between role ambiguity and expressions of the desirability and likelihood of leaving the job. Lyons (1971) also obtained a positive relationship between role ambiguity and voluntary turnover; Johnson and Graen (1973) have obtained positive relationships between both role ambiguity and role conflict, and job performance ratings. Miles (1967a) summarized that across a variety of samples and measures, role perceptions of both conflict and ambiguity have been found to be unfavorably related to work outcomes of job-induced tension and anxiety, job

satisfaction, attitudes toward role senders, perceived effectiveness, job performance ratings, and voluntary turnover.

However, there is some evidence that not all workers respond negatively to role ambiguity and role conflict. Kahn et al. (1964) and Lyons (1971) demonstrated that different types of workers (need for clarity, extroversion, etc.) respond to role conflict and ambiguity in different ways. Johnson and Stinson (1975) indicated that both need for independence and need for achievement moderate relationships between several role variables and satisfaction.

Hamner and Tosi (1974) attempted to reconcile some of the inconsistent results of other studies. Their effort supported the findings of Rizzo et al. (1970) and House and Rizzo (1972) which showed role ambiguity was related to job satisfaction, while role conflict was not. But Hamner and Tosi's results conflicted with the findings of Tosi (1971) and Tosi and Tosi (1970) who reported that role conflict was related to job satisfaction, while role ambiguity was not. It was suggested by Hamner and Tosi that the differences were due to the organizational level of the different samples, and that organizational level should be taken into account when studying the relationship of role stress factors with job involvement measures.

Also in the area of organizational factors, Rogers and Molnar (1976) researched intraorganizational characteristics and interorganizational relations and found (1) that intraorganizational variables as a whole related to role ambiguity, but not to role conflict; and (2) interorganizational variables were related to both conflict and ambiguity.

Therefore, the "enduring" variables in the role episode model of

Katz and Kahn (1966) appear to be receiving more empirical attention in recent studies. Research on role stress now is examing such moderating variables as individual differences and organizational variables.

Keller and Holland (1975), Keller, Szilagyi, and Holland (1976), and Keller and Szilagyi (1976) have investigated the relationship of role stress and boundary spanning activity. Initially, Keller and Holland proposed that boundary spanning would be positively related to role conflict and ambiguity, and negatively related to job satisfaction; none of these hypotheses were supported in their study in an applied science department of a large government research and development organization. Keller, Szilagyi, and Holland then examined boundary spanning in a large manufacturing company. Again, they found that boundary spanning was unrelated to role conflict or role ambiguity and positively related to job satisfaction. Finally, Keller and Szilagyi did a longitudinal study on boundary spanning activity and roles and their effects on role conflict and ambiguity and job satisfaction in a large manufacturing organization. The data were collected eleven months apart from 132 managerial, engineering and supervisory employees; however, no causal relationships were found between boundary spanning and role conflict or role ambiguity. Positive, causal relationships were found between boundary spanning and job satisfaction.

The third, and final, enduring variable (interpersonal factors) in the role episode model has been addressed also. Miles (1976a) has examined the process of mapping the characteristics of the role set. This process allows the researcher to study authority, organizational distance, and other interpersonal variables.

Summary

The purpose of this chapter has been to survey the relevant literature to provide a proper theoretical base for the present study. The literature review has included a growing body of theory and research concerning the boundary spanning function in the modern, complex organization. The review has also entailed description of the theoretical base for three concepts important for the present study; hierarchy, perceived environmental uncertainty, and role theory.

CHAPTER III

THE THEORY

The major purpose of this chapter is to describe the theory which the study will examine. The chapter will include an overview and a separate discussion for each hypothesis and area of inquiry.

Overview

A review of several sets of theoretical and empirical data has been presented. The proposed study is built upon their interrelationships and the questions they pose.

The study of boundary spanning is quite new, as witnessed by the paucity of research and recent dates of publication of that research. Although approaches have varied, the goal of better understanding this vital function in the complex organization is common to all. This study is exploratory, in that the attempt is to develop a better understanding of boundary spanning activity. First, the intent is to establish the proposed relationship between hierarchical level and boundary relevance. Secondly, the study will attempt to clarify the relationships between boundary relevance and three perceptual measures: perceived environmental uncertainty, perceived role conflict, and perceived role ambiguity. The specific areas of study will now be discussed, with hypotheses and research questions presented.

Boundary Relevance and Organizational Hierarchy

It has been proposed that boundary relevance may differ, depending on the focal person's position (high, middle, or low) in the organizational hierarchy. This concept is based on the work of Parsons (1960), who suggested that there are three distinct decision making levels in an organization: the institutional level for strategic planning; the managerial level for decisions about procurement, coordination, and allocation of resources; and the technical level for decisions about operational problems. Brown (1966) used this trichotomy to suggest that quite different types of information and intelligence gathering activities may be involved in boundary spanning activities. He also argued that all three basic levels involve boundary spanning activities. Evan (1966), again drawing on the work of Parsons, made the assumption that the first and third levels would probably involve a higher proportion of boundary personnel. Thompson (1967) also postulated that boundary spanning activity has a greater magnitude and importance at higher levels of the organization hierarchy due to the greater interaction with the environment.

Keller, Szilagyi, and Holland (1976), studying managers, engineers, and supervisors, found that boundary spanning activity is a more important and desirable position component at higher "occupational" levels, as they found that positions with high levels of boundary spanning were desirable and more satisfying. This work and another study by Keller and Szilagyi (1976) draw on Thompson's conceptual framework which assumes boundary spanning activity has a greater

magnitude and importance at higher levels of the organizational hierarchy due to the greater interaction with the environment.

Leifer (1974, p. 13) offered a series of propositions about boundary spanning and proposed that "the content of boundary spanning activity will differ depending on whether the boundary spanner is high, medium, or low in the organization hierarchy." In other works, Leifer (1975) and Leifer and Huber (1975) suggested that, since their work sampled only the lower levels of a large institution, hierarchically related differences could be occurring. Leifer and Wortman (1976a) found boundary spanning to be slightly related to hierarchical level, but emphasized that: (1) boundary spanning in the organization studied, a research and statistics organization in a large state agency, is more routine than tasks that do not require boundary spanning; and (2) their data came from the lowest three levels of a tall hierarchy and may not be sampling high enough in the hierarchy to demonstrate hierarchical differences in reasons and content of boundary spanning. In a similar study, Leifer and Wortman (1976b) examined the same variables in a health and welfare organization. In this organization, however, boundary spanning was described as non-routine; and, the amount of boundary spanning did increase by hierarchical level. In both studies by Leifer and Wortman, there were fewer respondents in the upper level and therefore, it was collapsed into the second. Leifer and Wortman (1976b, p. 4) state that "hierarchical level was controlled for by limiting analysis to the lowest hierarchical level."

Miles (1976a) has attempted to determine the extent to which relationships (usually role-related variables and boundary relevance) varied with the type of organizational role occupied by the focal

person. His research has indicated a positive relationship between hierarchical level and boundary relevance; however, all of his research has been based on samples of "professional-level personnel from nine Governmental research and development directorates" (Miles, 1975a, 1975b, 1976b, 1976c, 1977 and Miles and Perreault, 1976). These groupings include: (1) basic scientists and engineers, (2) applied scientists and engineers, (3) group leaders, (4) division managers, and (5) boundary role person, and Miles emphasized that his results may be an artifact of the unique setting in which the research was conducted.

Thus, there is theory proposing or suggesting that hierarchical differences are important for a proper understanding of boundary spanning activity. What research that has been done seems to support the relationship between boundary relevance and hierarchical level. Based on the conceptual theory and limited reference, the following hypothesis is proposed.

Hypothesis 1. Degree of boundary relevance will be positively related to organizational hierarchical level.

Boundary Relevance and Perceived Environmental Uncertainty

Thompson (1967) suggested that boundary spanning jobs vary considerably in the types of action spheres they afford, depending on the degree to which the environment at the boundary is homogeneous or heterogeneous, stable or shifting. Therefore, the "perceived" environmental uncertainty (Downey and Slocum, 1975) of the focal person should be related to the amount of important interaction with "outsiders" (boundary relevance).

Leifer and Huber (1975) investigated this relationship with a sample of two state agencies and an insurance company. They theorized that if organizational members attempt to reduce perceived environmental uncertainty by obtaining more information, it follows that those having high perceived environmental uncertainty would engage in more boundary spanning activity in order to bring the uncertainty down to some manageable level. Their results were positive and highly significant, but did not exist after the variance due to organicness of structure was removed. Leifer and Huber advocated further research of these variables at different hierarchical levels, especially for middle and executive officers of organizations.

Thompson (1967) also alluded to the difference by hierarchical level, stating that uncertainty would appear to be greatest, at least potentially, at the institutional level. Since the first hypothesis predicted a positive relationship between organizational hierarchy and degree of boundary relevance, this investigation should demonstrate a positive relationship between the two variables (PEU and boundary relevance) and approach the problem of hierarchical differences.

Based on the literature and with the growing realization that contemporary organizations are extremely dependent on their environments which are increasingly turbulent, the following is hypothesized.

Hypothesis 2. The degree of boundary relevance will be positively related to perceived environmental uncertainty.

Boundary Relevance and Role Conflict

Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) pointed out that boundary positions are critical to the study of role conflict. Their studies indicated that the frequency of interaction of an individual with persons beyond the organizational boundary (interorganizational) was directly related to the level of role conflict which that person perceived. Looking within the organization, they found that the frequency of interdepartmental (intraorganizational) contacts was directly related to similar levels of experienced role conflict; thus, they emphasized that the boundaries between subsystems can be as stressful as the boundaries between systems.

Kahn et al. indicated that a person in a boundary job is likely to be confronted by role senders who are essential to his job; who are nevertheless imperfectly acquainted with it; and who are not subject to his control. Organ (1971b) proposed that individuals in boundary positions frequently get caught in the crossfire of constituents who expect different things of them, thus having to cope with at least two different, and sometimes contradictory, sets of goals, values, and beliefs. Thus, the greater the number of boundaries which separate a role senders from the focal person, the greater the probability of misunderstanding the focal person's role. This lack of comprehension may result in unrealistic or incompatible expectations placed on the focal person, which is compounded by the lack of power the focal person has over role senders.

Adams (1976) also regarded the boundary role person as the source and target of influence attempts from both within and beyond the focal organizational boundary. This condition is viewed as leading to

potentially higher levels of role conflict for the boundary role person than for individuals occupying internal organizational roles.

Miles (1976b) found that boundary relevance of the role occupied by the focal person was the best predictor of experienced role conflict. However, the hierarchical sample was drawn from research and development professionals (basic scientists and engineers; applied scientists and engineers; group leaders; division managers; and integrators), therefore, Miles (1976b, p. 178) suggested that the relationship between boundary relevance and role conflict should be tested "in a more conventional work organization."

Keller and Szilagyi (1976) investigations do not support the Kahn et al. (1964) theory with regard to boundary spanning activity and role dynamics and satisfaction. Only at the lower hierarchical levels (supervision) did boundary spanning activity appear to take on some of the negative relationship hypothesized from Kahn et al. (higher role conflict with higher amounts of boundary spanning activity). Keller and Szilagyi (1976, p. 12) added that the findings must be tempered by the fact that they are "from only one manufacturing company, and the results may not be generalizable to other organizations." However, Keller and Holland (1975) and Keller, Szilagyi, and Holland (1976) found no relationship between boundary spanning and role conflict. Also, Keller and Szilagyi (1976) found no relationship between boundary spanning activity and role conflict. This study was a longitudinal, follow-up study of the Keller, Szilagyi and Holland (1976) study. Finally, Szilagyi, Sims, and Keller (1976) found role conflict related to satisfaction only at "lower" occupational levels. This agreed with the earlier works of Hamner and Tosi (1974) and Schuler

(1975) and supports the argument against the proposed relationship of boundary spanning and role conflict.

Considerable theory has suggested that the degree of boundary spanning will be related to role conflict; yet, the evidence is contradictory in results and extremely limited in scope. Hopefully, additional research can aid in clarifying this situation; but, with the current contradiction in research, no hypothesis can be proposed. Rather, an "area of inquiry" will be presented.

Area of Inquiry 1. Is there a relationship between boundary relevance and role conflict?

Boundary Relevance and Role Ambiguity

The second area of inquiry closely parellels the previous one in theory and study. The negative aspects of role ambiguity have been documented by such works as Rizzo et al. (1970), Lyons (1971), Greene and Organ (1973) and others, based on the seminal work of Kahn et al. (1964); yet, it should be noted here that the work of Kahn et al. did not include extra-organizational role senders and did not record the extent of the relationship between boundary relevance and experienced role ambiguity.

A few researchers have attempted to delineate the relationship between boundary relevance and role ambiguity. Keller and Holland (1975) found that their measure of boundary spanning activity (a four-item scale, measuring the amount of information transferral) was negatively related to role ambiguity. Keller, Szilagyi, and Holland (1976) found no relationship between boundary spanning activity. Keller and Szilagyi (1976) attempted to demonstrate causal relationships in boundary

spanning using longitudinal data, collected eleven months apart from 132 managerial, engineering, and supervisory employees. They found a significant and negative dynamic correlation between role ambiguity and boundary spanning activity.

