



NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

THE RELATIONSHIP BETWEEN
ORGANIZATIONAL STRUCTURE AND EFFECTIVENESS
IN SCHOOL BOARD PROGRAM DEPARTMENTS

by Bonnie L. Viney

Thesis presented to the School
of Graduate Studies of the
University of Ottawa as partial
fulfillment of the requirements
for the degree of Ph.D. in
Education

Ottawa, Canada, 1980



UNIVERSITÉ D'OTTAWA
UNIVERSITY OF OTTAWA

ACKNOWLEDGMENTS

This thesis was prepared under the supervision of Professor Robert O'Reilly, Ph.D., of the Faculty of Education of the University of Ottawa. The writer wishes to express her gratitude to Dr. O'Reilly for his valuable appraisals and suggestions.

The writer also wishes to express her gratitude to the many Superintendents of Program and curriculum workers who participated in the study.

The financial assistance received from the University of Ottawa and the Federation of Women Teachers' Associations of Ontario during the course of the doctoral program is gratefully acknowledged.

CURRICULUM STUDIORUM

Bonnie L. Viney was born August 27, 1950, in Toronto, Ontario. She received the Bachelor of Arts degree in French and English from the University of Toronto in 1971. She received the Master of Arts degree in Education from the University of Ottawa in 1977. The title of her thesis was The Effect of Procedural Planning and Brainstorming Techniques on Group Performance using a Curriculum Task.

TABLE OF CONTENTS

Chapter	page
INTRODUCTION.....	vii
I. REVIEW OF THE LITERATURE.....	1
1. The Nature of Organizations	2
2. The Structure of Organizations	3
3. Empirical Studies of Structure	6
4. Five Structural Variables	12
a. Configuration	12
b. Centralization	15
c. Specialization	17
d. Standardization	19
e. Formalization	20
5. The Relation of Structure to Organizational Effectiveness	23
a. Definition of Organizational Effectiveness	23
b. The Measurement of Organizational Effectiveness	25
c. The Relation of Structure to Effectiveness	30
d. Organizational Structure and the Nature of the Task	34
e. Organizational Structure and the Nature of the Environment	42
f. Organizational Structure and Professional Employees	44
g. Effective Structure in Program Departments	52
6. Summary and General Hypotheses	54
II. RESEARCH DESIGN.....	57
1. Definition of Terms	57
2. The Variables	58
3. The Sample	59
4. Investigative Procedure	60
5. The Measures of Bureaucratic Dimensions	61
6. The Measure of Effectiveness	64
7. Data Analysis Procedures	74
III. PRESENTATION OF RESULTS.....	75
1. Collection of Data	75
2. Independent Variables	76
3. Dependent Variable	86
4. Tests of the Hypotheses	89
5. Major Findings	91

TABLE OF CONTENTS

Chapter		page
IV.	DISCUSSION OF RESULTS.....	97
1.	Measures of Structure in School Board Program Departments	97
2.	Effectiveness Measures	102
3.	Centralization, Formalization and Effectiveness	105
4.	Specialization and Effectiveness	109
5.	Configuration and Effectiveness	112
6.	Implications of the Study	116
	SUMMARY AND CONCLUSIONS.....	123
	REFERENCES.....	126
Appendix		
1.	THE INSTRUMENT TO MEASURE BUREAUCRATIC DIMENSIONS.....	140
2.	THE INSTRUMENT TO MEASURE ORGANIZATIONAL EFFECTIVENESS.....	149
3.	RAW SCORES.....	152
4.	A BRIEF DESCRIPTION OF PROGRAM DEPARTMENTS.....	154
5.	<u>ABSTRACT OF The Relationship Between Organizational Structure and Effectiveness in School Board Program Departments.....</u>	160

LIST OF TABLES

Table		page
I.	Configuration Measures.....	77
II.	Centralization Measures.....	79
III.	Specialization Measures.....	80
IV.	Formalization Measures.....	82
V.	Pearson Correlation Coefficients for the Independent Variables.....	83
VI.	Measures of Size.....	85
VII.	Pearson Correlation Coefficients for the Independent Variables and Size.....	87
VIII.	Pearson Correlation Coefficients for Nine Measures of Organizational Effectiveness....	88
IX.	Interrater Reliability.....	90
X.	Multiple Regression Analysis I.....	92
XI.	Overall Significance of Regression Equation I.....	93
XII.	Multiple Regression Analysis II.....	95
XIII.	Overall Significance of Regression Equation II.....	96

INTRODUCTION

In 1975, with the publication of a booklet entitled "The Formative Years", the Ontario Ministry of Education assigned major responsibilities in curriculum development to local school boards, following a decentralization trend which occurred throughout North America. Although the province continued to establish educational philosophy, local officials were directed to translate that philosophy into programs:

Thus, while the Ministry articulates the broad goals, it is the responsibility of the local school boards -- through their supervisory officials -- to formulate local programs that are within the rationale of the provincial policy and at the same time reflect local needs and priorities (1975: 2).

School boards responded to this directive by establishing or expanding special units to develop local programs. Provincial policy began to be translated locally into specific objectives and curriculum guides. As the scope of the task became clearer, these units grew in many directions. Guidance from the province concerning the form such expansion should take was not forthcoming.

At the present time, the organization of these units or program departments varies widely. In some cases, one or two consultants work alone or with volunteer teacher committees. At the other extreme, some curriculum departments have become very large, organized in accordance with business management principles. The question of the most effective organizational

structure for this curriculum task has never been formally examined.

Exciting recent developments in organizational analysis have made a comparative study of program department structures feasible. Based on Weber's theory of bureaucracy (1947), measures of such ~~dimensions as configuration, centralization,~~ specialization, standardization and formalization have been developed and tested in many different types of organizations, including educational institutions.

Theoretical postulations and empirical tests concerning the interaction of bureaucratic structure with certain types of tasks, environments and employees have suggested that certain forms of organization are more effective for the achievement of program department goals.

The combination of detailed procedures for structural analysis with appropriate measures of organizational effectiveness enabled predictions to be tested concerning superior organizational forms for the performance of curriculum development tasks in unpredictable environments by professionals.

The purpose of the present study was, thus, to examine the organizational structure of Ontario school board program departments, in relation to their effectiveness. The first portion of this report consists of a review of the literature examining organizational structure in terms of bureaucratic

theory. A conceptualization of the interaction of five bureaucratic dimensions with tasks, environments, and employees is presented. Empirical studies manipulating bureaucratization, task complexity, environmental predictability or professionalization of employees are thereupon analyzed, and the following prediction is formulated and explained: that program departments with minimally bureaucratized organizational structures are more effective in the curriculum development process than those with highly bureaucratized structures. The generation of this hypothesis is followed by a description of the research design used to test it, as well as a presentation and discussion of the results obtained. In an appendix, details of the various measures of structure and effectiveness are given.

The contributions of this study are twofold. In the realm of funded knowledge concerning organizations, it provides an extension of bureaucratic theory and the application of the Aston methodology to school boards, specifically to those departments within school boards charged with the curriculum development task. Secondly, this study establishes a guide for the organization of effective program departments. The latter contribution is of major importance to educators and indeed to society today, for upon the departments assigned the task of

INTRODUCTION

x

deciding what society's children will learn rests a considerable responsibility for the direction which the development of that society will take in the future. It is hoped that this research will contribute to society's understanding of these organizational units, and to its ability to design them to serve civilization's ends more effectively.

CHAPTER I

REVIEW OF THE LITERATURE

The formal study of organizations dates back to the turn of the century. Since that time, various theorists have examined organizational effectiveness from different perspectives. Some authors have favored universal principles of management, others the scientific deployment of men and machines; some have debated humanistic motivation techniques, while still others have considered organizations as natural systems. In this review of the literature, a theoretical framework is developed from writings concerning structural elements, relating the formal structure of an organization to its effectiveness. Particular emphasis is placed on the effect of the various dimensions of bureaucracy on complex task accomplishment in unpredictable environments by professional employees. The empirical studies focusing on the analysis of organizational structure and its interaction with tasks, environments and employees are reviewed to demonstrate what the effects of manipulating certain structural elements in these cases have been. Finally, a prediction concerning which organizational structures are most effective in school board program departments is derived, and a research problem based on the theories and studies reviewed is formulated.

1. The Nature of Organizations

An organization is a cooperative system developed by humans to overcome individual limitations in the accomplishment of certain goals (Barnard, 1938: 43). In order to survive, an organization must concern itself with achieving its objectives, maintaining its internal system, and adapting to its external environment (Argyris, 1966: 120).

Organizations develop a plurality of parts to cope with their threefold survival attempt. These parts serve five general functions (Bakke, 1967: 73). The "Identification Bond" consists of the definition and legitimation of the purpose of the organization, while the "Perpetuation Bonds" are concerned with the acquisition of resources. The "Work-Flow Bonds" include the production and distribution of output, the "Control Bonds", the direction and coordination of all operations. Finally, the "Homeostatic Bond" focuses on the maintenance of a dynamic equilibrium among all of the parts.

Analyses of the function of organizations have been carried out on three different levels. The individual has been studied in relation to his specific role in a certain formal position of the organization. The pattern of social relations among individuals and groups has also been examined. Finally, the system of interrelated elements that characterizes the organization as a whole has been described and manipulated (Blau, 1974: 113). Each of

these levels of analysis has also been related to organizational effectiveness (Steers, 1975).

Organizational theory is a "network of interconnected concepts, definitions, assumptions, and hypotheses (Khandwalla, 1977: 15)" derived from the contemplation of these levels. The present study is concerned with the third area of emphasis: the formal structure of the organization as a whole.

2. The Structure of Organizations

The structure of an organization is the formally sanctioned arrangement of its parts. Since it is the visible result of conscious efforts by the organization to achieve its objectives while maintaining itself as an entity and adapting to its external environment, structure is the medium through which the organization attempts to be effective. As such, it has attracted the interest of many theorists.

Early in this century, Taylor and other advocates of scientific management concerned themselves with optimum arrangements of men and machines for maximum productivity. An organization's undertakings, it was argued, should be divided and subdivided into very simple, carefully defined functions. The specific procedures to be carried out by individual workers in each division were to be clearly identified and closely controlled. Thus, through specialization and standardization, it was argued, an effective organizational

REVIEW OF THE LITERATURE

4

structure would be achieved (Owens, 1970: 5-6).

The concept of an ideal structure was further developed by Fayol, who elaborated upon notions of centralization, "the optimum degree for the particular concern (1959: 33)," as well as hierarchies, it being "an error to depart needlessly from the line of authority (1959: 36)," and division of labour, "the object of [which being] ... to produce more and better work with the same effort (1959:20)."

Gulick further described the optimum relationship of superiors to subordinates, suggesting that "the absurdities of the hierarchical system of authority are made sweet and reasonable through unity of purpose (1937: 39)" and identifying the theory of organization as "[having] to do with the structure of coordination imposed upon the work-division units of an enterprise (1937: 3)." Mooney argued the universality of three principles of organization: the coordinative, scalar and functional (1947: 5-32), principles which were thought to be crucial to organizational effectiveness.

Weber's writings defined and extended the organizational principles described by these writers. His theory of bureaucracy identified "the purely bureaucratic type of administrative organization" as an ideal:

From a purely technical point of view, capable of attaining the highest degree of efficiency and ... formally the most rational known means of carrying out imperative control over human beings [it] is superior to any other form in precision, in stability, in the stringency of its discipline, and in its reliability (1947: 337).