Miles (1976b) correlated role ambiguity with measures of "role requirements" (three general factors of: (1) personnel supervision activities, (2) integration and boundary spanning activities, and (3) scientific research activities). His evidence suggested that role ambiguity is not very sensitive to difference in the role requirements of "research and development" personnel. Miles added that his findings may be an artifact of the particular setting of the research suggesting that the relationship between boundary relevance and role ambiguity should be tested in a more conventional work organization. Miles (1977) found no significant differences between roles in relationships between "role-set distance" and the general role ambiguity index (Rizzo et al., 1970).

The literature on hierarchical differences addressed role ambiguity as Szilagyi, Sims, and Keller (1976) and Hamner and Tosi (1974) have proposed that role ambiguity is strongly related with job satisfaction at higher levels, while role conflict predominates at lower levels. This would indirectly contribute to the theory that boundary spanning is positively related with role ambiguity, as it is already hypothesized that boundary relevance increases by hierarchical level.

In summary, there is literature and research suggesting that role ambiguity is positively related to boundary relevance; yet, other studies have not proven this to be the case. These contradictory results do not allow formation of a hypothesis and therefore an area of inquiry will be presented.

Area of Inquiry 2. Is there a relationship between boundary relevance and role ambiguity?

Summary

The theory has been presented for investigation into four major areas concerning boundary relevance: hierarchical level, perceived environmental uncertainty, perceived role conflict, and perceived role ambiguity. The research hypotheses and areas of inquiry have been developed and prescribed. The specifics of the research design, including the names of analysis and testing of the hypotheses is presented in the next chapter.

CHAPTER IV

THE STUDY

The purpose of this chapter is to describe completely, yet succinctly, the research project. The chapter will include the Research Objectives and the Research Design, comprised of the Sources of Data, Research Instruments, Research Methodology, Research Hypotheses, and Problems and Limitations.

Research Objectives

There were several objectives of this study. The general objective was to better understand the boundary spanning activity of individuals in a complex organization. More specifically, the study was designed to determine if there is a relationship between boundary spanning activity and hierarchical level; and, if so, the configuration of that relationship. A major assumption is that there are organizational and behavioral differences by hierarchical level, one of which being that individuals higher in the organization structure tend to deal more with forces external to their department, level, or organization.

Another objective was to determine the relationship between the level of boundary spanning activity and the uncertainty perceived in the subject's environment. It is posited that there will be a positive relationship between the level of boundary relevance and the level of perceived environmental uncertainty. The final objective was to determine the relationship between boundary spanning activity and perceptual

measures of role stress. Previous research has delineated two dimensions of role stress: role conflict and role ambiguity; these two dimensions were utilized in this study. However, the investigation here was more of an exploratory nature, because the support for this relationship in the literature was either limited in scope or conflicting in results.

Research Design

This study was designed to be correlative and not causal in nature; future studies may eventually approach causation, based on the earlier correlative works. The research design represents an attempt to correlate the dimension of boundary spanning with perceptual measures of role conflict, role ambiguity, and environmental uncertainty. Also, the relationship of boundary spanning and an objective measure of hierarchical level will be explored.

Sources of Data

The data were gathered from university administrators in a number of large universities located in the United States. For purposes of this study, a large university was defined as an institution of higher education with a minimum enrollment of ten thousand students and a doctorate as highest academic offering. These criteria provide a sample representative of the large, complex university. The Education Directory: College and Universities provided this information, as well as a listing of each university's top administrative staff and deans. Not all universities meeting these criteria were selected; in states with a multitude of higher education institutions, such as Texas, California, or New York, an attempt was made to select a sample representative of of that geographic region.

The appropriate departments to contact were discerned by consulting the sample universities' catalogs. Six hundred (600) questionnaires were mailed to the selected sample; this consisted of two hundred (200)

questionnaires to each of the three hierarchical levels. One hundred and fifty-seven (157) completed questionnaires were eventually returned (a 26% response rate) and were broken down by hierarchical level as follows: institutional level (n = 44), managerial level (n = 55), and administrative level (n = 58).

Approximately six weeks after the initial mailing, a follow-up letter was sent to the sample of university administrators. The intent was to encourage response to the questionnaires.

Although it is acknowledged that the modern university is among one of the most complex of purposive organizations with an unusual technology, wide dispersal of power, and other unique attributes (Thompson, 1967), the hierarchical levels are distinct and somewhat uniform. Using Parson's organizational scheme, the university managerial system may be viewed at three levels. The institutional level composed of the president, any vice-presidents or other administrators whose primary responsibility is strategic decision making, and the Board of Trustees (Regents), if actively involved in the affairs of the university. The managerial level is the coordinating level of the university, including the deans and those vice-presidents/major administrators whose primary function is the internal coordination of the university. The administrative level is primarily composed of the department chairpersons and various committee chairpersons and representatives. Several authors have discussed the hierarchical framework of the university. Parsons (1960) used educational organizations as examples of the three levels in the hierarchical structure of organizations. Kast and Rosenzweig (1974) distinguished the three hierarchical levels in their discussion of the managerial system of the university. Baldridge (1971) also used Parson's organizational levels to discuss the

activities of university administrators and specified that the university has a formal hierarchy with offices and a set of bylaws that specify the relations between those offices. Similarly, Richman and Farmer (1974) emphasized that, like other large organizations, universities have a formal authority hierarchy composed of chiefs, subchiefs, and the rank and file. Finally, Perrow (1972) concluded that the idea of a university as a collegial body with a minimum of hierarchy and status separation was a myth.

Research Instruments

A mailed questionnaire called the University Administrator's Questionnaire was utilized to collect the data. It contained four sections. Section I consisted of demographic questions including two items measuring hierarchical position. The role-set configuration scales, developed by Miles (1977), were presented in Section II. Section III contained the scales measuring conditions of perceived environmental uncertainty, developed by Duncan (1972) and revised by Downey, Hellriegel, and Slocum (1975) for use in a mailed questionnaire. Section IV contained the two scales developed by Rizzo, House, and Lirtzman (1970) to measure an individual's perceptions of role conflict and role ambiguity. (See Appendix for the complete University Administrator's Questionnaire.)

Hierarchy. The hierarchical level of the respondents was obtained by two items in the introduction of the University Administrator's Questionnaire. First, the respondents were asked to check (✓) one of four alternatives concerning their administration position: (1) a

full-time post in central administration, (2) a full-time post in a college or school administration, (3) a post in a department, or (4) other. After checking the appropriate blank, the respondents were asked to specify their exact position title.

In an attempt to verify that these positions reflected a three-level hierarchy in university administration, another item asked the respondents to indicate which of the following alternatives best described "their" position in "their" university's structure. The alternatives were: (1) institutional level: top management in your university; responsible for major decision making; often relate the activities of the university to its environment; (2) managerial level: middle level administration in your university; coordinate and integrate the performance of lower levels to meet the requirements set forth by the institutional level; and (3) administrative level: lower level administration in your university; directly coordinate the work of faculty and students (and some staff).

Role-Set Configuration: Boundary Relevance. Miles (1977a, p. 22) defined the role-set configuration of a focal person as "...the mix of characteristics of role senders within the role set, and may include their location...." Although the initial research by Miles (1974) measured some twenty characteristics of the role-set, the important dimension for consideration in the present study is the "organizational distance" of role senders as a measure of boundary relevance.

The organizational distance, as a measurement of the role-set, is defined as the number of distinct organizational boundaries, intraorganizational and interorganizational, which separate the focal person from his role senders (role-set). This measure of boundary relevance

is based on the work of Kahn et al. (1964). They proposed that organizational positions vary considerably in the amount of boundary relevance, and that one of the major dimensions of boundary relevance is the "importance" of role-related contacts outside a focal person's work unit for effective performance of the focal person's organizational role.

Rather than making "a priori" assumptions about the focal person's role-set (as did Kahn et al.), the role-set configuration scales ask the respondents to list those people who can significantly help or hinder their job performance. This allows the respondents to consider any potential role sender, whether the role sender is in the immediate work unit, organization, or outside the organization. (It should be noted that the Kahn et al. (1964) research did not include role senders outside the organization, except to measure frequency of contact.) When the focal person has completed the list of important role senders (to a maximum of ten role senders), he has mapped his role-set.

To measure the organizational distance dimension, the respondent indicates the number of distinct organizational boundaries separating him from each role sender. Adapting the Miles instrument for the university sample, the alternatives were: (1) "Within my department;" (2) "Within my control, but outside my department;" (3) "Within the Division, School, or College, but outside my control;" (4) "Within the University, but outside the Division, School, or College;" and (5) "Outside the University (e.g., in other universities, agencies, private industry, government, etc.)." The definitions of these boundaries represent dividing lines in terms of both horizontal and vertical differentiation between units and levels.

As each additional boundary represents a greater potential degree of differentiation (e.g., activities, goals, socialization, and responsibilities), there is an accompanying potential of greater conflict, stress, and perceived uncertainty. Miles (1977a, p. 26) emphasized that "in addition to revealing the existence of boundary-spanning activities, this role-set measure of organizational distance accounts for the intensity of differentiation."

After completing the distance scale, the respondent is instructed to remove and destroy the list of role senders names; this procedure should help ensure confidentiality and minimize any social desirability response bias. The organizational distance scores for all role senders are combined into an unweighted role-set average. Miles (1977a, p. 26) states that this average "role-set distance," "is a relatively objective, activity-free measure of the boundary relevance of the focal person," applicable for all boundary spanning roles.

The average role-set distance measure of boundary relevance was validated by determining its relationships with formal role classifications and with reported importance to focal persons of boundary spanning job activities. First, average role-set distance was objectively anchored on the basis of organizational role (the roles samples were arrayed in ascending order of boundary relevance). Using this "a priori" ordering, an ANOVA test of linear trend was performed on both average and count measures of role-set distance, taken from the average role-set instrument, with organizational roles ordered in terms of increasing boundary relevance. The results indicated a highly significant, positive linear trend between the role-set and "a priori" measures of boundary relevance. ($F = 61.79$, $p < 0.001$) (Miles, 1977a, p. 27).

Additional validity is provided by the pattern of correlations between the importance of various types of job activities reported by focal persons and the average organizational distance over which they must transact with their role senders. Using the ROLEREQS (R & D) Miles (1976b) found the average role-set distance to be strongly correlated with the extent of boundary spanning activities engaged in by the focal person; weakly but positively correlated with the extent of supervisory or "linking" activities; and negatively correlated with the performance of scientific research activities. Thus, the role-set measure of boundary relevance not only discriminates between persons occupying roles whose titles imply different degrees of boundary relevance, but it also correlates predictably with the actual job activities performed. Miles (1974) also investigated the reliability of the organizational distance measure of the respondent's role-set. The test-retest reliability of the average role-set distance was .66 over a four-month period (Miles, 1977b). Miles emphasized that he waited four months between tests therefore, the reliability estimate is conservative.

In an attempt to verify the appropriateness of this measurement of boundary relevance for administrative personnel within a university, a pilot study was conducted at the annual fall conference of the Oklahoma Association of College and University Personnel Administrators. The boundary relevance questionnaire was given to 37 participants. Thirty-two (32) completed responses were received, for a response rate of 86.5%. The average response was 2.90 on a five-point response scale, indicating that most respondents felt the persons who could help or hinder the accomplishment of their jobs were located on the average in

the area "within my control, but outside my department."

Again, the intent of this study was to check for any problem in the administration of the average role-set distance measure of boundary relevance to a sample of university and college administrators. Since this instrument was included in the mailed questionnaire (and out of the researcher's control), any difficulties needed to be discovered and corrected prior to the final mailing. The pilot study confirmed the use of the measure, as the respondents seemed to readily understand the instrument and quickly completed it. The results of this pilot study were generally in accord with expectations and encourage the use of this technique of measuring boundary relevance.

Perceived Environmental Uncertainty

The Duncan (1972) perceived uncertainty instrument, as revised by Downey, Hellriegel, and Slocum (1975 and 1977), was utilized for this study. The Duncan instrument provides three subscale scores and a total uncertainty score. The three dimensions of uncertainty are: lack of information regarding the environmental factors associated with a given decision making situation; not knowing the outcome of a specified decision in terms of how much the organization would lose if a decision were incorrect; and the inability to assign probabilities with any degree of confidence with regard to how environmental factors are going to affect the success or failure of the decision unit in performing its function.

To complete the instrument, the respondent first is asked to describe a major decision that is typical of the crucial decisions faced in the operation of his/her work unit. With this decision situation

established, the respondent is presented a list of 27 potential factors, grouped into components by their degree of similarity, and asked to indicate those factors which he feels were major considerations in the decision situation previously described. Of the factors checked by the respondent, he is asked to list which three (3) were most important in the decision situation. With these three factors recorded, the measurement of the dimensions of uncertainty is possible.

The first two dimensions, lack of information and lack of knowledge about a specific decision, are measured by Likert-type questionnaire items (six questions on the former, five questions on the latter), for each of the three selected factors. The third dimension, ability to assign probabilities, is measured by a single, two-part questionnaire item. The respondents are asked how sure they are (measured between 0 and 1.0) about how each of the factors is going to affect the success or failure of the unit in carrying out its task. Also, the respondent indicates the range being considered in assigning the probability value. Next, the first score is multiplied by one minus the range, this produces a degree of ability to assign probabilities score for each factor.

As mentioned in a previous chapter, Duncan used a semistructured interview format to gather his data; Downey, Hellriegel, and Slocum (1975) have modified the Duncan uncertainty instrument, as described above, to be more appropriate for a mailed questionnaire. The internal reliability coefficients of the three subscales listed above were r_{kk} = .59, .26, and .66, respectively. The internal reliability coefficient for the total uncertainty instrument was r_{kk} = .67 (Downey et al., 1977, p. 167). Due to the low reliability of the second

subscale, it was not included in the analysis by Downey et al. Since the reliability of the instrument's subscales is questionable, reliability will again be tested in the study described herein. Also, some of the terminology has been adapted for relevance with the sample of university administrators. Richman and Farmer (1974) offered taxonomies, such as systems, input, environmental, and output, of the modern, complex university. Using the terms within the taxonomies as guides, the business-oriented terminology of the uncertainty instrument was revised to academic-oriented terminology. An example is: "customers: (1) Distributors of product/services. (2) Actual users of product/services" was changed to "Customers: (1) Students, (2) General public reached via extension or research." It was also necessary to include two additional factors, one in the "Input" component and the other in the "Socio-Political" component (A complete list of the factors is included in the Appendix).

To obtain a total uncertainty score, the scores on the subdimensions were standardized and then summed, giving the ability to assign probabilities subdimension a negative weighting. The scoring procedure is thoroughly discussed in Chapter II.

Role Stress Instrument

The Rizzo, House, and Lirtzman (1970) measures of role conflict and role ambiguity were used as measures of role stress; they developed a questionnaire to measure role conflict and ambiguity in complex organizations as part of a broader survey to identify management development needs and barriers for the effective implementation of a management development program.

Role "conflict" was defined as the degree of incongruity or incompatibility of expectations an occupant experiences in the performance of an assigned role. An example question of role conflict is: "I receive incompatible requests from two or more people." Role ambiguity was defined as the lack of predictability of the outcome of, or responses to, one's behavior and lack of clarity of role requirements. An example question of role ambiguity is: "I feel certain about how much authority I have." The questionnaire utilizes a seven-point scale ranging from Very False to Very True for each item. The responses are summed and divided by the number of items in each scale; the role ambiguity items are reverse scored.

The measure was administered to 290 salaried managerial and technical employees, excluding salesmen, first level foremen, and clerical personnel. Rizzo et al. utilized two samples in which all respondents were salaried managerial and technical employees from a large manufacturing organization sample A (N = 199) consisted of a random selection of 35 percent of office and plant personnel and a random selection of 35 percent of the personnel in the research and engineering division. Sample B (N = 91) consisted of the remaining 65 percent of the personnel from the research and engineering division not in Sample A. This division was to permit a representative sampling of the entire firm and to permit maximum sampling of the research and engineering division.

The responses to the role questionnaire items were factor analyzed using an image covariance method and rotated using a varimax criterion. Two factors were extracted, named role conflict and role ambiguity because they primarily reflected items drawn from the definitions. Thus, the factor analysis demonstrated that the two factors

extracted, strongly parallel the two theoretical concepts of role conflict and role ambiguity.

For purposes of developing scales, items were selected for scoring on each factor using the following criteria: (1) only items loading greater than or equal to .30 were included; (2) items with relatively high loadings on both factors were deleted; and (3) the Kuder-Richardson internal consistency reliabilities with Spearman-Brown correlations were calculated, and, using an interpretive technique which selected items contributing to the reliability of the final sets for each scale, the items were delineated. Eight items comprise the general role conflict scale; six items make up the general role ambiguity scale. Table II demonstrates the reliabilities for the two scales.

Rizzo, House, and Lirtzman reported a construct validation of the scales of role conflict and role ambiguity against 45 other variables measured as part of the larger survey. These 45 variables were categorized as follows: satisfaction, leadership, organization, anxiety, propensity to leave, and demographic. In general, the scales tended to correlate as expected, negatively with satisfaction, more strongly with leadership and organization practices, and weakly, but positively, with anxiety and propensity to leave.

Research Methodology

The research study gathered data from university administrators in a number of large universities throughout the United States. Three top level administrators, the deans of the colleges of Engineering, Business, and Arts and Sciences, and three department chairpersons (of the selected colleges) of each university were selected and sent the

TABLE II

MEANS, STANDARD DEVIATIONS, AND RELIABILITIES FOR SAMPLES OF RIZZO ET AL. SCALES OF ROLE CONFLICT AND ROLE AMBIGUITY

Scales	No. of Items	Means		Standard Deviations		Reliabilities	
		A	B	A	B	A	B
Role Conflict	8	4.19	3.86	1.21	1.17	.816	.820
Role Ambiguity	6	3.79	4.03	1.08	1.15	.780	.808

Sample A: N = 199
Sample B: N = 91

Scale has a 7-point response mode ranging from Very False to Very True

Source: J. R. Rizzo, R. J. House, and S. I. Lirtzman, "Role Conflict and Ambiguity in Complex Organizations," Administrative Science Quarterly (1970).

University Administrator's Questionnaire. Due to the much larger number of department chairpersons, an attempt was made to randomly select a department from each of the selected colleges. Thus, the lower level administrators represent a stratified random sample of department chairpersons; for any department chairperson receiving a questionnaire, his dean also received a questionnaire.

A cover letter, co-signed by the department chairperson of a College of Business Administration and the researcher, introduced the questionnaire, with the hope of generating support for the instrument. A follow-up letter was sent to the entire sample approximately six weeks after the initial mailing. After the instruments were returned, the data collected were analyzed according to the hypotheses stated herein.

Research Hypotheses

The hypotheses presented are divided into four sections. The main hypothesis tested in the first section involves the relationship between boundary relevance and hierarchical level. The second section contains the hypothesis regarding the relationship of the level of perceived environmental uncertainty and boundary relevance. The third section presents a discussion of an explanatory relationship regarding boundary relevance and role conflict. Similarly, section four explores the relationship of boundary relevance and role ambiguity.

Hierarchy and Boundary Relevance

Hypothesis 1. There is a positive relationship between hierarchical level and boundary relevance.

The hypothesis will be tested utilizing the Kendall Tau (rank-

order correlation analysis); this technique requires neither a normal distribution nor the metric quality of interval scales. The Kendall Tau statistic was chosen over Spearman's r_s because the Kendall coefficients are somewhat more meaningful when the data contain a large number of tied ranks; although, in general, the absolute value of Tau tends to be smaller than that of Pearson's r (Nie et al., 1975, p. 289). The probability level of .05 will be used in the determination of statistical significance.

Since the argument can be made that the hierarchical level measurement is distinct and so few in number (only three alternatives) that excessive ties will occur, a separate statistic will be used to provide a double check on the results. "Eta" is a measure of association used when the independent variable (hierarchical level) is nominal level and the dependent variable (boundary relevance) is internal or ratio level and will also be utilized with this data.

Boundary Relevance and Perceived Environmental Uncertainty

Hypothesis 2. Boundary relevance is positively related to perceived environmental uncertainty.

The Pearson product-moment correlation analysis will be used to test this hypothesis. The Pearson correlation coefficient r is used to measure the strength of the relationship between two interval-level variables, in this case boundary relevance and PEU. The probability level of .05 will be used in the determination of statistical significance.

Boundary Relevance and Role Conflict

Area of Inquiry 1. Is there a relationship between boundary relevance and role conflict?

This area of inquiry will be analyzed using the Pearson product-moment correlation analysis. The probability level of .05 will be used in determining statistical significance.

Boundary Relevance and Role Ambiguity

Area of Inquiry 2. Is there a relationship between boundary relevance and role ambiguity?

This area of inquiry will be analyzed using the Pearson product-moment correlation analysis. The probability level of .05 will be used in determining statistical significance.

Post Hoc Analysis

After completing the test of hypotheses and exploration of areas of inquiry, two additional analyses will be performed to better understand the relationships of the variables studied herein. These two methods of analysis will now be discussed.

Automatic Interaction Detector (AID3)

The Automatic Interaction Detector is a searching routine, which searches among a set of predicting characteristics for those that increase the researcher's ability to account for the variance of a dependent variable. AID3 divides the sample, through a series of binary

splits, into mutually exclusive series of subgroups. Every observation is a member of exactly one of these subgroups, chosen such that each stage is maximizing the distance between the group mean on the dependent variable. The predictor variables may be ordinally or nominally scaled; the dependent variable must be continuous.

The primary objective of utilizing AID3 was to test the structure of the predictive model implicit in the literature and data. The study described herein uses the boundary relevance scale as the dependent variable, and the predictor variables are: hierarchy, perceived environmental uncertainty, perceived role conflict and perceived role ambiguity. The last three variables were recorded into three-level categorical data for analysis in AID3.

Multivariate Nominal Analysis (MNA)

Multivariate Nominal Analysis performs a multivariate analysis of nominally scaled data. MNA is designed to handle situations where the researcher is attempting to study the relationship between one dependent variable and two or more independent variables. Specifically, MNA can handle problems where:

1) the dependent variable is measured on a nominal scale and represents mutually exclusive categories,

2) there are two or more independent variables which may be at any level of measurement,

3) There may be any form or pattern of relationships,

   a) between any independent variable and the dependent variable

   b) between any pair of independent variables.

Several statistics are provided by MNA for the analysis of the data. These statistics can be placed in two basic categories: Bivariate

and Multivariate. The first of the bivariate statistics is the one-way analysis of variance eta-square, which gives a measure of the ability of an independent variable to explain the variation of each dependent variable code dichotomized against all others. The second bivariate statistic is the bivariate Theta, which within the MNA framework may be defined as the proportion of the sample correctly classified when using a prediction-to-the-mode strategy in the distribution of each category of the predictor variable.

There are two statistics provided by MNA for measuring the multivariate strength of association. The generalized squared multiple correlation coefficient, R^2, was chosen because of its intuitive appeal in explaining percent of explained variation. The multivariate Theta statistic generalizes the bivariate prediction-to-the-mode concept to the multivariate level. It is basically the proportion of cases classified correctly using the decision rule of predicting each case as being in the particular dependent category which has the maximum forecast value for that case.

Thus, what an MNA analysis hopes to accomplish is to find the relationships of the independent variables with the set of the dependent variables such that the predictive ability will be increased beyond probability level. The basic advantage that MNA is felt to have over other techniques applicable to the same data is the simplicity and direct interpretability of the MNA coefficients and the categorical prediction algorithm. The study described herein will set the hierarchical levels as the dependent variable set and the independent variables will be: boundary relevance, perceived environmental uncertainty, perceived role conflict, and perceived role ambiguity. The independent

variables were recoded into three-level categorical data for analysis in MNA.

Problems and Limitations

The study described herein is a field study, using a mailed questionnaire to gather objective and perceptual measures. With a mailed questionnaire, the researcher is not in a position to control the instrument, whether it be to assure a "response rate" or control "who" actually completes the instrument. Since the research is not intended to ascertain causation, the interpretation of the correlation analysis is limited to establishing relationships, not cause-and-effect. The perceptual measures utilized in this study also possess the problem of individual variations and, perhaps, do not reflect reality. In fact, researchers involved in the measurement of perceived environmental uncertainty, have not resolved the perceptual versus objective controversy. However, based on the current theory and literature, it is felt that perceptual measures are adequate because an individual will experience, act, and react based on his perceptions (see Leavitt, 1958). Finally, the choice of sample may limit any generalizations from this study; yet, it is proposed that university administrators are as "conventional" as hospital administrators or research and development administrators, who currently serve as subjects for organizational research.

With recognition of the problems inherent in the study, the findings and conclusions drawn should provide insight in the general theoretical area of boundary spanning activity. The relationships studied herein may provide inputs to future research, specifically in the areas

of perceived environmental uncertainty and role stress.

The statistical results related to the hypotheses stated herein are presented in the following chapter.

CHAPTER V

ANALYSIS OF THE DATA

Having set forth the nature of this research in the previous chapters, the present chapter deals with the analysis of the data relevant to the research hypotheses and areas of inquiry delineated in Chapter III and in Chapter IV. The significance and implications of the results will be discussed in the next chapter. All hypotheses must be significant at the .05 level.

Hypothesis 1

Hypothesis 1. Hierarchical level is positively related to boundary relevance.

To test this hypothesis, "Kendall's tau" was utilized, as the variable "Hierarchy" as measured is considered ordinal. Hierarchy demonstrated a mean of 2.08 and standard deviation of .080 for the 157 subjects. The means and standard deviations for boundary relevance are presented in Table III. The "Kendall rank-order" correlation coefficient was 0.43, which was significant at $p < .001$.

As mentioned in the previous chapter, the measurement of hierarchy may be considered categorical, or nominal, as there are only three distinct levels of hierarchy. To deal with this question, the statistic "eta" was used as a measure of association, appropriate when the independent variable (hierarchy) is nominal and the dependent variable

TABLE III

MEANS AND STANDARD DEVIATIONS FOR BOUNDARY RELEVANCE BY HIERARCHICAL LEVEL

Boundary Relevance (by level)	Means	Standard Deviations	Sample Size
Top	3.479	.583	44
Middle	3.071	.568	55
Lower	2.654	.624	58
Total	3.031	.676	157

(boundary relevance) is interval. With boundary relevance as the dependent variable, eta was 0.5055.