Organizational structure was therefore directly linked to organizational effectiveness.

Weber described the characteristics of his ideal bureaucracy in six areas:

- I. There is the principle of fixed and official jurisdictional areas, which are generally ordered by rules ...
- II. The principles of office hierarchy and of levels of graded authority mean a firmly ordered system of super- and subordination in which there is a supervision of the lower offices by the higher ones ...
- III. The management of the modern office is based upon written documents ...
- IV. Office management ... usually presupposes thorough and expert training ...
- V. ... official activity demands the full working capacity of the official ...
- VI. The management of the office follows general rules, which are more or less stable, more or less exhaustive, and which can be learned ... only to regulate the matter abstractly (1958: 196-198).

Because of the specificity of these principles, Weber's theory of bureaucracy inspired many empirical studies of organizations (Filley and House, 1969: 9). Research concerning organizational structure has focused on the presence of elements derived directly from Weber's theory; for example, configuration, centralization, specialization, standardization and formalization (Pugh et al., 1963).

The study of formal structure was also expanded to take into consideration the influence of the context of the structure and the external environment of the organization, as a result of biological comparisons. An organization was

envisaged as an organism, comparable to a living organism in the natural sciences. Physical models were used as clues to organizational study (Haire, 1967; Starbuck, 1965). Increasing attention was paid to the setting in which the organization was seen to exist as an open system. The organization, it was maintained, depended on its environment for resources and output consumption and therefore was forced to attempt to control it. Contextual variables such as origin and history, ownership and control, size, charter, technology, location, resources and dependence were defined and studied (Pugh et al., 1969a:92), as well as the predictability of the external environment (Lawrence and Lorsch, 1967).

Organizational structure has, thus, historically been described in terms of universal principles and interrelated ideal characteristics. The theoretical postulations of the effectiveness of these attributes have inspired further tests in the literature.

3. Empirical Studies of Structure

Structural variables derived from Weber's theory of bureaucracy, such as the division of labour and hierarchies of authority, have been the subject of many empirical studies. Initially focusing on the presence or absence of these elements, research techniques were eventually developed

which were capable of measuring the degree to which each attribute existed in an organization, enabling comprehensive comparative studies to be undertaken.

Udy (1959), in an international study of 150 production organizations, was able to distinguish the presence or absence of a hierarchical authority structure, a specialized administrative staff, and differential rewards according to office in various enterprises. He found these three bureaucratic characteristics to be positively related to each other. Udy further noted that the technological nature of the task appeared to influence the level of bureaucracy present in an organization. In a later study, further positive relationships were identified by Udy (1965) between the extent of division into subgroups and emphasis on impersonal rules.

Hall (1963) constructed Likert-type scales for six dimensions of bureaucracy: the division of labour (functional specialization), hierarchy of authority, system of rules concerning rights and duties associated with positions, procedures for work situations, impersonality, and promotion and selection procedures based on technical competence. He argued that these dimensions should not merely be categorized as present or absent, since they existed to varying extents in different organizations:

The degree to which each dimension is present ranges along a continuum rather than existing in a present-absent dichotomy. Bureaucracy in general thus may be viewed as a matter of degree, rather than of kind (1963: 37).

The scales, which were based on organizational members' perceptions, examined structure at the individual level. In subsequent studies, Hall developed his concept of complexity or degree of internal segmentation further, eventually defining eleven indicators for it (Hall *et al.*, 1967).

In a "Formal Theory of Differentiation in Organizations," Blau (1970) also measured structural differentiation, the "number of structural components that are formally distinguished in terms of any one criterion (1970: 204)." He originally used five empirical measures; later he derived nine propositions from his theory of differentiation, concerning the relation of these measures to each other (Blau, 1974).

In a series of studies, Aiken and Hage (Hage, 1965; Aiken and Hage, 1966, 1968; Hage and Aiken, 1967, 1969, 1970) established measures of centralization, formalization, specialization and stratification, while controlling for the effects of the environment. They also derived propositions and corollaries predicting interactions among these variables.

Heydebrand (1967) developed an extensive coding scheme for complex organizational charts and later empirically

measured the division of labor, being functional specialization as well as departmental specialization, hierarchies of authority, and centralization (Heydebrand, 1973).

In a massive project at the University of Aston, Pugh et al. (1963), arguing that despite its importance the concept of structure still remained primitive in its empirical applications, created and validated extensive measures of five carefully defined variables. Relying on responses from interviews and documents expressed mainly on dichotomous scales, these measures described structure at the organizational level. The variables included configuration, centralization, specialization, standardization and formalization. Subsequent testing and analysis led to the identification of four underlying dimensions of organizational structure (Pugh et al., 1968: 89). The structuring of activities factor concerned the degree to which intended employee behavior was overtly defined by task specialization, standardization of procedures, and formal paper work. The concentration of authority dimension described the degree to which decision-making authority was vested outside the organization or at the higher levels within it. The line control of workflow characteristic measured the degree of control exercised by line personnel rather than through impersonal procedures. Finally, the supportive component factor was concerned with the amount of auxiliary activities in the organization.®

Later studies refined and extended these dimensions (Child, 1972, 1973; Hickson, 1966; Hickson et al., 1969; Hinings and Lee, 1971; Hinings et al., 1967; Inkson et al., 1970b; Pheysey et al., 1971; Pugh, 1966; Pugh and Hickson, 1968, 1972; Pugh et al., 1968, 1969a, 1969b). A shorter form of the measures was also developed (Inkson et al., 1970a).

The Aston measures originally studied in Great Britain were also examined in the United States and Canada (Hickson et al., 1974). The original structural relationships were found to be stable across societies. This conclusion was supported by later Canadian research (Holdaway et al., 1975; Sackney, 1976; Goodwin and O'Reilly, 1979).

The work of Reimann (1973, 1975) in Ohio extended the original Aston measures of functional specialization, formalization and lack of autonomy with the addition of eight structural measures. These included delegation of authority, centralization, functional dispersion, hierarchical control, functional specificity, staff density, administrative density and vertical span. Reimann argued that taken together his eleven measures were thoroughly representative of the major facets of bureaucracy. Through factor analysis four basic dimensions were finally extracted: decentralization, including delegation of authority and centralization; specialization, consisting of functional specialization and vertical span;

formalization, encompassing formalization of role and lack of autonomy; and configuration, combining administrative density and staff density. Reimann concluded, "The results of this research confirmed the major conclusion of the Aston study, namely that 'bureaucracy is not unidimensional, but that organizations may be bureaucratic in any one of a number of ways' (1973: 469)."

The Aston measures have been further examined in several non-manufacturing environments. Hinings and Foster (1973) derived a model including these variables in a study of churches. Donaldson and Warner (1974) found the measures useful in research on trade unions and a professional association. Greenwood and Hinings (1976) used them in municipal departments. The measures were also found to be applicable to the educational sector by Holdaway et al. (1975), Sackney (1976), and Goodwin and O'Reilly (1979). These researchers concluded, "The scale values reaffirm that the concept of structure which the scales operationalize are as appropriate to educational institutions as they are, for example, to industrial plants (Holdaway et al., 1975: 43)."

In summary, the Aston measures of bureaucracy have been analyzed and reanalyzed many times, and have been found to apply in widely varied settings. It has been demonstrated that they clearly distinguish different degrees of bureaucratic structure as described by Weber, through the measurement

of five primary dimensions. Their usefulness in comparing different organizations fulfilling similar functions has been tested in many realms of activity, including the educational sector. As Mansfield concluded after a critical reanalysis of the Aston data, "These methods are the most sophisticated approach available for the measurement of these aspects of the administrative structure of organizations (1973: 487)."

4. Five Structural Variables

The dimensions of bureaucracy which were defined and measured in the Aston research have been studied in various combinations by many authors. Through a review of the literature on each attribute individually in this section, each dimension's derivation from Weber's conceptualization of bureaucracy is clarified and its subsequent application in a variety of settings is described. The widespread acceptance of each trait by organizational researchers is thus made apparent, as well as the similarities in measurement techniques employed. Finally, a specific operational definition is derived for each dimension: configuration, centralization, specialization, standardization and formalization.

a. Configuration

Weber referred to "the principles of office hierarchy and of levels of graded authority" as being actualized in "a firmly ordered system of super- and subordination in which there is supervision of the lower offices by the higher ones (1958: 197)." Such a system implied both vertical and horizontal divisions of power.

Pugh et al. (1968) measured this aspect of organizational structure vertically by a count of the number of job positions between the chief executive and the employees directly working on the output. Their horizontal measure included the chief executive's span of control, the ratio of subordinates to first-line supervisors, and the percentage of total employees that could be classified as direct-output workers.

Blau (1970) referred to this attribute as complexity and measured it in terms of the number of branches, number of occupational positions, number of hierarchical levels, number of divisions and number of sections within branches or divisions.

Hall and Tittle (1966) and Rushing (1967) examined configuration by studying the hierarchy of authority

combined with the division of labor. For Heydebrand (1973), configuration formed part of a division of labor characteristic and was measured by the degree of differentiation among departments or organizational components.

Samuel and Mannheim (1970) used a measure of configuration incorporating the height of the hierarchy, the average span of control, and the cumulative authority vested in each level.

Ouchi (1977) measured configuration vertically by counting the number of levels from the chief executive to the production worker in the organization's largest division, and horizontally by counting the number of units.

Pondy (1969) developed a formula which included configuration in its count of the number of administrative personnel and the number of production personnel.

Reimann (1973) also used a formula to measure the organization's hierarchy. It included the number of levels, the average span of control within levels, and the cumulative number of subordinates at each position.

Haas, Hall and Johnson (1963) employed a fourfold measure of configuration, encompassing general division

of labour, specific division of labour, spatial dispersion and hierarchical differentiation.

Woodward (1966) measured configuration by counting the number of levels of the organization, the number of executives responsible to the chief executive, and the average span of control of production supervisors. This procedure was replicated by Zwerman (1970).

Meyer (1972) used a count of the number of major subunits combined with the number of levels of the hierarchy and the number of supervisors to describe an organization's configuration.

Goldman (1973) examined this attribute by calculating the number of horizontal divisions, the number of administrative divisions, the number of selling divisions, the number of vertical levels, the percentage of managers, and the spans of control over sales personnel and buyers.

Configuration has thus been used by many authors as a denotation of the shape of an organization's role structure, including its height and breadth, and some measure of how the individuals within that height and breadth are divided into groups.

b. Centralization

Weber described "fixed and official jurisdictional areas" within his hierarchy of authority (1958: 196). In this way he referred to the responsibility of certain positions in the hierarchy to make decisions pertaining to specified subjects. This attribute is described by Pugh et al. (1968) as the degree of authority to make various decisions affecting the organization located at the top of the hierarchy. It was measured by Pugh and his associates by identifying the levels at which specific decisions were made.

Reimann (1975) measured centralization by calculating the percentage of decisions the chief executive delegated to subordinates, and employing an index taking count of the locus of decision making for various policies, the degree of information sharing and the degree of participation in long-range planning.

Robey et al. (1977) multiplied the number of final decisions made at each level by a weight assigned to that level. A sum of the figures for all levels then served as their measure of centralization.

Simpson and Gulley (1962) used survey questions to determine where the main activity of the organization was carried out, where initiative for change originated, and where decisions were finally made.

Hall's centralization dimension (1968) was defined as the extent to which the locus of decision making was prestructured by the organization. The measure consisted of the identification of the levels at which specific decisions were made.