These results indicate there is a positive relationship between hierarchical level and boundary relevance, as both the Kendall tau analysis and the "eta" statistic are statistically significant.

A check on the reliability of the hierarchy measure was also performed. As mentioned in the previous chapter, another item in the questionnaire asked the respondents to indicate the best description of their position in one of three categories, institutional, managerial, or administrative in their organization. These two variables were found to be highly related, as the Kendall rank-order correlation coefficient was quite high ($r_s = .917$, $p < .001$). This confirmed that the position held by the respondent in his specific university did represent the hierarchical level assumed in this study.

Hypothesis 2

Hypothesis 2. Boundary relevance is positively related to perceived environmental uncertainty.

Hypothesis 2 was tested utilizing Pearson product moment correlation analysis. Pearson's r is used to measure the strength of relationship between two interval-level variables. Table IV represents the means and standard deviations for the perceived environmental uncertainty subscales and total perceived uncertainty. The subscale scores were standardized using Z scores.

As mentioned previously, the uncertainty instruments contain three subscales (dimensions). These subscales are: (1) inability to assign "probabilities" with any degree of confidence with regard to how environmental factors are going to affect the success or failure of the decision unit in performing its function; (2) not knowing the outcome of a "specific decision" in terms of how much the organization would lose if the decision was incorrect; and (3) lack of information regarding the environmental factors associated with a given decision-making situation. The internal reliability coefficients (coefficient alpha, Nunally, 1967) associated with the three subscales were r_{kk} = .70, .76, and .78, respectively. The internal reliability coefficient of the total scale was r_{kk} = .85.

To simplify terminology, the subscales and total uncertainty scale have been numbered from 1 to 4: PEUI refers to the inability to assign probabilities; PEU2 connotes the specific decision subscale; PEU3 references the environmental factors subscale; and PEU4 is the total uncertainty score. The results of the application of the Pearson statistic are presented in Table V.

TABLE IV

MEANS AND STANDARD DEVIATIONS OF PERCEIVED ENVIRONMENTAL UNCERTAINTY BY HIERARCHICAL LEVEL

Perceived Environmental Uncertainty (by level)	Mean	Standard Deviation	Sample Size
PEU 1:			
Top	.457	.749	44
Middle	-.003	.810	55
Lower	-.348	1.172	58
Total	-.001	.994	157
PEU 2:			
Top	.277	.837	44
Middle	-.044	.976	55
Lower	-.158	1.080	58
Total	.004	.990	157
PEU 3:			
Top	.147	.902	44
Middle	.114	1.034	55
Lower	-.204	.996	58
Total	.006	.992	157
PEU 4:			
Top	.895	1.686	44
Middle	.084	1.836	55
Lower	-.699	2.666	58
Total	.022	2.226	157

TABLE V

PEARSON PRODUCT - MOMENT CORRELATION COEFFICIENTS
FOR BOUNDARY RELEVANCE AND PERCEIVED
ENVIRONMENTAL UNCERTAINTY

Boundary Relevance (by level)	PEU 1	PEU 2	PEU 3	PEU 4
Top (n = 44)	.2343	.0641	-.0460	.1060
Middle (n = 55)	-.2213	.0771	-.0798	-.1035
Lower (n = 58)	.1449	.2457*	-.0177	.1557
Total (n = 157)	.2052**	.2096**	.0327	.1979**

* significant at $p < .05$ level
** significant at $p < .01$ level

As shown in Table V, boundary relevance has a statistically significant relationship at $p < .05$ with the total uncertainty scale (PEU4). Also, there is a statistically significant relationship with two of the subscales (PEU1 and PEU2); however, there is no relationship indicated between boundary relevance and the third subscale (PEU3). A closer inspection, by hierarchical level, indicates there is no statistically significant relationship in subdimensions of the variables except between the boundary relevance of lower level administrators and the uncertainty concerning the outcome of a specific decision (PEU2). Yet, in general, the hypothesis is supported.

Areas of Inquiry

The areas of inquiry represent explorations of the relationships of boundary relevance and perceptual measures of role stress. Being areas of inquiry, there are no tests of hypotheses. The findings of the analysis are presented below.

Area of Inquiry 1

Area of Inquiry 1. Is there a relationship between boundary relevance and perceived role conflict?

The data for this area of inquiry were analyzed to determine the bivariate relationship between boundary relevance and role conflict. Table V shows the Pearson product-moment correlations coefficients for boundary relevance and role conflict. The internal reliability coefficient (coefficient alpha, Nunnally, 1967) of the role conflict scale was .76.

As shown in Table V, there is no significant relationship indicated between boundary relevance and role conflict for the sample in general. However, there is a statistically significant, negative relationship between boundary relevance and role conflict for the top hierarchical level.

Area of Inquiry 2

Area of Inquiry 2 is stated as follows:

Area of Inquiry 2. Is there a relationship between boundary relevance and perceived role ambiguity?

This area of inquiry was also analyzed utilizing Pearson product-moment correlation analysis. Table VI demonstrates the Pearson correlation coefficients for boundary relevance and role ambiguity. The internal reliability coefficient (coefficient alpha, Nunnally, 1967) of the role ambiguity scale was .73.

The results presented in Table VII show there was no relationship between boundary relevance and role ambiguity, statistically significant at $p < .05$.

Post Hoc Analysis

The post hoc analysis is an attempt to better understand the relationships between the variables of this study. As was the case of the areas of inquiry, there are no tests of hypotheses. The findings of the analyses are presented below.

TABLE VI

PEARSON CORRELATION COEFFICIENTS FOR BOUNDARY RELEVANCE AND PERCEIVED ROLE CONFLICT

Boundary Relevance and Role Conflict (by level)	Pearson Correlation Coefficients
Top	-.2835*
Middle	.0992
Lower	-.0903
Total	-.0452

* significant at $p < .05$ level
** significant at $p < .01$ level

TABLE VII

PEARSON CORRELATION COEFFICIENTS FOR BOUNDARY RELEVANCE AND PERCEIVED ROLE AMBIGUITY

Boundary Relevance and Role Ambiguity (by level)	Pearson Correlation Coefficients
Top	-.0252
Middle	.0842
Lower	.1832
Total	.0239

*significant at $p < .05$ level
**significant at $p < .01$ level

Automatic Interaction Detector (AID3)

AID3 searches among a set of predicting characteristics for those that increase the researcher's ability to account for the variance of a dependent variable.

> The question 'what dichotomous split on which single predictor variable will give us a maximum improvement in our ability to predict values of the dependent variable?' embedded in an iterative scheme is the basis for the algorithm used in this program. The program divides the sample, through a series of binary splits, into a mutually exclusive series of subgroups. Every observation is a member of exactly one of these subgroups. They are chosen so that at each step in the procedure, the two new means account for more of the total sum of square (reduce the predictive error more) than the means of any other pair of subgroups (Sonquist, 1975, p. 2).

In an AID3 program, the predictor variables may be ordinally or nominally scaled; the dependent variable must be intervally scaled. For the study described herein, the dependent variable is boundary relevance; the predictor variables are: perceived environmental uncertainty, hierarchy, role conflict, and role ambiguity. The predictor variables were recoded into categorical data, except for the hierarchy data which are already ordinal.

As indicated above, the Automatic Interaction Detector (AID3) essentially is searching for the structure of relationships. Given a dependent variable, the AID3 program examines all predictor variables and selects that variable which explains the most variance. Figure 3 is a visual representation of the AID3 printout for the variables delineated above.

The first split is on "hier," the measure of hierarchical level. The predictor variable, hierarchy, explained 18.4 percent of the variance--greatest of all the predictor variables. The dichotomous split placed lower level administrators in a group (group 2, the number 3 inside the square indicates lower level hierarchical position) with $N = 58$ and the average degree of boundary relevance ($\bar{y}$) equal to 2.65.

The second split is again on hierarchical level, as group three

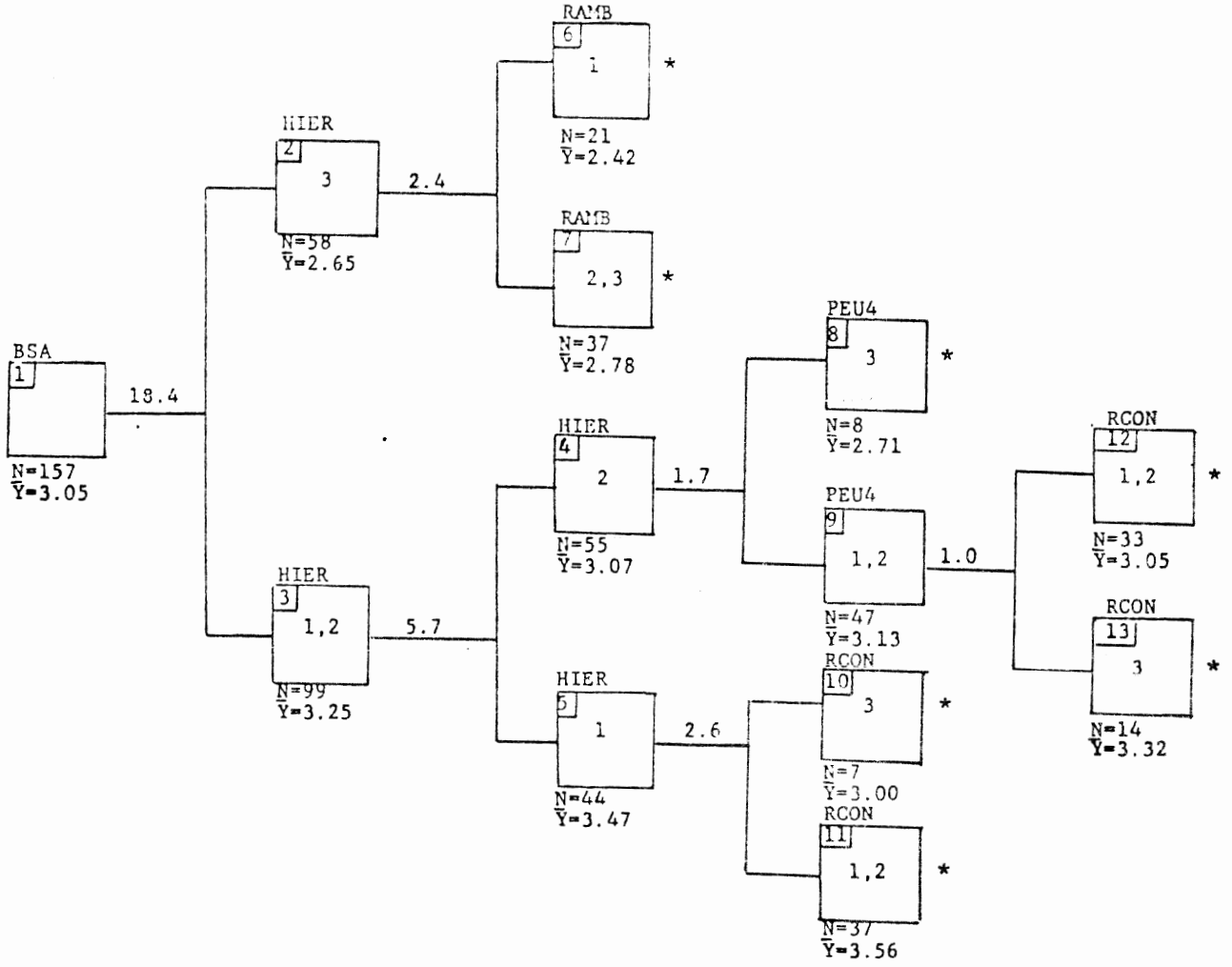


Figure 3. The AID3 Structure of Relationship Between Boundary Spanning Activity and the Independent Variables

splits the top and middle hierarchical levels (1 and 2); this predictor variable accounted for 5.7 percent of the explained variance in boundary relevance.

Group five split on role conflict (RCON), separating those high in role conflict (3) from those individuals experiencing medium to low levels of role conflict (2 and 1) for the third split, which accounted for 2.6 percent of the explained variance in boundary relevance.

Group two split on role ambiguity (RAMB), splitting those low in role ambiguity (1) from those individuals experiencing middle to high levels (2 and 3) of the role ambiguity.

The fifth split occurred in group four, those at the middle hierarchical level, and the split was on perceived environmental uncertainty (PEU4). The split accounted for 1.7 percent of explained variance.

The final split involved group nine, individuals perceiving low and medium levels of environmental uncertainty. The split was on role conflict (RCON) and accounted for 1.0 percent of the explained variance of boundary relevance.

As demonstrated in Figure 3, this analysis involved six splits, which accounted for 31.7 percent of the explained variance. An indepth discussion of the structure delineated will be presented in Chapter VI.

Multivariate Nominal Analysis (MNA)

Multivariate Nominal Analysis is a multifaceted program, which helps the researcher to better understand how a nominally scaled dependent variable is related to a set of independent variables. MNA is appropriate to this study, since hierarchical level (nominally scaled) has repeatedly been emphasized as a key variable in the study of

boundary spanning activity. This analysis is an attempt to give an additive multivariate model showing the relationship between a set of predictors (boundary relevance, perceived environmental uncertainty, role conflict, and role ambiguity) and the dependent variable (hierarchical level).