Aiken and Hage (1968) asked staff members how often they participated in organizational decisions about the hiring of personnel, the adoption of new organizational policies, and the adoption of new programs or services. A second measure was taken on a scale concerning the degree of decision making about work derived from Hall (1963). Hage and Aiken summarized this variable as follows: "The smaller the proportion of jobs and occupations that participate in decision making and the fewer the decision-making areas in which they are involved, the more centralized the organization (1970: 38)."

Child defined centralization as "the extent to which the locus of authority to make decisions affecting the organization is confined to the higher levels of the organization (1973: 3)." He based its measure on the identification of the hierarchical level at which specific decisions were made. Holdaway et al. (1975) made a similar examination.

Blau et al. (1976) measured centralization by identifying the levels at which twenty-five key decisions were made. Evers et al. (1976), on the other hand, used a count of the number of employees involved in eight decision areas as their measure of this attribute.

Centralization has been defined in the literature, therefore, as the extent of decision-making power exercised by the upper echelons of the authority hierarchy. It has been measured by estimating the numbers and types of decisions made at each organizational level.

c. Specialization

Weber based his bureaucratic ideal on "the principle of specializing administrative functions according to purely objective considerations (1958: 215)." He thus referred to the division of labour according to specific tasks.

Hinings et al. (1967) developed a comprehensive technique for measuring specialization. Beginning with a list of sixteen functions present in all work organizations, it consisted of the total "functional specialization" score of a particular organization's endorsements on all items. A measure of role specialization was further derived by counting the extent to which specialist roles existed within the sixteen functional categories.

Hage and Aiken (1967; 1970) added the concept of training to their measure of specialization, which was

comprised of three measures: the number of occupational specialties, the degree of professional training, and the amount of professional activity in each occupation.

Reimann (1975) calculated an average of the number of levels, the number of specialties, and the number of seventeen named functions which were performed by at least one specialist. He also measured the professionalization of each category by examining the length of training required for it and its job description.

For Pugh et al. (1963), specialization referred to a count of the division of labor on several dimensions, including the number of "specialisms", as well as the differentiation of activities within each function.

Pondy (1969) calculated the effective number of occupational specialties using a formula which accounted for the total number of specialties and the number of workers in each occupational group.

Samuel and Mannheim (1970) distinguished three components of specialization: functional differentiation, the degree of differentiation of a given work segment into separate jobs; functional diversification, the extent to which positions are dispersed uniformly among the jobs; and functional specialization, the extent to which the whole complex is based upon high levels of expertness.

Heydebrand (1973) used a simpler measure comprised

of the total amount of division of labour among departments.

Rushing (1967) limited his measure of specialization to a count of the total number of different occupations among production personnel. Hall (1962) counted the number of different functions, while Blau et al. (1976) combined this count with an index of occupational diversity. Holdaway et al. (1975) restricted their calculation to the number of support nonlinear functions carried out by designated individuals at least one-half of their available working time.

The specialization variable has been used, in this way, as a measure of the extent to which an organization's tasks are divided into subtasks. It has been calculated by taking account of the division of labour and the number of tasks or of parts of one task which one individual is required to perform. Occasionally the degree of skill required for each specialization has been included as part of the measure.

d. Standardization

According to Weber, bureaucratic management "follows general rules, which are more or less stable, more or less exhaustive, and which can be learned (1958: 198)." This structural characteristic referred to clearly defined role prescriptions.

Pugh et al. (1963; 1968) distinguished two aspects of this bureaucratic dimension. Standardization of

procedures occurred when rules or definitions existed which covered all circumstances and applied invariably. Standardization of roles prescribed role definitions and qualifications for office, role performance measurement, titles for office, symbols of role status, and rewards for role performance. A standardization score was obtained by a count of the number of such procedures and titles available to an organization from those in a given list.

Hall (1968) referred to standardization as the presence of rules, or the degree to which the behavior of organizational members was subject to organizational control, along with procedural specifications, the extent to which members were obliged to follow defined techniques in dealing with situations which they encountered.

Standardization has, thus, been defined as the extent to which roles, procedures and activities within an organization are specified. It has been measured by counting the number of defined procedures which role incumbents must follow. In many research studies the measure for this bureaucratic dimension has been included in the measure for formalization, since these two traits are very closely related (Reimann, 1973; Hage and Aiken, 1967, 1970).

e. Formalization

In Weber's ideal bureaucracy, "the management of the modern office is based upon written documents (1953: 198)."

Weber thus referred to the written record of standardized procedures and activities within the organization.

Hage and Aiken (1967; 1970) combined aspects of both standardization and formalization in their definition of this variable as the degree of codification of jobs in an organization. Thus, "the greater the number of rules specifying what is to be done, whether formally written or informally understood, and the more strictly they are enforced, the greater the formalization of the organization (1970: 3)." This measure was, therefore, twofold, including both job codification and rule observation.

Reimann (1973; 1975) calculated formalization by counting the number of specific role-defining documents -- from a set list -- which existed in an organization, and measuring the extent to which these documents were distributed within the organization.

Pugh et al. defined formalization as "the extent to which rules, procedures, instructions, and communications are written (1968: 75)." To measure this element the organization's documents were examined and a count of the written rules and procedures was taken.

Samuel and Mannheim defined formalization in a similar manner, as the "extent to which the organization formalizes a body of written rules and procedures to govern participants' procedures (1970:221)." Two categories of norms were

distinguished: "rules to regulate and standardize the participants' behaviors in general, such as disciplinary rules and duties," and "procedures dealing with various work situations, mainly from a technical point of view (1970: 221)." A two-part measure of these elements was therefore taken.

Rushing (1965) examined the written records of rules and past performance to measure formalization. Hall, Haas and Johnson (1967), on the other hand, used five indicators for this characteristic: roles, authority relations, communications, norms and sanctions, and procedures. In a similar way, Child (1973) measured the extent to which procedures, rules, instructions and communications were written down. This procedure was also followed by Inkson et al. (1970).

Holdaway et al. (1975) counted the number of documents in the institution which were used for specifying roles and checking on role performance. Hickson et al. (1974) measured the degree to which intended behavior was described in writing, and Ouchi (1977) examined the formality with which rules and regulations were communicated to employees.

In the literature, formalization has, thus, referred to the definition in writing of the roles and procedures in an organization. It has been measured by counting the number of rules and guidelines published in company documents, frequently taking account as well of the extent to which such documents are distributed among employees.

In this way, five characteristics of Weber's bureaucracy have been narrowly defined in the literature: configuration, centralization, specialization, standardization and formalization. Empirical measures for each of these attributes have also been developed; combined indices for standardization and formalization have frequently been employed.

5. The Relation of Structure to Organizational Effectiveness

In this section, a definition of organizational effectiveness is followed by a review of the various measures which have been developed to evaluate it. Constraints placed on effective structures by the nature of the task, the organizational environment and professional employees are then discussed.

a. Definition of Organizational Effectiveness

Effectiveness is commonly defined as "the degree to which an organization accomplishes its objectives (Argyris, 1968: 311)." In consideration of the problem of organizational survival as the enterprise attempts to accomplish its objectives, however, two additional concepts merit attention: the organization's capacity to maintain its internal system in working order so that it can solve problems effectively and the organization's ability to adapt to its external environment (Argyris, 1966: 120).

Definitions of organizational effectiveness in the literature have basically been rewordings of this

conceptualization. Duncan (1973), for example, referred to goal achievement, integration and adaptation as components of effectiveness. Etzioni (1964) described the same attributes under the headings of goal realization and efficiency. Georgopoulos and Tannenbaum defined organizational effectiveness as "the extent to which an organization as a social system, given certain resources and means, fulfills its objectives without incapacitating its means and resources and without placing undue strain upon its members (1957: 535-536)." Ghorpade (1970) also argued the importance of considering the rational goal-attaining basis of organizations and the means used as well as the needs experienced by the organization's social systems. Mott combined these elements in a succinct definition of effectiveness as "the ability of an organization to mobilize its centres of power for action -- production and adaptation (1972: 17)."

Organizational effectiveness is a measure, therefore, of the extent of goal achievement, which is in the long run dependent upon internal maintenance and problem-solving ability combined with adaptability to the environment.

The establishment of measures derived from this widely accepted definition to gauge the effectiveness of specific organizations has not met with an equal degree of consensus in the literature.

b. The Measurement of Organizational Effectiveness

As Argyris pointed out, the measurement of organizational effectiveness in the literature has typically focused on the degree to which an organization accomplishes its objectives:

A business firm is effective if it makes a profit, a welfare agency if it provides professional service of high quality, the Department of State if it achieves its substantive goals related to foreign policy (1968: 311).

Bennis (1959) also defined effectiveness criteria related to the goals of an enterprise in this vein: the number of products, number of ideas, number of clients or the extent of services performed, depending on the organization's objectives, were the measure of its success. Etzioni supported this approach, a measurement of "the degree of goal achievement (1964: 8)."

Keeley identified two distinct sets of goals which could be measured. Official goals he described as the formally stated charter of the organization; operative goals were the functions the organization was actually trying to perform (1978: 272).

Price (1968) argued that the latter type of goal should be the focus of all measures of organizational effectiveness. This approach was supported by Steers, who described it as being more realistic by focusing on "the feasible goal set" rather than "the desired goal set (1975: 556)."

In spite of common usage, the goal approach to the measurement of organizational effectiveness has been criticized by several authors. Yuchtman and Seashore (1967) pointed out the difficulty of determining operative goals, that is, of obtaining a stable consensus among individual employees on goal definition. They further argued that goals defined in terms of the publicly announced societal functions of an organization would be no better, since the values and standards for effectiveness would become external to the enterprise itself. Argyris (1968) maintained that two additional dimensions must be considered as well as goals to make the measurement of effectiveness more valid: the organization's internal problem-solving ability, and its capacity for utilizing human energy. Mott (1972) supported this contention and defined three organizing centers of power as criteria for effectiveness, centers related to routine production, adaptability and flexibility.

Other authors have specified still different evaluation criteria. Georgopoulos and Tannenbaum (1957), for example, measured productivity, flexibility and the absence of organizational strain. Bennis (1962) compared organizational adaptability, sense of identity and capacity to test reality. Yuchtman and Seashore (1967) examined the acquisition of scarce and valued resources, as well as control over the environment. Schein (1970) discussed open communication, flexibility, creativity and psychological commitment, while

Negandhi and Reimann (1973) developed both behavioral and economic indices. Child (1974; 1975) based his conclusions on measures of profitability and growth. Duncan (1973) used three indices: an integration index measuring role conflict and ambiguity, an adaptation index measuring flexibility, and a rating for goal achievement.

Katz and Kahn (1966) measured organizational growth, survival and control over the environment. Lawrence and Lorsch (1967) compared balances of integration and differentiation. Friedlander and Pickle (1968) gauged profitability, employee satisfaction and societal value, while Price (1968) examined productivity, conformity, morale, adaptiveness and institutionalization. Mahoney and Weitzel (1969) based their conclusions on a combination of two models: the general business model, consisting of productivity-support-utilization, planning, reliability and initiative, and the research and development model, consisting of reliability, cooperation and development. Webb (1974) measured cohesion, efficiency, adaptability and support.