The MNA technique offers an array of statistics for the analysis of the data. Also, the MNA program provides a measure of predictability: the prediction of the dependent variable value based on the scores of an individual on an independent variable set. Finally, MNA furnishes a classification matrix which indicates the pattern of correct categorical predictions made by MNA.

The first area of interest in inspecting the output of an MNA analysis is the overall percentage distribution of the sample across the three categories of the dependent variable; in this analysis, the dependent variable is the hierarchical level, as demonstrated in Table VIII.

TABLE VIII

DISTRIBUTION BY HIERARCHICAL LEVEL

Code	N	Percent
1	44	28.03
2	55	35.03
3	58	36.94

It can be seen that 28.03 percent of the administrators are classified as top level; 35.03 percent as middle level; and 36.94 percent as lower level. It should be noted that even without knowing anything at all about the administrators, one could predict each administrator to be a "lower level administrator" and be correct 36.94 percent of the time. Then, what an MNA analysis hopes to accomplish is to find the relationships of the independent variables with the set of the dependent variables such that the predictive ability will be increased beyond the 36.94 percent level.

The next step in the analysis is to examine the multivariate relationships. What is the strength of relationship between the independent variables taken as a set and the dependent variable? MNA offers several ways to determine this, as can be seen in Table IX. The generalized R^2 is .1154, which may be interpreted as having explained 11 percent of the variation in the hierarchical level categories. Also in Table IX, multivariate Theta is .5478, which indicates that 54 percent of the administrators could be correctly classified after taking into account the data on the four independent variables for each administrator. Again, without any information one could correctly classify 36 percent of the administrators; therefore, by considering the relationship of the set of independent variables with the dependent variable, the prediction ability has been increased by 18 percent (.54 - .36).

Yet, it is unreasonable to assume that the set of independent variables can predict each category of the dependent variable equally. Thus, further insight may be gained by examining the category-specific R-squares. Table X shows that the set of independent variables

explained 20 percent of the variation in the top level category, 4 percent of the variation in the middle level category, and 12 percent in the lower level category.

TABLE IX

MULTIVARIATE STATISTICS OF THE MNA

Generalized R^2	0.1154		
Multivariate Theta	0.5478		
Correctly Classed Wt. N	27	16	43
Correctly Classed Proportion	0.6136	0.2909	0.7414

TABLE X

CATEGORY-SPECIFIC R-SQUARES
(BY HIERARCHICAL LEVEL)

Code	1	2	3
N	44	55	58
Sum Wt.	44	55	58
Percent	28.03	35.03	36.94
R-Squared	0.1992	0.0406	0.1161

The bivariate relationships are also presented by MNA. Table XI has the complete list of these relationships. The summary statistics for each independent variable are: Generalized Eta-Square and the

TABLE XI

BIVARIATE STATISTICS OF MNA

Independent Variables	Hierarchical Levels		
	1	2	3
1. Boundary Relevance			
Eta-Squared =	.1321	.0054	.0722
Beta-Squared =	.1234	.0087	.0605
Generalized Eta-Square = .0675			
Bivariate Theta = .4713			
2. Perceived Environmental Uncertainty			
Eta-Squared =	.0412	.0078	.0212
Beta-Squared =	.0444	.0061	.0158
Generalized Eta-Square = .0226			
Bivariate Theta = .3949			
3. Role Conflict			
Eta-Squared =	.0047	.0254	.0185
Beta-Squared =	.0029	.0276	.0130
Generalized Eta-Square = .0167			
Bivariate Theta = .4140			
4. Role Ambiguity			
Eta-Squared =	.0255	.0011	.0168
Beta-Squared =	.0393	.0007	.0272
Generalized Eta-Square = .0141			
Bivariate Theta = .3949			

Bivariate Theta. These provide alternative ways of measuring the strength of the simple bivariate relationships.

The generalized eta-square for the independent variable boundary relevance is .0675, which indicates a mild relationship to the dependent variable, hierarchy. More insight may be gained by examining the category-specific eta-squares. As can be seen, boundary relevance (BSA) best distinguishes top level administrators from the other two hierarchical levels.

The other statistic, the bivariate theta, indicates that knowing the degree of boundary relevance would give correct predictions of hierarchical level in approximately 47 percent of the cases. This represents a gain over the base percentage of 36.94 percent. The Beta Square statistic is still an experimental statistic, and its intent is to provide an answer to the question of a particular variable's importance, while holding constant all other independent variables.

As with the discussion of boundary relevance, the other three variables in Table XI, perceived environmental uncertainty, role conflict, and role ambiguity, can be examined. The generalized eta-square for the three variables (.0226, .0167, .0141, respectively) indicate a moderately low relationship to hierarchy.

The bivariate theta values for PEU, role conflict, and role ambiguity were very similar (.3949, .4140, .3949, respectively). As with boundary relevance mentioned above, knowing the degree of PEU would give correct predictions of hierarchical level in about 39 percent of the cases; the degree of role conflict would give correct predictions in about 41 percent of the cases; and, role ambiguity would predict about 39 percent of the cases. Each of these is an improvement over

the base percentage of 36.94 percent.

Another facet of the MNA program offers more detailed analysis. Table XII demonstrates how each category of an independent variable is related to each category of the dependent variable; this table is the output from the MNA program with "BSA" = boundary relevance; "PEU4" = perceived environmental uncertainty; "RAMB" = role ambiguity; and "RCON" = role conflict.

The row "percent" shows the percentage distribution of the independent variable across the three categories of the dependent variable. That is, under the BSA variable, there are three codes, 1 = low, 2 = medium, 3 = high; for example, the percent of high degree of boundary relevance individuals are: 63.16 percent in top levels, 26.32 percent in middle levels, and 10.53 percent in lower levels. Each independent variable is similarly displayed. This method offers a more detailed way of examining the bivariate relationships and extends the generalized eta square and bivariate theta.

The next items of interest are the rows labeled "coefficients." These coefficients show the effects of membership in a particular category of an independent variable on the likelihood of membership in each category of the dependent variable. This is truly the core of an MNA analysis. These coefficients are literally added together in order to predict an administrator's location in a university hierarchy.

The second row of detail statistics in Table XII are the "adjusted percents." These show, in each cell, the sum of the coefficients for that cell plus the relevant base likelihood (the overall percent).

TABLE XII

RELATIONSHIPS OF INDEPENDENT VARIABLES
TO DEPENDENT VARIABLE

Variable	Code	Analysis	Hierarchical Level		
			Top	Middle	Low
1. BSA	1	Percent	18.02	36.94	45.05
		Adj Percent	18.51	37.05	44.43
		Coefficient	-9.51	2.02	7.49
	2	Percent	44.44	33.33	22.22
		Adj Percent	42.41	35.05	22.54
		Coefficient	14.38	0.02	-14.41
	3	Percent	63.16	26.32	10.53
		Adj Percent	63.15	23.20	13.65
		Coefficient	35.13	-11.83	-23.30
2. PEU 4	1	Percent	13.64	38.64	47.73
		Adj Percent	14.76	39.01	46.23
		Coefficient	-13.26	3.98	9.28
	2	Percent	32.53	36.14	31.33
		Adj Percent	29.94	35.44	34.62
		Coefficient	1.91	0.40	-2.32
	3	Percent	36.67	26.67	36.67
		Adj Percent	42.18	28.08	29.74
		Coefficient	14.16	-6.96	-7.20
3. RAMB	1	Percent	35.71	34.29	30.00
		Adj Percent	37.90	33.85	28.25
		Coefficient	9.88	-1.19	-8.69
	2	Percent	19.61	37.25	43.14
		Adj Percent	21.12	36.74	42.15
		Coefficient	-6.91	1.70	5.20
	3	Percent	25.00	33.33	41.67
		Adj Percent	18.60	34.92	46.47
		Coefficient	-9.42	-0.11	9.53

TABLE XII (Continued)

Variable	Code	Analysis	Hierarchical Level		
			Top	Middle	Low
4. RCON	1	Percent	30.86	33.33	35.80
		Adj Percent	28.55	33.41	38.04
		Coefficient	0.53	-1.62	1.09
	2	Percent	26.09	28.26	45.65
		Adj Percent	30.19	27.78	42.03
		Coefficient	2.17	-7.26	5.09
	3	Percent	23.33	50.00	26.67
		Adj Percent	23.28	50.54	26.18
		Coefficient	-4.75	15.51	-10.76

As mentioned above, MNA provides a measure of predictability. For any individual in the sample, a prediction can be made. This prediction will indicate the likelihood of that individual's falling into each category of the dependent variable. Thus a single number is not generated, but rather a set of probabilities. These are computed by summing, separately for each category of the dependent variable, the relevant coefficients and the overall percentage.

Finally, not only does MNA compute the forecast for each individual but also checks to see how the predicted scores match the actual score. Table XIII demonstrates the results of such a procedure. The row labeled "correctly classed proportion" indicates the proportion of the administrators actually located in each of the hierarchical level categories, which were correctly predicted by MNA as being in that category. While multivariate theta shows the proportion correctly classified for the data set as a whole, this row ("correctly classed proportion") increases understanding; accuracy of prediction varies substantially across the categories. In fact, the prediction ability at the middle level administrator is 29.09; this is less than "pure chance" probability (.3503). An examination of the middle row of percents reveals that 47.27 percent of the deans would have been predicted to be department chairpersons, based on their responses. Although the predictive ability of MNA for the middle level was low, it should be emphasized that the top and lower level predictive ability was high (61.36 percent and 74.14 percent, respectively).

Concluding Statement

This chapter has presented the results of analyses of the study.

TABLE XIII

CLASSIFICATION MATRIX

Actual	Predicted			
1	27	8	9	44
Percent	61.36	18.18	20.45	
2	13	16	26	55
Percent	23.64	29.09	47.27	
3	6	9	43	58
Percent	10.34	15.52	74.14	
Total	46	33	78	157
"Correctly Classified Proportion"	61.36	29.09	74.14	

The two hypotheses were supported by the results; boundary relevance was found to be positively related to hierarchical level, and boundary relevance was also positively related to perceived environmental uncertainty.

For this sample, there was no relationship found between boundary relevance and role ambiguity. Similarly, there was no relationship found between boundary relevance and role conflict, except a negative relationship at the top hierarchical level.

Finally, two post hoc analyses were carried out in an attempt to better understand the structure and relationships of the variables in this study. The Automatic Interaction Detector (AID3) presented the structure of relationships for the dependent variable, boundary relevance. AID3 indicated that hierarchical level was responsible for most of the explained variance of boundary relevance.

The second post hoc analysis involved the Multivariate Nominal Analysis (MNA) technique. The use of MNA was to better understand the relationship of the variable, hierarchical level, to the set of independent variables (the remaining variables of the study). MNA offers a variety of statistics, a forecasting technique, and a classification matrix. Of interest to this study, the importance of boundary relevance in relation to predicting hierarchical level was demonstrated.

With the results of the study having been presented, the next chapter will fully discuss these results.

CHAPTER VI

DISCUSSION OF THE RESULTS

The present chapter presents a discussion of the results of the statistical analysis presented in Chapter V.

It is important to reiterate that the primary thrust of the present study has been one of a correlative nature to determine relationships that exist, and therefore no cause and effect conclusions can be drawn. The discussion in the chapter will be broken down by the major areas of the study corresponding with the presentation of the results of the statistical analysis in Chapter V. The first such area entails discussion of the relationship between boundary relevance and hierarchical level.

Boundary Relevance and Hierarchical Level

Some literature, such as Brown (1966) and Thompson (1967), suggests that boundary spanning activity will vary by hierarchical level. Recently, research by Keller, Szilagyi, and Holland (1976) and Miles (1976a) has indicated that boundary spanning does vary by occupational level. The results of the present study strongly support this theme. The results showed a positive relationship between boundary relevance and hierarchical level.

These results may have implications to the other studies in the rapidly growing body of literature concerning boundary spanning

activity. Perhaps viewing hierarchical level as an intervening variable may help explain potential inconsistencies in other studies; certainly any empirical efforts to examine boundary spanning activity in an organizational context should consider an examination of the results by hierarchical level.

Thus, hierarchical level appears to be an important variable when considering boundary spanning activity. The results from this study clearly indicate one of the classic differences of hierarchical level: position occupants higher in the organizational structure tend to deal more repetitively with individuals who are external to the focal organization (or organizational unit). As "success" is often measured by promotions up the organizational hierarchy in both the public and private sectors of the economy, the individual may seek higher level positions without an awareness of the increasing level of boundary spanning activity. Adams (1976) emphasized that an individual in a position requiring boundary spanning activity may find himself psychologically, if not physically, distant from members of his own organization. Thus, the positive relationship between boundary relevance and hierarchical level may indicate the organizational obligation to better select, place, and, perhaps, socialize individuals as they rise to hierarchical levels requiring increased boundary spanning activity. The functions of negotiations, monitoring the ervironment, representing the organization, transmitting information, and other similar activities of boundary spanners may be onerous or formidable to some individuals.

Finally, it should be noted that the results of this portion of the study described herein are somewhat unique. As mentioned earlier, some studies have examined boundary spanning differences by

"occupational" level: Keller, Szilagyi, and Holland (1976) utilized managers, engineers, and supervisors; while Miles (1976a) made use of integrators, division managers, technical group leaders, nonsupervisory basic scientists and engineers, and nonsupervisory applied scientists and engineers. The study described herein surveyed and examined the responses from top, middle, and lower "managerial, hierarchical levels" of large corporations. Differences in boundary spanning activity found to exist between these levels would seem to be more descriptive of boundary spanning activity, than differences found to exist between occupational levels.

Boundary Relevance and Perceived Environmental Uncertainty

The results of the present study offer support for the proposed relationship between boundary relevance and perceived environmental uncertainty, as the measure of boundary relevance for the total sample of university administrators was positively related to the measure of total perceived environmental uncertainty. This result supports Leifer and Huber (1975). They theorized that if organizational members attempt to reduce perceived environmental uncertainty by obtaining more information, individuals experiencing high levels of perceived environmental uncertainty would be actively spanning boundaries to reduce the uncertainty. However, it may be that the university administrators occupying positions higher in the organizational structure are forced to span boundaries (interacting with state legislatures, alumni, governmental agencies, and other groups within and external to the university) to manage effectively their position. Thus, they perceive more

environmental uncertainty as a result of the boundary spanning activity. The correlational analysis of this study does not permit any interpretation as to causation between the two variables.

A closer inspection of the findings indicate mixed results concerning the subdimensions of the perceived environmental uncertainty instrument. In general, those administrators engaging in more boundary spanning activity did perceive less ability to assign probabilities, with any degree of confidence, regarding how environmental factors were going to affect the success (or failure) of their organizational unit in performing its function. Similarly, the more active boundary spanners were less sure concerning the outcome of a specific decision in terms of how much the university (or university subunit) would lose, if their decision was incorrect. The results of these two subdimensions of PEU seem to indicate that more boundary spanning activity leads to more perceived environmental uncertainty. However, the converse is also possible: that those administrators perceiving higher levels of environmental uncertainty would be more inclined to span organizational boundaries in attempting to reduce this perceived uncertainty.

Yet, there was no significant relationship (at the .05 level) between boundary spanning activity and the third subdimension of PEU, lack of information regarding the environmental factors associated with a given decision-making situation. This does not lend itself to interpretation, except to indicate that the administrators in this sample who were experiencing high levels of uncertainty about information associated with a decision-making situation did not engage in significantly different levels of boundary spanning activity. Conversely, those engaged in greater boundary spanning activity did not reduce (or

increase) the level of perceived environmental uncertainty in this subdimension.

The differing results in the relationship between boundary relevance and the three subdimensions of the perceived environmental uncertainty instrument become more comprehensible when examining the basis of each subdimension. There was a relationship between boundary relevance and the two subdimensions which basically tap a predictive ability (the ability to assign probabilities, and the ability to predict the outcome of a specific decision). There was no relationship between boundary relevance and the subdimension which basically taps the possession, or acquisition, of facts concerning the environment.

This diversity in the subdimensions may have contributed to the differing results in the study described herein. Knowledge about environmental factors may have been readily available or accessible without appreciable boundary spanning activity; whereas, knowledge concerning the outcome of a specific decision or specifically assigning probabilities may necessitate greater degrees of boundary spanning activity by the university administrator.

Boundary Relevance and Role Conflict

Most research examining the relationship between boundary relevance and role conflict has found these variables to be related. Yet, Keller and Holland (1975) and Keller, Szilagyi, and Holland (1976) recently found no relationship between these variables. In both studies, the authors suggested that the individuals with high levels of boundary spanning activity were able to obtain a valuable organizational resource--power (in the form of information). This information power

may contravene the perceived role conflict often assumed to accompany boundary spanning activity.

The results of the study described herein also found no relationship between boundary relevance and perceived role conflict for the sample as a whole. Thus, it seems that the university administrators engaging in boundary spanning activity may establish outside contacts, form liaison relationships, gain access to information, develop alternative courses of action, and other activities which may free them from the conflict situation of being caught between differing interest groups. Corresponding with this concept, Baldridge (1971) addressed the role of information to the university president.

> This is not to say, however, that the president has little personal influence, that he merely becomes a technical bureaucrat. On the contrary, since he is at the center of this network of expertise, he comes to enjoy a new type of power, a power based on the control of information and the manipulation of expertise rather than on the form of personality alone (p. 205).

Organ (1971) also discussed these activities for the boundary spanner in general; yet, this would be especially important to the university administrator, as power is so diffused throughout the university structure [see Thompson (1967) and Kast and Rosenzweig (1974).]

However, if the boundary spanning activity did accumulate power in the form of information and, indeed, reduced role conflict, it was not strong enough to have caused a significant negative relationship (except at the top level of the sample). The effect of hierarchical level as an intervening variable will be discussed later in this section.

There is an alternative explanation for the lack of relationship between boundary relevance and role conflict. It may be that those individuals unable to cope with the conflict inherent in the university

positions requiring higher levels of boundary spanning activity do not seek these positions, or perhaps do not survive long in these positions. Those administrators occupying administrative positions requiring considerable boundary spanning activity may have developed or internalized mechanisms to deal with conflicting pressures and, therefore, do not perceive high levels of role conflict.

A closer inspection of the results for these variables indicated no significant relationships, by level, except for the top level university administrators. The statistically significant, negative relationship between boundary relevance and perceived role conflict indicates that this sample of top level administrators seemed to experience less role conflict, as they actively span organizational boundaries. Or, again, those who have attained top level positions may have developed a capacity to cope with role conflict (to mitigate, ignore, or selectively fail to perceive conflicting pressures). Thus, these individuals would be less hesitant to span organizational boundaries in attempts to effectively function in their administrative positions.

This set of results for the top level administrators emphasizes the importance of hierarchical level as an intervening variable in the study of boundary spanning activity. Keller, Szilagyi, and Holland (1976) alluded to this concept in their study of occupational levels (managers, engineers, and supervisors). In their study, only the lower levels of supervision demonstrated a relationship between boundary spanning activity and role conflict, which they attributed to the relative lack of power of lower-level supervisory personnel in any boundary spanning activities.

This area of inquiry has discussed possible explanations for the lack of relationship between boundary relevance and perceived role conflict and has indicated the significance of hierarchical level as an intervening variable in the study of boundary spanning activity. As a whole, however, all that has been indicated is that there was no relationship between the variables for this sample.

Boundary Relevance and Role Ambiguity

As demonstrated in Chapter III, there is considerable diversity in the literature concerning the relationship of boundary relevance and perceived role ambiguity. No relationship between these variables was found in this study, for the sample as a whole or for any hierarchical level within the sample. These results agree with the work of Keller, Szilagyi, and Holland (1976) and Miles (1977).

Drawing on the work of Pettigrew, Keller et al. (1976) suggested that individuals engaged in high levels of boundary spanning activity were able to obtain power in the form of information. Therefore, managers may find that boundary spanning activity gives them additional power in relation to their peers, and thus it could be a desirable activity--without the role stress often assumed to accompany boundary spanning activity.

Miles (1976b) proposed that while performance in managerial and boundary spanning roles has generally been regarded as more difficult to evaluate than the performance of nonsupervisory subordinates, this may not be the case in research and development (and other professional) organizations where the work of the scientist and nonsupervisory professional may be the most unstructured and ambiguous, and criteria of

effectiveness the most difficult to establish.

When examining role ambiguity of university administrators, it is possible that "the professional nature of all the roles sampled may result in a restriction of range in the degree of objective, if not experienced, role ambiguity" (Miles, 1976b, p. 177). Thus, with the Miles' studies of research and development organizations, the lack of a relationship between boundary relevance and role ambiguity may be an artifact of the setting selected for the study described herein.

Miles offered another explanation for the lack of relationship between boundary relevance and perceived role ambiguity. He suggested that the role-set distance for boundary spanners places their role senders in a relatively weak position to evaluate performance in the focal role; consequently, role senders may be forced to rely on the boundary role occupant's self-reports of extra-organizational transactions and outcomes. High role-set distance conditions may permit the boundary spanner to largely define his or her own role expectations as well. If these conditions hold, boundary spanner ambiguity regarding role expectations and performance evaluations may vary inversely with additions to role-set distance beyond some threshold. This certainly is a possibility concerning the boundary spanning activity of university administrators.

Therefore, possible explanations exist for the lack of relationship between the variables. The concept that other intervening variables, such as power gained by access to information or independence due to lack of visiblity to constituents, may have affected the relationship between boundary relevance and role ambiguity appears credible.

A closer inspection by hierarchical level did not add to the interpretation, as there were no significant results by level. Again, the results indicate no existing relationship between boundary relevance and role ambiguity for this sample.

Automatic Interaction Detector (AID3)

As discussed in Chapter V, AID3 searches for the structure of relationships. The AID3 technique was selected for post hoc analysis to attain a fuller appreciation of the interrelationships of the variables being studied--to better understand the structure of these relationships. As boundary relevance is of primary importance in the study described herein, it is the dependent variable in this analysis.

The results of the AID3 analysis indicate the critical importance of the predictor variable: hierarchy, as the first two splits are on hierarchical level. The initial split explained 18.4 percent of the variance of the dependent variable: boundary relevance. The second split accounted for an additional 5.7 percent of the explained variance. This demonstrated that the hierarchical level of the individual accounted for a total of 24.1 percent of the explained variance of boundary relevance. Thus, the AID3 analysis provided cogent evidence as to the importance of hierarchical level in the study of boundary spanning activity. This supports the emphasis on hierarchy as an important variable for explaining boundary spanning activity.

The other four splits were presented in Chapter V, but it should be emphasized that the predictor variables (hierarchical level, role conflict, role ambiguity, and perceived environmental uncertainty) in this study accounted for a total of 31.7 percent of the total explained

variance of boundary relevance. Obviously, there are additional variables which could (and should) be considered in future research concerning boundary spanning activity; this study was constrained to four predictor variables which were shown by the literature as having importance for boundary spanning activity.

Another consideration of the AID3 results should be noted. There was no relationship found between role ambiguity and boundary relevance, when utilizing the Pearson product-moment correlation analysis. Yet, the fourth split on the AID3 analysis was on role ambiguity and accounted for 2.4 percent of the explained variance of boundary relevance. This indicates some importance for the role ambiguity variable, which was not demonstrated by the parametric Pearson correlation coefficient. To a lesser degree, the same is true for the role conflict variable, which is the sixth, and last, split and accounts for 1.0 percent of the explained variance.

Finally, it should be reiterated that the real value of the AID3 analysis is to gain better understanding of the structure of relationships and, thereby, increases the researcher's ability to account for the variance of a dependent variable. The AID3 analysis described herein indicated the importance of hierarchy in understanding the boundary spanning activity of this sample. To a lesser degree, the importance of the other predictor variables was demonstrated; and, it was noted that other variables need to be incorporated in the study of boundary spanning activity to obtain a greater percent of explained variance in the dependent variable, boundary relevance.

Multivariate Nominal Analysis (MNA)

The utilization of the Multivariate Nominal Analysis program for the study described herein was to facilitate better understanding of hierarchical level, as it relates to the other variables (boundary relevance, perceived environmental uncertainty, role conflict, and role ambiguity). MNA offers an array of statistics for the analysis of the data, which was presented in Chapter V; this section will summarize and discuss those results.

Initially, the multivariate statistics of MNA (Table IX) indicated that the program could markedly increase the percent of university administrators that could be correctly classified after considering the four independent variables for each administrator. It is particularly interesting that the percentage would have been much higher for the total sample, except that the middle hierarchical level (deans) was much lower than the other hierarchical levels. This is the first indication that the analysis of the middle level of university administrators would present some complex and unexpected results. This was demonstrated again when the independent variables explained in a very low (4%) portion of variation in the middle level category. Again, the top and lower hierarchical levels evidenced much higher levels of explained variance.

The MNA program also provided bivariate relationships for the variables in the study (see Table XI). Summarily, the bivariate statistics primarily indicated the strength of the relationship between boundary relevance and hierarchical level. Specifically, boundary relevance best distinguished the top hierarchical level, as did perceived environmental uncertainty, and role ambiguity. However, role conflict

best distinguished the middle hierarchical category. Except for this relatively strong relationship between role conflict and the middle hierarchical level, the middle category has extremely low values.

A detailed analysis of the relationships between each of the independent variables and each hierarchical level category was shown in Table XII. The direct relationship between boundary relevance and hierarchical level was apparent in this table, as top level university administrators comprised the largest percent of those with high levels of boundary spanning and were, by far, the lowest percent of those with lower levels of boundary spanning activity. The converse was true for lower level university administrators.

Some interesting percentages are presented in Table XII. An examination of role conflict indicates almost an even distribution of the variable by level at the lowest degree of role conflict (RCON 1). At the middle level of role conflict (RCON 2), the variable is perceived primarily at the lower hierarchical level (45.65% in the lower levels). Yet, those experiencing highest levels of role conflict are the deans, the group most "caught in the middle" of the organizational structure. With the highest level of role conflict being perceived by the middle hierarchical category, it would seem that this group (deans) is most vulnerable to the dysfunctions of role conflict discussed in Chapter II.