It is readily apparent that there has been no consensus on criteria of organizational effectiveness in the literature. After a review of twenty-one empirical studies, Cameron (1978) concluded that most researchers have used sources and types of criteria which are not comparable with other empirical investigations, and pointed out that

some choices of criteria were more appropriate in one type of organization than others. Ghorpade argued in a similar way: "It is essential to recognize at the outset that criteria which are acceptable from one frame of reference may not be valid from another vantage point (1970: 37)." He further maintained that the choice of any criteria ought to reflect the type of organization and the purpose of the inquiry.

In view of the lack of consensus on effectiveness measures, Steers (1975) defended the use of operative goals. After reviewing seventeen multivariate models of organizational effectiveness, and finding little consistency in evaluation criteria, he rejected the notion that effectiveness could be defined and measured in terms of some static set of variables. He concluded that it should instead be viewed in terms of goal attainment, which he saw as a measure of the capacity of an organization to use its resources successfully toward specific ends.

Price (1972b) also defended the goal approach and identified four guidelines for goal identification designed to overcome the various criticisms levelled against it: a focus on major decision-makers; a focus on organizational rather than individual goals; a focus on operative rather than formal goals; and finally a focus on both intentions and activities. Webb (1974) offered further support for this

approach if adequate care was taken in the determination of the goals, describing the goal model as an objective and reliable analytical tool for the measurement of organizational performance.

Georgopoulos and Mann (1962), in a study of 880 employees in ten community general hospitals, developed a measure of effectiveness based on the conception of effectiveness as a measure of how well an organization is doing in achieving its operational objectives, as perceived by the employees. Price re-examined this measure's validity and reliability and concluded that the researchers had exercised "an uncommon care in the evaluation of the validity and reliability of their measures (1972a: 106)." Price further commented that the measure could be readily adapted for use in educational institutions and other organizations.

The Georgopoulos-Mann measure was used again by Knoop (1976) in a study of seventy-five elementary schools, and Mott (1972) in research on the space industry, a research organization, and eleven hospitals in the United States. After further study, Mott concluded that the effectiveness index was "a valid and inexpensive measure (1972: 199)."

In summary, organizational effectiveness has been measured in many ways in the literature. The traditional goal model approach has received considerable support from

many authors, particularly as operationalized in the Georgopoulos-Mann measure.

c. The Relation of Structure to Effectiveness

Early writers of organizational theory were concerned with principles that would establish a perfect, extremely effective organizational structure (Taylor, in Owens, 1970; Fayol, 1959; Gulick, 1937; Mooney, 1947). Weber's theory of bureaucracy (1947) was also designed as an ideal, completely rational in its attainment of the highest degree of efficiency.

The structure of an organization is indeed the physical means through which it must accomplish its goals. As Etzioni pointed out, "Organizations are coordinated human efforts to realize specific goals (1959: 43)." Logically, the shape of that coordination or structure must have a direct effect on the degree of goal achievement:

If the orientation of this structure is compatible with the organizational goals, the probability that these goals will be achieved is greater than in organizations where this is not the case (Etzioni, 1959: 43-44).

Gouldner (1971) developed this argument further, pointing out that since the rationality of the modern organization varied in degree, causing variance in individual motivation and hence organizational effectiveness, the variation itself was in need of study and explanation.

Hickson (1966) argued that specificity of role prescription in an organization resulted in variance in

employee participation and output. He postulated a curvilinear relationship between these elements and demonstrated how the conceptualizations of twenty-five organizational theorists could be classified using such a concept.

Lawrence and Lorsch described how significant task and environmental differences resulting in appropriate structural differentiation led to good performance. They concluded, "The viable organizations will be the ones that master the science and art of organizational design (1967: 238)," later explaining that there was no one best way to organize; rather, that organizations needed to be systematically tailored to their goals (1969: 84).

Melcher (1976) argued that individual factors such as degree of cooperation, communication, idea exchange and effort were mediated by organizational structure. He explained that individuals moved in a structured context; productive individual behavior was therefore partly the product of that context.

Thompson (1961) examined the characteristics of bureaucratic structure in relation to the function of small work groups. He concluded that configuration and centralization had a direct influence on the effectiveness of the small group thinking process. He later related the looseness of bureaucratic structure to productive innovativeness in organizations (Thompson, 1965).

Weiss (1956) argued the need for designing hierarchies suited to the goal of the organization; he emphasized informal processes of coordination when creativity and commitment were required. Wexley and Yukl (1977) provided a definition of organizational structure specifying its relationship to effectiveness: structure was "the formal plan for achieving an efficient division of labor and effective coordination of member activities" in pursuit of the organizational objectives (1977: 15).

These theoretical postulations have been tested in the literature in various forms. Many empirical studies have related specific shapes of organizational structure to effectiveness. For example, Baldrige and Burnham (1975) studied innovation in school districts and concluded that structural elements, such as complexity, were better predictors of effective innovative behavior than individual employee characteristics.

Duncan (1973) described decision unit structure as the critical variable determining information processing potential and effectiveness. He came to the conclusion that different types of organizational structure are more appropriate for different types of situations.

Frank (1963) found a relationship between role definition and innovation, and thus the ability of the

organization to adapt to its environment. Hage (1965) and Hage and Aiken (1967; 1969; 1970) related the structural variables specialization, centralization and formalization to the effectiveness variables adaptiveness, production, cost and morale. Jones (1969) found the number of hierarchical levels in a production group to be related to productive output in a complex manner. Ouchi and Johnson (1978) related structural variables of organizational control to the mental well-being and hence functioning of top executives.

Pennings (1975) compared the ability of environmental and structural variables to predict organizational effectiveness and concluded that structural variables were superior in explaining the variance in effectiveness.

Stinchcombe (1959) related the structure of communication channels to productivity. Weiss (1957), on the other hand, linked centralization to employee turnover, accidents and absenteeism, and hence to organizational effectiveness.

The structure of an organization has, thus, been related to its effectiveness both theoretically and empirically in the literature. In order to specify which structure is most appropriate for a particular enterprise,

it is clear, however, that certain crucial details about that organization must be defined: the nature of its task, the nature of its environment, and the nature of its employees. Each of these elements imposes limitations on the type of organizational structure which will be effective.

d. Organizational Structure and the Nature of the Task

Modern organizations perform many different functions, ranging from rigidly structured and predictable production tasks to the provision of unpredictable services for an endless variety of people. Appropriate measures of organizational effectiveness, it has been argued, must be tailored to the organization's task.

Bennis (1959) classified the functions of organizations in four areas: habit, problem-solving, indoctrination and service. A habit organization, he maintained, replicated standard and uniform products. An effective structure for it would maximize the number of products completed. Problem-solving enterprises, on the other hand, had the task of creating new ideas, as in research or engineering establishments. In this case, increasing the number of ideas created would serve as the goal for structural design. The third category, indoctrination, had for its objective the changing of peoples' habits, attitudes, intellect or behavior. Schools, prisons and hospitals were examples of this type of organization. Their structure, Bennis suggested, would

focus on increasing the number of clients leaving. Finally, service organizations were concerned with distributing services either directly to a consumer or to other organizations, as was done by the military, governments, advertising firms and taxi companies. In these cases, broadening the extent of services performed would be the purpose of structural design. Bennis argued in this way that the type of task faced by an enterprise strongly influenced the determination of an effective structure for it.

Thus, all organizations do not perform similar tasks; different establishments therefore require different structures to effectively achieve their own goals.

The curriculum development task faced by a school board program department consists of creative idea production and problem-solving (Kirst and Walker, 1971). An organizational structure for these departments should therefore be specifically designed for this type of task. Bennis (1959) characterized structures designed for problem-solving tasks as facilitating a high similarity of goals between superior and subordinate employees, a high degree of professionalization, and a high degree of autonomy for workers. Goals were long-term and frequently intangible. Supervision consequently included a management by objectives approach with self-control as a modality of power. Technical competence

had more authority than role incumbency, and only indirect control of rewards was held by the supervisor through the promotion of conditions whereby subordinates could achieve their own goals.

These specifications have been supported in small group research dealing with complex tasks, where status differences have been demonstrated to negatively affect both communication and task-related participation. Back et al. (1950), for example, found most communications to be directed upward in a hierarchical setting, thus biasing the idea-sharing and supportive functions of problem-solving groups. Barnes (1967) further found that status differences hindered the establishment of task-helpful interpersonal relationships.

Bavelas (1968) reported that the occurrence and utilization of insight dropped rapidly as hierarchical distinctions emerged. This could be explained by the results of a study of state employment and federal law enforcement agencies carried out by Blau (1969). He noted that officials with secure status were more likely to participate in discussions than their colleagues. They not only made the most suggestions, but their suggestions were also the ones most often followed. In the case of creative, problem-solving tasks where many viewpoints are essential, this dominance of a single member was dysfunctional and resulted in lower group effectiveness.

Burns and Stalker (1968) further explained this phenomenon in their observation that the less definition given to status, roles and modes of communication, the more the activities of each member of the organization became determined by the real tasks.

Cohen (1958) found that low-ranking individuals in a hierarchical setting communicated in a way guaranteed to protect and enhance their relations with the higher status members, to the detriment of task fulfillment. Festinger (1950) similarly reported hierarchies to impose restraints against open communication. Goffman elaborated on this occurrence in his description of the type of discussion that occurs in status-differentiated groups as "double-talk (1959: 194)." He further pointed out the individual's tendency to conceal or underplay those activities, facts and motives which were incompatible with the superior's idealized version of employees and task results.

In his study of communication networks, Guetzkow (1968) found hierarchical structure to have a direct effect on group task performance. In a review of communication studies, Hare (1976) pointed out that low status individuals initiated more communication with content irrelevant to the task; he interpreted this communication as a manifestation of the desire to escape from a subordinate position. This view was also supported by Kelley (1951).

Heinicke and Bales (1953) found that a few statements made by the right people were readily agreed to. Homans (1950) similarly reported that people of higher social rank originated more interaction than those of lower status. Hurwitz et al. (1968) described the behavior of low-ranking individuals in such situations as defensive. Kowitz and Knutson (1980) supported this view, concluding that interpersonal norms related to the status hierarchy inhibited the proper analysis of information during group discussions. Suggestions put forward by higher status individuals were rarely criticized, while support for lower ranking members' participation was not often forthcoming. Similar results have been reported by Lippitt et al. (1952), Sherif (1970), O'Reilly and Roberts (1974), Read (1981), Torrance (1955), Zaleznik (1958) and Zander (1977).

In summary, hierarchical distinctions in problem-solving groups have been demonstrated to be dysfunctional in three main ways (Blau and Scott, 1962: 122-123): first, explicit status distinctions tend to reduce normal social interaction and social support; hence lower status members do not receive the support necessary for stimulating thought and making suggestions. Second, formally instituted status differences undermine the process of competition for respect. Instead of striving to earn the approval of most members of the group, workers concentrate on impressing the hierarchical elite. This is dysfunctional for creative task accomplishment.

Third, status differences distort the error-correcting function of social interaction, since members are hesitant to criticize a superordinate for fear of later repercussions. Superior ideas are not generated in such a situation. Thus, as Blau and Scott concluded, creative task performance is not enhanced by hierarchical structure:

There is, then, some indication that differentiation of hierarchical status in groups attenuates the very characteristics that have been hypothesized to be responsible for the superiority of groups ... in problem-solving ... [T]he more pronounced the hierarchical differences in a group, the less effectively it will perform (1962: 123).

The organizational structure appropriate for a group engaged in a problem-solving task, it has been demonstrated, is not one which entails status distinctions. Since the active participation, support and criticism of all members is desired, the predominance of hierarchical authority in such a situation has only been dysfunctional.

Woodward's research in Great Britain (1966), on an organizational rather than a group level, provided additional empirical support for the contention that task type affects the appropriateness of certain structures for goal achievement. In a study of 203 manufacturing firms classified according to the technological complexity of their task, a strong relation between appropriate organizational structure and success appeared within each group. The successful firms at the complex extreme of the task complexity scale tended

towards less emphasis on clearcut, written definition of duties, greater delegation of authority, more permissive management, and less tightly organized work forces. Woodward concluded that situational demands imposed themselves more rigidly at the extremes of the task scale. In such cases, unsatisfactory structures resulted immediately in declines in organizational success. Zwermann (1970) confirmed these results in an American replication of Woodward's research.

Other studies have also identified the type of task as crucial in determining the structure which is most effective in an enterprise. Dewar and Hage (1978), for example, in a longitudinal study of sixteen social service organizations, found the rate of change in task scope to be positively related to change in structural complexity. Donaldson and Warner (1974) found the degree of centralization in trade unions and a professional association to differ from that in business enterprises. Filley and House commented on these differences, explaining that with relatively predictable tasks decisions were more effectively made at the top of the organization, and so a rigid formal structure would be useful. With highly unpredictable situations, on the other hand, in which all levels required considerable influence to deal with environmental uncertainty, a more participative structure was advisable (1969: 98-99).

Hare (1976) maintained that the very definition of the

task itself included structural variables relating to the rules or roles to be followed as well as a method of imposing the rules. He further pointed out that the solution to the task became more difficult to obtain if the criterion for completion was ambiguous or if group consensus was necessary. He thus maintained the need for procedures to be determined which were appropriate to the task for the enterprise to be successful.

This conclusion was again supported in a comprehensive study of seven thousand hospitals by Heydebrand:

The relevance of hierarchical coordination may be limited to conditions of low task complexity and high routinization of work ... Where the task complexity is generated by multiple and diverse objectives, nonbureaucratic 'associational' forms of administration will predominate ... In short, it has been shown ... that monocratic, hierarchical authority is not a necessary element of complex task administration, and may actually impede it or simply be inefficient (1973: 3).

Heydebrand concluded that the greater the degree of task complexity, the greater the need for modes of coordination other than bureaucratic ones. In another study (Heydebrand and Noell, 1973), he identified professional norms as intervening between a complex task and organizational structure, eliminating much of the need for bureaucratic controls.

Additional theoretical arguments for the necessity of shaping organizational structure to the task have been presented by Homans (1950), Lawrence and Lorsch (1967), Litwak (1961), Melcher (1976), Perrow (1967), and Thompson

and Bates (1957).. Further empirical validation of the task-structure connection has been provided by Inkson et al. (1970), Khandwalla (1974), Mohr (1971), Mott (1972), Ouchi (1977), Pheysey et al. (1971), Samuel and Mannheim (1970), Simpson and Gulley (1962), and Udy (1957; 1967).

In summary, it has been demonstrated that the task which an organization faces places severe limitations on the sort of structure which will be effective in its accomplishment. With non-routine, creative tasks, highly bureaucratic structures have proven to be less effective. Structures which were more productive with these tasks were characterized by an authority structure based on competence rather than hierarchical position, by decentralized, participative decision making and by a reliance on professional norms as opposed to strictly enforced, formalized company procedures.

e. Organizational Structure and the Nature of the Environment

The structure which enables an organization to effectively survive and accomplish its goals is not only influenced by the type of task but also by the context in which the organization must function. The predictability of the environment in terms of resource supply and product consumption, it has been shown, determine whether a rigid hierarchical arrangement or a less bureaucratic and more flexible structure is appropriate. The age and history

of the organization, as well as its size, location, and legal status similarly place limitations on the effectiveness of particular structures in relation to goals.

In the Aston research, Pugh et al. (1969a) identified six elements of structural context other than task complexity. Origin and history referred to the age of the organization and whether its status was entrepreneurial or government. Ownership and control referred to the degree of public accountability and the relationship of ownership to management. Size was conceptualized as the number of employees and the net assets utilized, while charter was concerned with the goals and self image of the organization. Location was defined as the number of operating sites of the enterprise and dependence measured interdependence with other organizations.

The Aston contextual variables have been reflected in the work of other researchers with similar concerns. For example, Aiken and Hage (1968) examined interdependence; Blau (1970), size; Heron (1973), age; Likert (1961) capital investment; Pondy (1969), ownership; Robey et al. (1977), autonomy; Udy (1962), independence; and Etzioni (1964), charter.

In addition to these contextual elements, Lawrence and Lorsch (1967) demonstrated the importance of the predictability of the external environment in which the organization must function. Other studies of this variable

include discussions by Baldrige and Burnham (1975), Filley and House (1967), Hirsch (1975), Homans (1950), March and Simon (1958), and Pennings (1975). In general, it was found that in predictable environments highly bureaucratized structures were effective. In unpredictable settings, however, looser structures enabling greater flexibility and innovation were found to be more effective.

All of the variables surrounding an organization are of primary importance because of their potential to influence the effectiveness of various structures. This fact has been underlined by Pugh et al.:

The structure of an organization is closely related to the context within which it functions, and much of the variation in organizational structure might be explained by contextual factors. Many such factors, including size, technology, organizational charter or social function and interdependence with other organizations, have been suggested as being of primary importance in influencing the structure and function of an organization (1963: 308-312).

Thus, any study of organizational structure must take account of contextual variables, if not by measuring them directly, then at least by exercising control over them.

f. Organizational Structure and Professional Employees

When Weber described the highly bureaucratic structure as an ideal, capable of attaining the highest degree of

efficiency of all possible forms of organization (1947: 337), he was probably influenced by the environment in which he lived. As Friedrich has observed, in Weber's writings "the very words vibrate with something of the Prussian enthusiasm for the military type of organization, and the way seems barred to any kind of consultative, let alone cooperative pattern (1952: 31)." Thompson has described two conditions which were prevalent at Weber's time and which were reflected in his theory of bureaucracy -- but which are no longer applicable: first, a great inequality among organization members in social standing and abilities, and a corresponding inequality in their contributions and rewards; and second, a technology simple enough to be within the grasp of an individual (1965: 3).

Blau has argued in a similar way that the pattern of social relationships and the general level of education in the population have a considerable effect on the viability of hierarchical authority in that population's work situations:

When an authoritarian orientation toward social relationships prevails in the family and in the society generally and when lack of education limits the qualification of subaltern officials, as in Germany in Weber's time, strict hierarchical control may be the most efficient method of bureaucratic operation. However, when equality in social relationships is highly valued and when a much higher level of popular education has been reached ... permitting junior officials considerable discretion in discharging their responsibilities may be a more efficient system of administration (1969: 252).

Thus, Weber's model of a highly bureaucratized structure may not be ideal in environments which differ from his own, for more complex tasks, or for individuals who have had more education and who are accustomed to more social equality than those with whom he was familiar.

One type of individual for whom a highly bureaucratized structure has been described as dysfunctional is the professional. Heydebrand and Noell defined professionals as "workers who are formally trained to produce, preserve, communicate, and apply specialized knowledge (1973: 295)." Wilensky described the job done by such formally trained workers as "technical -- based on systematic knowledge or doctrine acquired through long prescribed training" and further added the distinction that "the professional ... adheres to a set of professional norms", including a norm of service, and a concern for client welfare (1964: 138). Greenwood further explained that society is not composed of professionals and non-professionals, but rather of a continuum of occupations varying in the degree to which they possess five professional characteristics: a systematic theory base, authority over members, sanction of expertise by the community, codes of ethics, and a somewhat unique culture (1966: 10). It has been demonstrated that some of the more recently recognized professions, such as educators,

are stronger in their possession of some of these characteristics than the traditional professions, such as doctors and lawyers. (Hall, 1973).

A professional association has certain characteristics in common with bureaucracy. Blau drew attention to the similarity in their impersonal detachment in relation to clients, their emphasis on specialized technical expertise, and the basing of their decisions on universalistic standards (1968: 455).

Professions differ from bureaucracies, however, on at least one important dimension. Professional authority rests on the voluntary recognition of certified superior competence; bureaucratic authority is based on the legitimate power of command held by superordinates over subordinates, which is backed by the threat of sanctions. Superior knowledge is not required for such authority (Blau, 1969: 455). Blau continued to explain that within the structure of a formal organization, professionals, being a set of workers certified and recognized as having excellent judgement in their area of expertise, expected to enter the decision-making process as equals. They did not expect their judgement to be questioned, except perhaps by those with superior professional expertise. A superordinate without superior expertise was expected to generally follow professional advice. Compliance by subordinates with orders in matters of professional decision was voluntary, and based on the

recognition of expertise.

The professional view of authority is thus in direct conflict with the bureaucratic definition of hierarchical power. As Meyer pointed out, since professional and bureaucratic authority are based on different principles, that is, competence versus official position, "harmonious relations between professionals and bureaucrats in an organizational setting may ... be difficult" to achieve (1968b:945).

Numerous studies have examined the problem of professionals in bureaucratic settings. Ben-David (1958), Moore and Renck (1955), Becker (1955), and Scott (1965; 1966) have documented professional resentment at the loss of authority in such a setting, and dissatisfaction from role-status disequilibrium. Hall (1968) reported that professionals able to structure autonomous organizations of their own made them significantly less bureaucratic on measures of position power, division of labor, standardization, formalization, and administrative impersonality. He concluded that when professionals had the power to choose, they preferred to function in a nonbureaucratic structure; indeed, they converted structure to that form whenever possible. Higher levels of professionalism were consistently related to lower levels of bureaucratization (1968: 503). When professionals were unable to control the organizational structure, however, a potential for role conflict and dissatisfaction existed. Hall concluded, "This suggests that the nature of the

occupational groups in an organization affects the organizational structure. The workers (professionals) import standards into the organization to which the organization must adjust (1968: 505)."

Heydebrand (1967) found the bureaucratic centralization of managerial authority and professionalization to constitute alternative modes of coordination. He further found that an advanced division of labor tended to facilitate centralization or professionalization but not both at the same time.

In a later study, Heydebrand (1973) related these trends to task complexity, suggesting that a more complex task performed in increasingly divided segments by professionals in specialist capacities required additional administrative coordination. In other words, a narrower span of administrative control (and so a higher ratio of managers) in an organization with many professionals was found to reflect the extensive two-way communication demanded by those professionals. As experts, they made greater contributions to decision making and to organizational operations through continuous feedback, when compared to non-professionals. Highly professionalized departments became increasingly specialized and the whole organization became decentralized, as authority was delegated to the subunit level. Managers functioned in many ways as coordinators and teammates rather than as authority figures.

Blau's results similarly suggested that a narrow span of managerial control over professionals was not so much related to closeness of supervision as it was to the high volume of communication occurring. Decisions were frequently debated and shared rather than imposed. He concluded that managerial authority over decision making was more decentralized in organizations with large proportions of trained experts than in others (1968: 462).

These findings were supported in a study by Meyer (1968c) who related a narrower span of control over experts to freer, more open communication. Similar results were reported by Stauffer et al. (1966).

Decentralization of decision making and altered hierarchies of authority are not the only changes in Weber's ideal bureaucracy which have been proven necessary to accommodate professional workers. From a review of several studies, Hall (1977) concluded that professionalization and formalization were also incompatible. He found that the more professionalized the work force, the more likely it was that formalization would lead to conflict and alienation. He attributed this to the fact that formalization and professionalization were actually designed to do the same thing, to organize and regularize the behavior of members. Formalization accomplished this goal by means of rules, procedures and sanctions. Professionalization did the same thing. Both served to accomplish the task. From

the organization's point of view, Hall argued, either technique would be appropriate (1977: 170).