The results of the variable, role ambiguity (RAMB), are more mixed. There are approximately equal percentages of the lowest degree of perception of role ambiguity (35.71%, 34.29%, and 30.00%); at the middle degree of role ambiguity, the lower hierarchical level is predominant (43.14%) and is still predominant at the highest degree of

role ambiguity (41.67%). Thus, it appears that the department chairpersons are perceiving the most role ambiguity. This could be attributed to a number of possibilities: the difficulty of coordinating and dealing with a professional faculty; uncertainty concerning departmental performance expectations and evaluations by higher level administrators; fewer years in departmental chairperson position; and others. At any rate, the role ambiguity often assumed to be associated with top level administrators was found most predominantly at the lower hierarchical category.

Table XII also indicated that of those experiencing low degrees of PEU, the majority are lower level administrators (47.73%). Those administrators experiencing a middle degree of PEU are equally divided among the three levels (32.53%, 36.14%, and 31.33%). However, those perceiving the highest level of PEU were in the top and lower levels; these two levels both had 36.67%, while the middle level was 26.67%. This would seem to indicate that the deans (middle level) are somewhat more insulated from PEU than either higher or lower levels of university administration.

Finally, the MNA program predicted hierarchical level for each university administrator, based on his responses to the variables being studied. Table XIII evidenced that the MNA program could predict hierarchical level quite well for the top level category and the lower level category. Yet, almost one-half of the deans (middle level category) were predicted to be department chairpersons, and almost another fourth were predicted to be top level administrators. This seems to indicate that many of the deans in the sample were still perceiving and relating to the dean's position in ways very similar to department chairpersons.

This may be a residual from their previous role as a department chairperson (assuming that a large portion of deans were previously department chairpersons), or the roles may, indeed, be very similar in relation to the variables studied.

As with the AID3 analysis, the Multivariate Nominal Analysis was employed to contribute understanding to the study described here. MNA specifically examined the relationship of hierarchical level with the other variables. It has been demonstrated that the independent variables do aid in understanding and, indeed, predicting the hierarchical levels. Yet, the unique nature of the middle hierarchical category (the deans in the university structure) has also been demonstrated and emphasized.

Summary

This chapter has presented a discussion of the results of the statistical analyses contained in the study. Several relationships have been examined and discussed herein.

Initially, the strong relationship between boundary relevance and hierarchical level was discussed. The positive results of the correlational analysis indicated that in this sample higher level administrators do, indeed, cross more organizational boundaries to function in their position than lower level administrators. This finding was supported by the analysis of the Automatic Interaction Device (AID3), using boundary relevance as the dependent variable. AID3 demonstrated the importance of hierarchical level. The first two splits were on hierarchy variable and accounted for 24.1% of the explained variance of boundary relevance. Furthermore, the Multivariate Nominal Analysis

(MNA) established that boundary relevance was the best predictor (of the variables studied) of hierarchical level. This study provides strong evidence supporting hierarchical level in the investigation of boundary spanning activity.

The relationship between perceived environmental uncertainty (PEU) and boundary relevance was also found to be positive and statistically significant. This was substantiated by MNA, which demonstrated that PEU best distinguished top level administrators from the other two hierarchical levels. The AID3 program did split on PEU (split number five, accounting for 1.7% of the explained variance of boundary relevance), but this was negligible.

No significant relationship was found between role conflict and boundary relevance in this study, utilizing correlation analysis. However an examination of the relationship with hierarchical level as an intervening variable revealed that a negative, significant relationship existed between boundary relevance and role conflict at the top hierarchical level. It was suggested that either this sample of top level administrators reduced role conflict by increased boundary spanning activity, or these administrators have developed the ability to cope with, or ignore, role conflict and do not hesitate to span boundaries. The strength of this negative relationship was evident in the AID3 program, as role conflict twice split off groups of top level administrators (the third and sixth splits, account for a total of 3.6% of the explained variance of boundary relevance). However, in the MNA program, role conflict best distinguished middle level administrators, of those administrators experiencing high degrees of role conflict, 50% were the middle administrators. It appears that, in this sample of

university administrators, the strongest relationship is negatively between top level administrators and role conflict; yet, the middle level (deans) is the group experiencing the most role conflict.

There also was no significant relationship found between role ambiguity and boundary relevance, utilizing correlation analysis. Yet, the AID3 program split on role ambiguity from a lower level group of administrators (split number four, accounting for 2.4% of the explained variance of boundary relevance). This indicates some relationship between the lower level administrators and role ambiguity. The MNA program offered similar results, as the lower hierarchical level has the largest percent of individuals experiencing middle and high degrees of role ambiguity.

Summarily, this chapter has presented discussion and explanation of the results of the study. Some results are definitive and clear; other results remain less clear. Still, this is to be anticipated in an area of study still emerging in organizational theory, such as boundary spanning activity.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The study entailed several objectives. The major research objective was to determine if a relationship exists between boundary relevance and hierarchical level. More specifically, the research was designed to see if boundary relevance increased by level in an organizational hierarchy.

Three other important research objectives were to determine if relationships exist between boundary relevance and (1) perceived environmental uncertainty, (2) role conflict, and (3) role ambiguity. There were also two other objectives of the research. One was to more fully explore the structure of the relationships of the variables by utilizing the Automatic Interaction Detector (AID3) with boundary relevance as the dependent variable. The final objective was to more fully investigate the hierarchy variable to better understand how hierarchy is related to the other variables; this was accomplished via Multivariate Nominal Analysis (MNA).

This chapter will entail a brief summary of the findings for each hypothesis, areas of inquiry, and post hoc analysis; implications for organizational practices, limitations of the study, suggestions for future research, and concluding statements.

Summary of Findings

Hypothesis 1 was designed to investigate the relationship between boundary relevance and hierarchical level. It was found that boundary relevance increased in the higher hierarchical levels. This result suggests that for this particular sample boundary spanning activity is related to hierarchical level. It also suggests that it is meaningful to consider hierarchical level when examining boundary spanning activity in the existing literature and any future research.

Hypothesis 2 was designed to investigate the relationship between boundary relevance and perceived environmental uncertainty. A positive relationship was found to exist between boundary relevance and the overall measure of PEU, as PEU was higher for those with higher levels of boundary relevance. Also, two of the subdimensions were positively related to boundary relevance. This result supports the concept that boundary spanning activity is closely related to perceived environmental uncertainty, but does not presume to suggest causality. More research is needed before definitive conclusions can be made.

The areas of inquiry were designed to investigate the relationship of boundary relevance and two role stress variables, role conflict and role ambiguity. In both cases, no statistically significant relationship was found, except for role conflict when hierarchy was used as an intervening variable.

The post hoc analyses were performed to aid in understanding the variables and interrelationships involved in this study. The Automatic Interaction Detector (AID3) searches the structure of relationships. In this study, AID3 identified the importance of the

hierarchical level variable for explaining the variance of the dependent variable, boundary relevance. Also, Multivariate Nominal Analysis (MNA) was utilized in an attempt to understand how the hierarchical level variable is related to the other variables. Specifically, the MNA technique demonstrated that boundary relevance best distinguished the different hierarchical levels, and the MNA technique could substantially improve the ability to accurately predict top and lower hierarchical level occupants, based on the independent variables.

Some of the findings suggest certain implications for organizational practices which are described in the next section.

Implications for Organizational Practices

The type of research described herein has been largely of an exploratory nature but contains several questions which have differing degrees of theoretical and empirical support. There are still some implications for organizational practice which may be made based on the results of the research.

The findings that a positive relationship exists between boundary relevance and hierarchical level reaffirms that the content of managerial duties differ by level, and specifically that boundary spanning activity will increase as one moves up the organizational structure. Thus, one of the major problems in the administration and management of a university is the selection and retention of individuals who are able to effectively function in boundary spanning positions. Individuals aspiring to high level positions in university administration must be aware of their increasing external responsibilities and prepared to cope with them.

One finding which has important implications for organizational practice is that of the positive relationship of perceived environmental uncertainty and boundary relevance. This, as stated earlier, may be due to administrators actively crossing organizational boundaries in attempts to secure information which could reduce the environmental uncertainty. Suppression of this boundary spanning activity could result in increased uncertainty and dysfunctional side-effects. This practice of boundary spanning should be encouraged and allowed to continue. Possibly better methods of liaison relationships could be instituted along with any existing boundary spanning avenues.

Finally, since boundary spanning activity appears to increase with hierarchical level, and, presumably, higher level administrators have greater power and control in the organization, it may be advantageous to provide some organizational socialization and control of boundary spanning activity. This is not to contradict the previously discussed implication; but rather, this should serve as an addendum to it. Organ (1971) and Organ and Greene (1972) have demonstrated that subjects deviate from the demands of their constituents more often when their behavior is thought to be unobserved. The organization may need to take some measure to ensure the boundary spanning activities are toward organizational goals.

Hopefully, these implications and suggestions would aid in the eventual outcome of increased efficacy of boundary spanning performance at individual, organizational, and interorganizational levels. The ensuing section will briefly highlight limitations of the present study.

Limitations of the Study

The correlative nature of the major portion of the research restricted generalization and application of the findings. Time constraints did not allow a longitudinal assessment of causality.

The sample consisted of 157 university administrators from large universities across the United States. Although care was taken to select a good size sample from a cross-section of large universities to provide representative data, the time and financial constraints did not allow a larger sample in numbers of administrators and universities represented. Also, the inclusion of data from more and different type organizations should support more meaningful results as the present research draws upon perceptions of administrators of one type of non-profit organizations.

The low response rate of this mailed questionnaire was anticipated, yet does limit the generalizations which may be drawn from the study. With regard to the instrument, few problems were encountered with the scales measuring the administrators' perceptions. Apparently if an administrator chose to complete and return the questionnaire, he did complete all scales. The only missing data were in the descriptive portion of the questionnaire; the administrators would often fail to describe their position title. This may have been an oversight or an attempt by the respondent to assure the anonymity of the questionnaire. It should also be noted that due to the several hypotheses being tested on the same set of data, the confidence level for the study as a whole is reduced.

Suggestions for Future Research

Future research on the topics studied and reported herein should entail a replication of the present study. Replication could do much in evaluating the value and general applicability of the findings found in the present study, particularly in reference to the hierarchical differences emphasized in this study. Further empirical work also needs to be done to see if these results may be generalized to other boundary spanning circumstances and to other types of organizations. The emphasis in earlier empirical work on this subject on research and development organizations must be expanded to a diversity of profit and non-profit organizations.

Other variables should be incorporated into the study of boundary spanning activity. Such variables as individual differences, job satisfaction, physical health, visibility to constituents, and others have been suggested or examined in earlier studies. These studies should be extended as additional variables related to boundary spanning are introduced and empirically tested.

The increased use of multivariate analysis, such as the Automatic Interaction Device or Multivariate Nominal Analysis, is essential to integrate the expanding body of multivariate research. Analyses which can examine several variables with boundary spanning activity and the multivariate nature of boundary spanning will greatly contribute to this area of organizational theory.

Finally, more research of a longitudinal nature is also needed in the study of boundary spanning activity. Changes in the boundary spanner's environment, the metastasis of boundary spanning responsibilities, and the movement of individuals into positions requiring

boundary spanning need to be studied in order to enrich the understanding of this organizational function. As it is proposed the boundary spanning activity is essential to the adaptability and viability of an organization, the actual tracking of individuals in these positions and the changing requirements of these positions is a worthy area of research. Through longitudinal research, studies can be undertaken to assess causality in the relationships being tested.

Concluding Statements

The research undertaken and described herein has entailed a major effort to delineate specific relations described as important for organizational theory. Certain relationships have been clarified, and others have been complicated by the findings of the research. It is important to note that research in boundary spanning activity is, for the most part, in embryonic stages. The major purpose of any research should be to add to existing knowledge in the area. It is believed that the research described herein has provided evidence for further theoretical and empirical work on the topics studied and has also provided several implications for current and future organizational practices.

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APPENDIX

UNIVERSITY ADMINISTRATOR'S QUESTIONNAIRE

Part A. Introduction: Please check and fill-in the appropriate blanks concerning general information about your administrative position.

1. Administration:
   _____ I hold a full-time post in the central administration. Please specify _____.
   _____ I hold a full-time post in a college or school administration. Please specify _____.
   _____ I hold a post in a department (chairperson, head). Please specify _____.
   _____ Other
   Please specify _____.

2. With what college/school (e.g. Agriculture, Business) are you affiliated (if not central administration)?
   Please specify _____.

3. How long have you been in your current position?
   _____ Less than one year.
   _____ 1 - 3 years.
   _____ 4 - 8 years.
   _____ 9 - 15 years.
   _____ More than 15 years.

4. What is your age?
   _____ Under 30.
   _____ 30 - 40.
   _____ 41 - 50.
   _____ 51 - 60.
   _____ Over 60.

5. Please indicate which of the following best describes your position in your university's structure.

   _____ INSTITUTIONAL LEVEL: Top management in your university; responsible for major decision-making; often relate the activities of the university to its environment.

   _____ MANAGERIAL LEVEL: Middle level administration in your university; coordinate and integrate the performance of lower levels to meet the requirements set forth by the institutional level.

   _____ ADMINISTRATIVE LEVEL: Lower level administration in your university; directly coordinate the work of faculty and students (and some staff).

7. How many ADMINISTRATIVE LEVELS are between your position and your university's top administrative position? _____ Levels.