In summary, professionalization and bureaucratization conflict in several important ways. Professionals do not readily accept imposed hierarchical authority; however, they voluntarily acknowledge superior expertise. Professionals demand participative decision making. In fact, higher managerial ratios may be necessitated by the increased communications and decentralization generated by their presence. Standardization and formalization of the tasks performed by professionals are somewhat redundant and may cause hostility, since the expert training and professional policies accomplish the same ends.

Thus, as Scott concluded, when professionals enter bureaucratic organizations the potential exists for widespread if not ubiquitous conflict (1966: 274). This does not mean, however, that structures cannot be designed within which professionals can function effectively. If the special characteristics of expert workers are taken into consideration, much of the conflict can be resolved:

Fundamentally, the problem is one of the degree of autonomy granted professional workers to specify and to define operationally the goals of the organizations as well as the nature of the task, to apply their specialized knowledge, and to control the available resources. Given these conditions, there should be little conflict between bureaucratic and professional elements, even where there is a hierarchy (Heydebrand and Moell, 1973: 311).

g. Effective Structure in Program Departments

The effectiveness of school board program departments is related to the organizational structure of those departments. To maximize effectiveness, the nature of the task, the context and the employees must all be taken into consideration in the structural design.

The task of program departments is a creative, problem-solving one. Broad educational goals provided by the Ministry must be translated into practical and specific curriculum guides relevant to a wide range of students and useful to many different teachers. These guides must be distributed and their implementation assisted, with ongoing evaluations and revisions completing the cycle.

This task demands a great deal of creative idea generation in response to a continually vacillating political superstructure and an extremely varied clientele. Procedures effective at one point in time for one program may be totally ineffective on another occasion when different environmental constraints, subject matter or clients must be considered.

The environment in which the program department's task is carried out fluctuates constantly. Ministerial, public and teacher demands vary extensively and frequently conflict at any single point in time; they rarely remain stable for any length of time. The contextual variables of goals, size, control, resources and interdependence with

other organizations can be changed abruptly and with little warning by the various levels of government. Program departments cannot depend upon a stable environment within which to standardize their activities.

The people employed in these departments are professional educators. They have considerable formal training, rigidly enforced certification requirements, and professional affiliations which both sanction certain types of conduct and demand certain types of participation. These employees have a service orientation, a sincere concern for client welfare, and a confidence in their own training and experience as the best basis for decision making in their own field.

Given a creative task in an uncertain environment and professional employees, the effectiveness of school board program departments is related to the extent to which the organizational structure takes all of these factors into account.

The creative task and unpredictable context appear to require a problem-solving, not a mechanistic orientation. The usefulness of a great deal of specialization within the department may be limited, for the divisions appropriate for the writing of one curriculum at one time may be totally inappropriate on another occasion. Considerable standardization and formalization of procedures may be equally dysfunctional, for each subject area and grade level places specific and unique limitations on curriculum development in comparison to other subject areas. Professional employees in any case

have not reacted well in previous research to such standardization or formalization, preferring to base procedures on their own training and experience. These employees have also reacted badly to centralized decision making and highly structured hierarchies of authority. Seeing their own expertise as an appropriate authority base, therefore, these curriculum workers could be predicted to demand active participation in decision making about all aspects of their work and the structure of their work environment.

It would thus appear that school board program departments structured in a less bureaucratic way in response to the nature of their task, environment and employees will be more effective than those which have a highly bureaucratized structure.

6. Summary and General Hypotheses

Weber's theory of bureaucracy identified six organizational principles which he maintained described an ideal structure. Empirical research based on his theory has led to the development of five measurable attributes differing in degree from one organization to the next: configuration, centralization, specialization, formalization and standardization. Combined measures for the last two dimensions have also been derived.

The research procedures developed at the University of Aston for comparing the degree of each of these

traits present in various establishments have been demonstrated to accurately distinguish among different structures.

According to Weber and many other theorists, the effectiveness of an organization is contingent upon its structure. Various attributes have been measured in empirical studies examining effectiveness. The Georgopoulos-Mann index, based on the traditional goal model, has received considerable support in the literature.

The determination of an appropriate structure for a specific organization appears to depend on several factors. These include the task faced by the organization, its environment and the type of employees it has. The creative, problem-solving nature of the curriculum development task faced by program departments, their unpredictable environment and professional employees could be predicted to require a less specialized, decentralized decision-making structure, with little standardization or formalization. The need for fewer status distinctions in work groups to maximize problem-solving effectiveness and so the complex task accomplishment appears to be combined with a need for much communication about all aspects of the operation. Those structures may be superior which enable the professional employees to function in groups with fewer status distinctions and yet simultaneously to communicate their opinions on a wide range of matters. Such communication would require ready access to super-

ordinates when desired; but no compulsion to include higher-ranking individuals in the actual curriculum development process. A school board program department with this less bureaucratized structure could therefore be predicted to be significantly more effective in the accomplishment of its goals than program departments with more rigid structures.

The present study thus examined organizational structure and effectiveness in school board program departments by testing the following four hypotheses:

- I. Program departments with flat configurations have a higher degree of organizational effectiveness than departments with steeper hierarchies.
- II. Program departments with low degrees of centralization have a higher degree of organizational effectiveness than departments with higher levels of centralization.
- III. Program departments with low degrees of specialization have a higher degree of organizational effectiveness than departments with higher levels of specialization.
- IV. Program departments with low degrees of formalization have a higher degree of organizational effectiveness than departments with higher levels of formalization.

The research design used to test these hypotheses is presented in the following chapter.

CHAPTER II

RESEARCH DESIGN

The research design which was employed to test the hypotheses presented in the preceding chapter is described in the following manner. Section One presents a definition of the terms used in the study, while Section Two specifies the variables. The sample is described in Section Three and the investigative procedure in Section Four, with Sections Five and Six containing the instruments measuring the bureaucratic dimensions and level of effectiveness, respectively. Finally, the data analysis procedures are presented in Section Seven.

1. Definition of Terms

The definitions assigned to the principal terms of this study are as follows.

An organization is a cooperative system developed to overcome individual limitations in the accomplishment of certain goals. It may consist of an enterprise in its entirety or of a subunit of an enterprise with specific goals of its own.

A program department is that division of a school board assigned the task of developing curriculum.

The organizational structure of a program department is the formally sanctioned arrangement of its parts, such arrangement being describable by its degree of configuration, centralization, specialization and formalization.

The configuration of an organization is the hierarchical shape of its structure, and the manner in which it is divided into groups.

Centralization is the extent of decision-making power exercised by the upper echelons of the authority hierarchy.

Specialization is the extent to which an organization's tasks are divided into subtasks.

Formalization is the definition in writing of standardized roles, procedures and activities within an organization.

Organizational effectiveness, for the purposes of this study, is the degree to which operative goals are accomplished.

2. The Variables

The dependent variable in this study is the degree of effectiveness in goal achievement of each program department, as measured by the modified Georgopoulos-Mann (1962) instrument.

The independent variables of the study are the levels of four bureaucratic characteristics present in each program department: configuration, centralization, specialization and formalization, as quantified in the Samuel and Mannheim (1970) index of configuration and the abbreviated Aston measures of centralization, specialization and formalization (Reimann, 1973).

3. The Sample

In determining the sample to be studied, care was taken to ensure both its representativeness of program departments in general and its limitation of extraneous variables to the greatest extent possible.

The province of Ontario was used to represent the broad parameters for study, with the rationale that its school boards would have a similar charter and control system, "performing the same general function and circumscribed by much the same legislation and directives (The Education Act, 1976)."

From the entire range of 192 school boards in the province, 188 were identified which were actually operating schools. Fifty-four of these were identified which had enrollments of 10,000 or greater, since according to the Ministry of Education, active curriculum development was

occurring in all boards of this size (Provincial Review Report 10, 1979). Twenty-seven school board program departments were randomly selected from these fifty-four; of the twenty-seven, twenty-five participated fully in the study.

These school boards constituted a homogeneous set of organizations in relation to five of the seven contextual factors defined by Pugh et al. (1963): origin and history, ownership and control, charter, technology, and dependence. Location was controlled by random selection, through which five of the six regions defined by the Ministry of Education were represented. The Northwestern Ontario Region contained only one school board with the required enrollment, and it was not identified in the random selection process. Statistical account was taken of the remaining contextual factor defined by the Aston researchers, that of organizational size.

For readers who may be unfamiliar with Ontario school boards, a more detailed description of the program departments in the sample is provided in Appendix 4.

4. Investigative Procedure

Twenty-five school boards were randomly selected for this study according to the guidelines described above. Their program departments were then examined for their

level of effectiveness and degree of bureaucracy using the Georgopoulos-Mann, Samuel-Mannheim and Aston measures. Both interviews and questionnaire methods were used. Structural data was obtained through an interview with a senior administrator familiar with the formal organization of each program department, and verified by an examination of documents wherever possible. Effectiveness questionnaires were completed by all members of each board's program department.

Completed structural surveys and effectiveness questionnaires were scored according to the criteria outlined by their designers.

5. The Measures of Bureaucratic Dimensions

The measure of configuration developed by Samuel and Mannheim (1970) and used by Reimann (1973) was designed to overcome the methodological crudeness of previous measures, such as the number of vertical levels or the average span of control. Samuel and Mannheim argued that in addition to their crudeness, such indices reflected a simplified view of organizational structure and neglected the cumulative effect of organizational authority and control:

If one admits the marked difference between a foreman at the lower end of the organization and a president at the top, one should incorporate such a difference in the measures employed (1973: 217).

The formula developed by Samuel and Mannheim has three advantages over previously suggested indices. First, it is sensitive to the height of the hierarchy as well as to the cumulative authority and responsibilities of each successive link in the control chain. Second, it reflects variations in span of control within and between levels of supervision. Finally, it avoids the view of the organization as a simple pyramid (1970: 218-219). The index is thus an objective and parsimonious measure of configuration.

As noted in the review of the literature, the basic framework of the Aston indices used in this study to measure centralization, specialization and formalization was developed by Pugh et al. (1968) and abbreviated by Inkson et al. (1970a) and Reimann (1973). The abbreviated forms have been employed and validated by numerous authors including Newberry (1971), Heron (1972), Sackney (1976) and Goodwin (1978).

When first developed, the Aston scales were subjected to item analysis using the Brogden-Clemans coefficient to test the scalability of items and their representativeness of the various structural dimensions. Item analysis means in the original study' (Pugh et al., 1968) ranged from 0.76 on specialization to 0.65 on standardization measures. Standard scores were then calculated to enable structural profiles to be constructed; product-moment coefficients

were used to establish variable comparisons, and a principal-components analysis was employed to define four mutually independent factors. Pugh concluded that these measures accurately discriminated the structural characteristics of the organizations studied.

The many reappraisal, replication and application studies which have subsequently used the Aston measures have reaffirmed their reliability and validity in delineating the structural dimensions of various enterprises. For example, the Inkson et al. (1970a) test for accuracy of representation, involving two independent dimensions of structure, resulted in correlations ranging from 0.91 to 0.97. After item analyses on both the original Aston figures and on fresh data, Inkson and his colleagues concluded that their abbreviated version of these measures retained the technical soundness of the original index (1970a: 324). The many researchers who have subsequently employed the abbreviated schedule have come to similar conclusions.

This study employed a slightly modified form of three abbreviated scales described by Reimann (1973) as measures of centralization, specialization and formalization. The face validity of the modified scales as measures of program department structure was tested by a survey of curriculum practitioners and graduate students.

The measuring instrument as well as the scoring technique for each dimension is included in Appendix 1.

6. The Measure of Effectiveness

The Georgopoulos-Mann (1962) measure of organizational effectiveness, originally developed in community hospitals, was adapted for use in this study.

Initially, in a study of ten general hospitals, 880 medical, nursing, technical and administrative personnel were surveyed to determine how well their organization was achieving its objectives. Four measures of effectiveness were used: nursing care, medical care, non-comparative overall patient care and comparative overall patient care. The data were collected by questionnaire; interviews were used as a check on questionnaire validity. After a careful re-examination of this work, Price concluded that Georgopoulos and Mann had exercised "uncommon care in the evaluation of the validity and reliability of their measures (1972a: 106)." Their validation methods included a comparison of questionnaire results with clinical judgements by physicians and nurses, as well as certain hard criteria objective measures (1962: 198-264).

The mean scores of all physicians in each hospital were found to be significantly related to the ratings of the hospitals by a panel of outside physicians. These

scores were also related to the infant mortality rate. The evaluation of the quality of nursing care by the doctors and nurses in each hospital was found to be related to the infant mortality rate, while the judgement of all hospital employees other than physicians was significantly related to that of the physicians. This was seen to imply that other groups in the hospital were capable of making evaluations employing the same criteria as physicians, and that employees within an organization were capable of evaluating its effectiveness as well as those outside it and in agreement with hard criteria measures of performance.

Six factors were cited as indicators of the validity of this effectiveness measure (1962: 215-225). First, the ten hospitals investigated differed in the quality of overall patient care, with combined hospital scores ranging from 1.99 to 2.94. Second, the relative standing of the ten hospitals on overall care, as evaluated by one category of respondent, correlated positively with the standing on the same measure as evaluated by other categories of respondents. Third, inter-hospital differences on overall patient care could not be attributed to differences in responses due to particular characteristics of the medical and nursing staff. Control factors like shift of work, different hospital divisions, full-time versus

part-time work, and medical specialty did not affect the evaluation of overall care by the medical and nursing staff. Fourth, interview data were consistent with the questionnaire ranking of the hospitals on the overall care measure. Fifth, customer satisfaction was greater in those hospitals that ranked higher on the measure of overall patient care. Sixth, a positive relationship existed between the reputation of each hospital in the community and the quality of its overall patient care.

The intercorrelations between questionnaire measures were positive and significant (1962: 227). Thus, hospitals which scored high on one measure were also likely to score high on other measures. The correlation between the two overall care measures was 0.96; between overall care and medical care, 0.78; between medical care and nursing care, 0.60.

The Georgopoulos-Mann measure has been further tested in the space industry, in research institutions and in other hospitals (Mott, 1972), as well as in schools (Knoop, 1976). After additional validity tests of the measure, including product-moment correlations among items, factor analysis, overall ratings and rater correlations, Mott concluded that "the effectiveness index is a valid and inexpensive measure (1972: 21)." This conclusion was supported by Price (1972a: 3-15), who further argued its

usefulness in comparing different organizations.

Georgopoulos and Mann (1962) used four questions phrased in a similar manner in their instrument; only the specific goals varied from item to item. For example, the following question was used to rate the quality of overall patient care:

On the basis of your experience and information, how would you rate the quality of overall care that patients generally receive from this hospital? (Check one.)

- ☐ Overall patient care in this hospital is outstanding.
- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Rather poor
- ☐ Overall patient care in this hospital is poor (1962: 209).

Clearly, this measure is directly based on the goal model of effectiveness. Its adaptation for use in institutions other than hospitals requires the identification of unique organizational goals.

Three criteria were observed in the identification of program department goals. First, as Etzioni argued should be the case (1964: 6), operational rather than formal goals were used. Second, a variety of intermediate as well as one overall criterion were selected (Mahoney, 1967: 76-91). Third, the achievement of higher-order goals was viewed as a more important measure of

organizational effectiveness than the achievement of lower-order goals (Price, 1972b: 12).

Employing these criteria, goal identification was then based on Ministry of Education guidelines, curriculum theory and professional opinion. The goals were given equal importance because it could not be shown conclusively that one goal was a better measure of effectiveness than another.

In "The Formative Years", the Ministry of Education charged school boards with the formulation of "local programs that are within the rationale of the provincial policy and at the same time reflect local needs and priorities." The document continued to more specifically assign responsibility "for ensuring that specific objectives and the means used to achieve them are consistent with overall purposes and priorities" including the identification of local resources, sequences of instruction, outlines of work and sample units (1975: 2). Concern was expressed also for the recognition of individual needs. Programs developed at the local level were to:

provide each child with opportunities to achieve the levels of competence and the forms of growth and development implies in the aims... Such programs should allow individual children to move beyond the expectations of the program without subjecting those who cannot reach them to loss of self-esteem or

confidence. The programs should also accommodate any modifications that may be necessary to meet the needs of children with learning or other disabilities (1975: 5).

These responsibilities were elaborated upon in a series of later Ministry documents.

Tyler (1949) described how the curriculum development process should proceed from educational values derived from a consideration of the learner, society and subject matter specialists, and filtered through screens of educational philosophy and the psychology of learning. According to Tyler, this value identification should be followed by the selection of learning objectives and then learning experiences likely to be useful in their attainment. The learning experiences should be organized for effective instruction and provision should be made for evaluation, "a process for finding out how far the learning experiences as developed and organized are actually producing the desired results and ... identifying the strengths and weaknesses of the plans (1949: 105)." In this way, Tyler identified the curriculum development tasks as the translation of values into a plan for education including objectives, learning experiences and evaluation techniques.

Four similar elements of the curriculum development process were identified by Taba: objectives, subject matter, method, and organization and evaluation (1962: 425). She

further emphasized that, "A decision made about any one element out of relationship to others is bound to be faulty, because each element of curriculum acquires meaning and substance in reference to other elements and by its place in the pattern that encompasses all others (1962: 424)."

Goodlad (1966) referred to curriculum development at the institutional level as consisting of the translation of values and aims selected on a societal basis into educational objectives and learning opportunities intended to be rendered more specific at the instructional level. All levels were linked by feedback through the evaluation process (1966: 68).

Beauchamp developed a model for curriculum design incorporating goals, culture content, rules for the use of the curriculum document as a guide and an evaluation scheme (1975: 129). This conceptualization was three-dimensional, defined by the realms of culture content, types of learning and levels of school organization.

Providing a practical method for translating scholarly materials into a defensible curriculum, Schwab (1973) maintained that evaluation should be used as the starting point for development. Real products of the present curriculum and a vision of "the best student-grown (1973: 518)", he advocated, should lead to a discovery of intentions in consideration of the student and the local milieu, prior to an examination of scholarly material for its potential.

The generation of alternatives was thus to lead to a choice among competing curriculum bits, with subsequent evaluation by the child, the teacher and the community.

The need for consideration of differing individual needs was defended by Bruner (1974). Arguing that education was not a neutral subject, nor an isolated one, Bruner insisted upon the need for dealing with curriculum in the context of current problems, a major example of which he defined as the giving back of initiative and a sense of potency to each child: "activating a learner ... giving him his full sense of intent and initiative (1974: 178)."

In summary, the curriculum development process described in Ministry of Education documents and the literature includes four main elements. First, broad goals based on societal values (as translated by the political authority) must be narrowed into relevant educational objectives. Second, learning experiences must be designed to accomplish those objectives in consideration of individual needs and abilities. Such experiences must be based on learning theory, child psychology and a philosophy of education. Third, learning experiences must be organized in a suitable manner, and fourth, provision must be made following implementation for the evaluation of student achievement, learning experiences and the curriculum development process itself.

The goals of a program department could thus be defined in seven general areas as follows:

1. Developing curriculum generally.
2. Translating provincial goals into relevant local objectives.
3. Outlining suitably organized educational experiences to translate these local objectives into learning.
4. Providing for individual differences in the interests and abilities of students and teachers.
5. Providing for the adequate evaluation of student achievement.
6. Establishing a suitable implementation procedure.
7. Providing for the evaluation of the curriculum documents produced and the curriculum process used.

The face validity of this definition of operational goals was verified by a survey of teachers, graduate students, and curriculum workers. Georgopoulos and Mann's (1962) measuring instrument of organizational effectiveness was subsequently adapted for use in this study incorporating these goals. The following questions were therefore used in program departments:

1. On the basis of your experience and information, how would you rate the quality of CURRICULUM DEVELOPMENT that GENERALLY occurs in your program department? (Check one.)

- ☐ Outstanding
- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Rather poor
- ☐ Poor

2. On the basis of your experience and information, how good, would you say, is the TRANSLATION OF BROAD MINISTRY OF EDUCATION GOALS INTO RELEVANT LOCAL OBJECTIVES in this program department?
3. On the basis of your experience and information, how good, would you say, is the OUTLINING OF SUITABLY ORGANIZED EDUCATIONAL EXPERIENCES TO ACHIEVE THOSE GOALS in this program department?
4. On the basis of your experience and information, how good, would you say, is the PROVISION FOR INDIVIDUAL DIFFERENCES IN STUDENT AND TEACHER INTERESTS AND ABILITIES in this program department?
5. On the basis of your experience and information, how good, would you say, is the PROVISION OF GUIDELINES FOR THE EVALUATION OF STUDENT LEARNING in this program department?
6. On the basis of your experience and information, how good, would you say, is the IMPLEMENTATION PROCEDURE in this program department?
7. On the basis of your experience and information, how good, would you say, is the EVALUATION OF THE EFFECTIVENESS OF THE CURRICULUM DEVELOPMENT PROCESS in this program department?

The complete questionnaire on organizational effectiveness is given in Appendix 2.

Questionnaire results were scored as they were in the Georgepoulos-Mann study, in the following manner. Scores of one to seven were assigned to each of the seven responses; the higher the score, the better the quality for each item. The scores of each respondent for the seven questions were added and used to compute arithmetic means, separately and combined, by department.

7. Data Analysis Procedures

The data were analyzed using the following methods. Scores for each program department on the various bureaucratic dimensions were computed as described in Appendix 1. Effectiveness scores for each program department were calculated as described in Section Six. To show the interrelationships among the independent variables and size, as well as among the dependent variable items, Pearson correlation coefficients were computed.

As a result of the analysis of the correlations among the seven measures of organizational effectiveness, the score consisting of the average rating of Items One to Seven was used in hypothesis testing.

Interrater reliability was estimated using Fisher Z transformations of the Pearson correlation coefficients between each pair of raters on each item in each board. Average reliability coefficients were then calculated both within and across all boards.

Finally, multiple regression techniques were employed to establish the relation of the effectiveness scores of the program departments to their respective measures on the four bureaucratic dimensions.

The results of all of these analyses are presented in the following chapter.

CHAPTER III

PRESENTATION OF RESULTS

The results of the analysis of the data are presented in the following manner. Section One describes the data collection procedures. Section Two reports the data obtained by the research instrument on the independent variables of this study: configuration, centralization, specialization and formalization. Each variable is discussed independently as well as in relation to the other independent variables and school board size. An examination of the data obtained by the research instrument on the dependent variable, organizational effectiveness, is presented in Section Three. Section Four contains the data pertaining to each of the four hypotheses and the statistical decision made as a result of that data. Finally, the major findings are summarized in Section Five.