8. How many ADMINISTRATIVE LEVELS are between your position and the lowest administrative position in your university? _____ Levels.

9. How many SUBORDINATES answer/report directly to you?
_____ Subordinates.

Part B. A University Administrator's Need for Clarity.

Please describe the extent to which each of the following phrases are descriptive of you. Using the scale below, place your answers in the blanks provided to the left of each sentence.

1	2	3	4	5
Very Important to me				Not Important to me

_____ How important is it to you to know, in detail, WHAT you have to do on a job?

_____ How important is it to you to know, in detail HOW you are supposed to do a job?

_____ How important is it to you to know, in detail, what the LIMITS OF YOUR AUTHORITY on a job are?

_____ How important is it to you to know HOW WELL you are doing?

Part C. Important Others to University Administrators.

1. Please list those persons (both within and beyond your university) who can significantly HELP OR HINDER your job success. Write their names at the left of this page under "NAMES". Please list no more than 10; less than 10 is fine.

1._____	a. _____	b. _____	c. _____	d. _____	e. _____
2._____	a. _____	b. _____	c. _____	d. _____	e. _____
3._____	a. _____	b. _____	c. _____	d. _____	e. _____
4._____	a. _____	b. _____	c. _____	d. _____	e. _____
5._____	a. _____	b. _____	c. _____	d. _____	e. _____
6._____	a. _____	b. _____	c. _____	d. _____	e. _____
7._____	a. _____	b. _____	c. _____	d. _____	e. _____
8._____	a. _____	b. _____	c. _____	d. _____	e. _____
9._____	a. _____	b. _____	c. _____	d. _____	e. _____
10._____	a. _____	b. _____	c. _____	d. _____	e. _____

(When you have completed a through e, tear off the list of names in the left-hand margin. Do not return it with the questionnaire.)

2. We would like you to describe a few aspects of your relationship with each of the persons you listed on the opposite page.

Please read each of the following questions carefully and choose the number-coded responses which most accurately describe your relationship with each person listed.

Record your answers by that person's name in the letter-coded blanks provided on the opposite page.

a. Please describe where this individual is LOCATED by using one of the number-coded alternatives:

__1__ Within my department.
__2__ Within my control, but outside my department.
__3__ Within the Division, School, or College, but outside my control.
__4__ Within the University, but outside the Division, School, or College.
__5__ Outside the University (e.g., in other universities, agencies, private industry, government, etc.).

b. For this individual, describe how much FORMAL AUTHORITY he has relative to yours on issues which require that you contact one another. Choose one of the following number-coded alternatives:

1	2	3	4	5
Considerably Less		About the same		Considerably More

c. Indicate HOW FREQUENTLY you have work-required contacts with this individual. Consider all types of contacts, including face-to-face conversations, telephone conversations, and written communications. Choose one of the following alternatives for each individual:

1	2	3	4	5
Never	Rarely	Sometimes	Rather Often	Nearly All the Time

d. How much effect does this person have on your PERFORMANCE?

1	2	3	4	5
No Effect	Very Little Effect	Some Effect	Considerable Effect	A Very Great Effect

e. How much effect does this person have on the rewards (raises, promotions, recognitions, etc.) you obtain as a result of your performance?

1	2	3	4	5
No Effect	Very Little Effect	Some Effect	Considerable Effect	A Very Great Effect

3. When you have completed a through e for all individuals listed on the opposite page, please tear off the list of names in the left-hand margin of that page. Do NOT return the list with the questionnaire.

Part D. The University Administrator's Environment.

Please consider a major DECISION SITUATION in which you were involved during the past year. Restrict the choice of this situation to one which you consider as typical of the crucial type of decisions which you face in the operation of your department, college/school, or university. Please write a short description of this decision situation in the following space: _____

_____.

The following is a list of 27 factors; some of which might have been considered by you in the above situation. Please place a check mark ( ) beside those factors which you feel were MAJOR CONSIDERATIONS in the above decision situation. The factors have been placed into categories only to aid your reading and SHOULD NOT be viewed as a guide for completing this portion of the questionnaire.

External Factors

Customers:

_____ (1) Students.
_____ (2) General public reached via extension or research.

Input:

_____ (3) Current high school students.
_____ (4) Alumni.
_____ (5) General public in your state or region.
_____ (6) High school administrators or staff.
_____ (7) Parents of current students.

Competitors:

_____ (8) Other universities or colleges.
_____ (9) Other post-secondary institutions (e.g., Vo-tech).

Socio-Political:

_____(10) Government regulatory control over your university.
_____(11) State legislature and other state offices/officials.
_____(12) Public attitude toward your university.
_____(13) Relationship with any collective bargaining units.

Technological:

_____(14) Meeting new educational, curricular, & research requirements of higher education.
_____(15) Improving services by implementing technological advances.

Internal Factors

Personnel:

_____(16) Educational and technological background and skills of personnel.
_____(17) Previous technological, educational and managerial skills of personnel.
_____(18) Individual member's involvement and commitment to attaining departmental, college/school, or university goals.
_____(19) Interpersonal behavior styles.
_____(20) Availability of manpower for utilization with department, college/school, or university.

Faculty and Staff Units:

_____(21) Different natures of organizational (university) units.
_____(22) Interdependence of organizational (university) units in carrying out their objectives.
_____(23) Intra-unit conflict in the faculty or staff units.
_____(24) Inter-unit conflict in the faculty or staff units.

Organizational Level:

_____(25) Department, college/school, or university objectives or goals.
_____(26) Processes for integrating groups and individuals for maximum attainment of goals.
_____(27) Nature of department's, college's/school's, or university's product or service.

Of the factors which you checked (✓) on the opposite page, please list the THREE factors which you feel were MOST IMPORTANT in your decision situation. Please write the description of these factors in the following spaces:

Factor 1 _____.

Factor 2 _____.

Factor 3 _____.

Would you please answer the following questions for each of the three factors you listed above. Using the scale provided, please write the number representing your experience for the particular factor under discussion. Simply write the number in the blank at the left of each factor.

1	2	3	4	5
Never	Seldom	Occasionally	Fairly Often	Always

1. How often do you feel that you have the NECESSARY INFORMATION about this factor in order to understand what it expects your department, college, etc. to do in making decisions?

_____ Factor 1 _____ Factor 2 _____ Factor 3

2. How often do you feel that you are UNABLE TO PREDICT how this factor is going to react to, or be affected by, decisions made by this department, college, etc.?

_____ Factor 1 _____ Factor 2 _____ Factor 3

3. How often is it hard to tell how this factor will REACT TO, or be affected by a decision before it is made?

_____ Factor 1 _____ Factor 2 _____ Factor 3

4. How often do you believe that the information that you have about this factor is ADEQUATE for decision making?

_____ Factor 1 _____ Factor 2 _____ Factor 3

1	2	3	4	5
Extremely Difficult	Somewhat Difficult	Neither Easy Nor Difficult	Somewhat Easy	Extremely Easy

5. How difficult is it for you to get the NECESSARY information about this factor for decision making?

_____ Factor 1 _____ Factor 2 _____ Factor 3

6. How difficult is it to obtain ADDITIONAL information about this factor when you need it for decision making?

_____ Factor 1 _____ Factor 2 _____ Factor 3

In summing up your beliefs about each of the three factors on the previous page, please indicate how sure you are about how each of these factors is going to AFFECT THE SUCCESS OR FAILURE of your department, college/school, or university in its tasks. After each factor listed below, circle one of the numbers from zero (0) to ten (10) to indicate how sure you are of how that factor affects your university unit.

	Completely Unsure										Completely Sure	
Factor 1	0	1	2	3	4	5	6	7	8	9	10	(Range)
Factor 2	0	1	2	3	4	5	6	7	8	9	10	(Range)
Factor 3	0	1	2	3	4	5	6	7	8	9	10	(Range)

Second, after you have indicated how sure you are about the factor, please indicate the RANGE of numbers (between 0 and 10) you were considering in indicating your "sureness". For example, if you were "3 sure" on Factor 1, was the range you were considering between 2 and 4, or 1 and 7, or 1 and 10, etc.? Indicate this range by writing it in the blank space to the right of each of the factors

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In the following five (5) questions you are asked to consider your DECISION PROCESSES IN GENERAL. Simply circle the response after each question which you feel best suits your experience.

1. How often do you feel that you can consider ALTERNATIVE COURSES OF ACTION before making a decision to follow a specific course of action?

   1. Never 2. Seldom 3. Occasionally 4. Fairly Often 5. Always

2. How often do you feel that you can effectively consider the CONSEQUENCES of making decisions before they are made?

   1. Never 2. Seldom 3. Occasionally 4. Fairly often 5. Always

3. How often do you feel that you are able to tell if the decisions you make will have a POSITIVE or NEGATIVE effect on your unit's overall performance?

   1. Never 2. Seldom 3. Occasionally 4. Fairly often 5. Always

4. How often can you determine what the OUTCOME of a decision will be before it is made?

   1. Never 2. Seldom 3. Occasionally 4. Fairly often 5. Always

5. What most nearly describes the typical length of time involved before you can obtain feedback or information concerning the effects of your decision on your department, college/school, or university?

   a. One Day
   b. Three Days
   c. One Week
   d. One Month
   e. Six Months
   f. One Year
   g. Two Years or More

Part E. Conflict and Ambiguity in University Administration.

Using the scale provided, please indicate the number in each blank which indicates the degree to which the conditions exist for you in your present position in the university.

1	2	3	4	5	6	7
Very False						Very True

_____1. I have enough time to complete my work.
_____2. I feel certain about how much authority I have.
_____3. I perform tasks that are too easy or boring.
_____4. I have clear, planned goals and objectives for my job.
_____5. I have to do things that should be done differently.
_____6. There are a lack of policies and guidelines to help me.
_____7. I am able to act the same regardless of the group I am with.
_____8. I am corrected or rewarded when I really don't expect it.
_____9. I work under incompatible polices and guidelines.
_____10. I know that I have divided my time properly.

_____11. I receive an assignment without the manpower to complete it.
_____12. I know what my responsibilities are.
_____13. I have to buck a rule or policy in order to carry out an assignment.
_____14. I have to "feel my way" in performing my duties.
_____15. I receive assignments that are within my training and capability.
_____16. I feel certain how I will be evaluated for a raise or promotion.
_____17. I have just the right amount of work to do.
_____18. I know that I have divided my time properly.
_____19. I work with two or more groups who operate quite differently.
_____20. I know exactly what is expected of me.
_____21. I receive incompatible requests from two or more people.
_____22. I am uncertain as to how my job is linked.
_____23. I do things that are apt to be accepted by one person and not accepted by others.
_____24. I receive an assignment without adequate resources and materials to execute it.
_____25. I am told how well I am doing my job.
_____26. Explanation is clear of what has to be done.
_____27. I work on unnecessary things.
_____28. I have to work under vague directives or orders.
_____29. I perform work that suits my values.
_____30. I do not know if my work will be acceptable to my superior.

Part F. Satisfaction in University Administration.

Think of your present position in your university. What is it like most of the time? In the blanks beside each word given below write:

__Y__ for "YES" if it describes your current position.

__N__ for "NO" if it does NOT describe it.

__?__ if you cannot decide.

Work:

_____Fascinating	_____Respected	_____Challenging
_____Routine	_____Hot	_____On your feet
_____Satisfying	_____Pleasant	_____Frustrating
_____Boring	_____Useful	_____Simple
_____Good	_____Tiresome	_____Endless
_____Creative	_____Healthful	_____Gives sense of accomplishment

---

Compensation:

_____Income adequate for promotion	_____Income provides luxuries	_____Highly paid
_____Satisfactory benefits	_____Bad	_____Underpaid
_____Rarely live on income	_____Less than I deserve	_____Insecure

---

Opportunity for Promotion:

_____Good opportunities for promotion	_____Opportunity somewhat limited	_____Fairly good chance for promotion
_____Promotion on ability	_____Unfair promotion policy	_____Dead-end job
_____Infrequent promotion	_____Good chance for promotion	_____Regular promotions

---

Supervision:

_____Asks my advice	_____Up-to-date	_____Knows job well
_____Hard to please	_____Doesn't supervise enough	_____Quick tempered
_____Impolite	_____Bad	_____Intelligent
_____Praises good work	_____Tells me where I stand	_____Leaves me on my own
_____Influential	_____Annoying	_____Around when needed
_____Tactful	_____Stubborn	_____Lazy

Others you meet/work with in connection with your position:

_____Stimulating	_____Fast	_____Unpleasant
_____Boring	_____Intelligent	_____No privacy
_____Slow	_____Lazy	_____Active
_____Ambitious	_____Talk too much	_____Narrow interests
_____Stupid	_____Smart	_____Loyal
_____Responsible	_____Easy to make enemies	_____Hard to meet

Thank you for your aid in this project. Please staple the questionnaire together (indicated on the cover sheet) and mail in.

VITA

Joe Allen Cox

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE RELATIONSHIP OF BOUNDARY SPANNING ACTIVITY TO HIERARCHICAL LEVEL, PERCEIVED ENVIRONMENTAL UNCERTAINTY, AND OTHER VARIABLES IN A UNIVERSITY SETTING: AN EMPIRICAL STUDY

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