1. Collection of Data

The data was collected through personal interviews with each program department's chief executive officer, conducted by a single researcher. Complete consistency in procedure was therefore maintained.

PRESENTATION OF RESULTS

75a

The methods outlined by the Samuel-Mannheim and Aston instrument designers were followed precisely as described in the original publications. For each of the four independent variables, therefore, corroborating written evidence was obtained in the form of departmental documents. Explanations of instrument items were carefully defined in advance, and so were identical from board to board.

The procedures followed in the administration of the Georgopoulos-Mann instrument to the curriculum workers were similarly consistent and exactly as described by the instrument designers. Corroborating qualitative evidence was hence collected to assist in the validation of the quantitative scores obtained. The same open-ended questions asked originally dealing with pressing departmental concerns and system strengths or weaknesses were used, all incidental remarks were tallied, and comments made by knowledgeable experts were duly noted and compared. Supplementary data on respondent age, sex, experience, qualifications and rank were collected.

The care taken in the appropriate use of each of these instruments thus contributed to their valid and reliable application in this study.

2. Independent Variables

The data obtained on each of the independent variables, configuration, centralization, specialization and formalization, are presented to describe the variations in organizational structure which existed across the total sample of twenty-five school board program departments. The relationships among the structural variables themselves, as well as their relationships with school board size, are included in order to identify the patterns which existed.

a. Configuration

The hierarchical control index used to measure program department configuration incorporated three elements: the height of the hierarchy, that is, the number of levels; the average span of control; and the cumulative authority vested in each level, in terms of the number of subordinates. (See Appendix 1, page 141.) The combined measure was expressed as a proportion of the difference between maximum and minimum possible values of cumulative authority and responsibility, with the effect of size removed.

Hierarchy heights ranged from a minimum of three to a maximum of ten levels. The number of different functions arranged within these heights varied from a minimum of five to a maximum of forty-seven.

PRESENTATION OF RESULTS

77

Table I
Configuration Measures

Board	Hierarchical Control Index
01	0.20
02	0.14
03	0.14
04	0.16
05	0.10
06	0.24
07	0.13
08	0.21
09	0.83
10	0.60
11	0.12
12	0.19
13	0.12
14	0.47
15	0.15
16	0.42
17	0.17
18	0.09
19	0.21
20	0.12
21	0.55
22	0.18
23	0.18
24	0.10
25	0.21
Mean	0.24
Standard Deviation	0.18

The hierarchical control measures themselves ranged from a minimum of 0.09 to a maximum of 0.83, with a mean of 0.24, and a standard deviation of 0.18. (See Table I.) The Pearson correlation coefficient for these measures and school board size was $-0.195^{n.s.}$ (See Table VII.)

b. Centralization

The centralization index measured the locus of decision making on topics from a set list as well as the degree of subordinate participation in decision making and information sharing. (See Appendix 1, page 143.)

Across the sample of twenty-five program departments, centralization scores ranged from a minimum of 1.25 to a maximum of 3.00, with a mean of 2.11 and a standard deviation of 0.51. (See Table II.) The Pearson correlation coefficient for these measures and school board size was $-0.042^{n.s.}$ (See Table VII.)

c. Specialization

A function in a program department was considered to be specialized when at least one person performed that function and no other. For each activity for which there was a specialist, the organization scored one. (See Appendix 1, page 145.)

Specialization scores varied from a minimum of 10 to a maximum of 54 across the sample, with a mean of 22.70

PRESENTATION OF RESULTS

79

Table II
Centralization Measures

Board	Centralization Index
01	1.25
02	2.38
03	1.62
04	2.25
05	2.25
06	1.75
07	1.50
08	2.00
09	2.00
10	2.12
11	3.00
12	2.00
13	2.19
14	3.00
15	2.81
16	2.69
17	1.89
18	2.25
19	2.12
20	2.37
21	1.75
22	1.38
23	2.94
24	1.88
25	1.31
Mean	2.11
Standard Deviation	0.51

Table III
Specialization Measures

Board	Functional Specialization Score
01	13.0
02	17.0
03	11.0
04	22.0
05	46.0
06	11.0
07	31.0
08	27.0
09	10.0
10	13.5
11	25.5
12	14.0
13	31.0
14	10.0
15	24.0
16	17.0
17	13.0
18	25.5
19	27.5
20	12.0
21	54.0
22	24.0
23	18.5
24	40.0
25	30.0
Mean	22.70
Standard Deviation	11.58

and a standard deviation of 11.58. (See Table III.) The Pearson correlation coefficient of these measures and school board size was 0.636 ($p < 0.01$). (See Table VII.)

d. Formalization

The degree of formalization of role definition in a department was measured by the number of specific role-defining documents, from a set list, which existed in that department, and, in some cases, the extent of their application and distribution. (See Appendix 1, page 147.)

Across the twenty-five boards, formalization scores ranged from a minimum of 3.0 to a maximum of 20.0, with a mean of 11.22 and a standard deviation of 5.86. (See Table IV.) The Pearson correlation coefficient of the formalization scores with school board size was 0.21^{n.s.} (See Table VII.)

e. Relationships Among the Independent Variables

The Pearson correlation coefficients for the four independent variables are presented in Table V. None of these correlations reached a level of significance of 0.05 or greater. The use of a multiple regression analysis to examine the effects of these variables on the dependent variable was therefore deemed to be appropriate.

Table IV
Formalization Measures

Board	Formalization of Role Definition Index
01	5.0
02	5.0
03	6.0
04	8.0
05	20.0
06	9.0
07	7.0
08	17.0
09	5.0
10	5.0
11	10.0
12	10.0
13	15.0
14	16.0
15	16.0
16	4.0
17	19.0
18	16.0
19	17.0
20	3.0
21	5.0
22	9.0
23	8.5
24	15.0
25	20.0
Mean	11.22
Standard Deviation	5.86

Table V

Pearson Correlation Coefficients
for the Independent Variables

Variable	1	2	3	4
Configuration	1.000			
Centralization	0.031	1.000		
Specialization	-0.179	-0.139	1.000	
Formalization	-0.365	-0.050	0.339	1.000

¹All coefficients are not significant at the 0.05 level.

Moreover, since the independent variables were essentially uncorrelated, it was possible to assess the effects of each one on the dependent variable independently of the other structural measures.

f. Size and the Independent Variables

The two measures of school board size used were the total number of teachers and the total number of pupils. These measures had a Pearson correlation coefficient of 0.991, significant at the 0.01 level. (See Table VI.) Hence, only one measure of size was used in the calculation of correlations among the four independent variables and board size. The number of pupils was selected as being a more accurate representation of organizational size, since the number of teachers is dependent upon pupil-teacher ratios, which are in turn dependent upon such diverse factors as the number of handicapped children in the area, and the skill of teacher negotiators.

The size of the school boards in the sample ranged from a minimum of 10,453 pupils to a maximum of 91,796 pupils, with a mean of 38,096. In the population from which the sample was drawn, school board size ranged from 10,104 to 91,796, with a mean of 29,006. This population was in fact comprised of the fifty-four largest school boards in the province.

PRESENTATION OF RESULTS

85

Table VI
Measures of Size¹

Number of Teachers	Number of Pupils
1016	18855
4735	83373
1007	21528
1400	25207
4354	82951
0930	18729
4292	82977
0848	15907
2440	40580
1003	20490
4118	80049
0646	12063
4292	91796
0382	10453
2197	43216
0839	15893
1078	19932
0930	21946
2323	49177
0986	18136
2333	43552
2302	48532
1227	30187
0754	16641
2090	40228
Pearson Correlation Coefficient	0.991
(Significant at the 0.01 level)	

¹ School board labels have been omitted and the data scrambled to preserve the anonymity of participant program departments.

Three independent variables, configuration, centralization and formalization, were not found to be significantly correlated with board size. The variable specialization, however, was. (See Table VII.) Larger school boards thus tended to have higher functional specialization scores than smaller school boards.

3. Dependent Variable

Since organizational effectiveness was viewed in terms of an overall measure as well as six specific goals, and since these criteria were used to test the research hypotheses, the interrelationships among the instrument items were examined.

Pearson correlation coefficients for the individual goal scores are presented in Table VIII. Each goal item was highly correlated to the measure comprised of the mean of all goals, (1-7). These findings supported the use of a single index, the measure comprised of the mean of all goals, as the dependent variable.

The interrater reliability for each board and for all boards was calculated by converting the Pearson correlation coefficients for the different judges' ratings on each item for each board to Fisher Z coefficients, which were then averaged within and across the boards. The results of this analysis are presented in Table IX.

PRESENTATION OF RESULTS

87

Table VII

Pearson Correlation Coefficients for the
Independent Variables and Size

Variable	Correlation with Board Size	Correlation with Log of Size
Configuration	-0.195	-0.248
Centralization	-0.042	-0.099
Specialization	0.636*	0.626*
Formalization	0.208	0.187

*Significant at the 0.01 level

Table VIII

Pearson Correlation Coefficients for Nine Measures of Organizational Effectiveness¹

Component	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(2-7)
(1) General Effectiveness	1.000							
(2) Ministry Goals	0.693	1.000						
(3) Educational Experiences	0.623	0.589	1.000					
(4) Individualization	0.656	0.531	0.488	1.000				
(5) Student Evaluation	0.647	0.629	0.710	0.515	1.000			
(6) Implementation	0.351	0.106	0.428	0.335	0.486	1.000		
(7) Process Evaluation	0.352	0.212	0.294	0.189	0.506	0.722	1.000	
(2-7) All Goals Except General	0.730	0.672	0.770	0.664	0.875	0.722	0.700	1.000
(1-7) All Goals Including General	0.798	0.698	0.774	0.686	0.869	0.694	0.674	0.994

¹ n=25

The average Pearson correlation coefficients thus obtained ranged from a minimum of 0.677 to a maximum of 0.849. All correlation coefficients were significant at the 0.05 level or better. The mean Fisher Z coefficient across all twenty-five boards was 1.079, equivalent to a Pearson correlation coefficient of 0.793, which is significant at the 0.025 level.

4. Tests of the Hypotheses

The four hypotheses were concerned with the relationship between each of the four structural variables, configuration, centralization, specialization and formalization, and the dependent variable, organizational effectiveness. The hypotheses suggested that in each case lower degrees of organizational structure would be related to higher degrees of organizational effectiveness.

These hypotheses were tested using a multiple regression analysis, the results of which are presented in Tables X and XI. Three of the independent variables, configuration, centralization and formalization, were found to have significant regression coefficients. The null hypotheses concerning these variables were therefore rejected.

One variable, specialization, did not have a significant regression weight. The null hypothesis

Table IX
Interrater Reliability

Board	Mean Fisher Z Coefficient	Reconverted Pearson r Coefficient ¹
01	1.136	0.813
02	0.890	0.712
03	1.028	0.773
04	0.979	0.758
05	1.046	0.780
06	1.202	0.834
07	1.060	0.785
08	1.044	0.780
09	1.196	0.838
10	1.178	0.827
11	0.869	0.701
12	1.228	0.842
13	1.069	0.789
14	1.066	0.787
15	1.039	0.777
16	0.932	0.736
17	0.824	0.677
18	0.911	0.721
19	1.252	0.849
20	0.860	0.696
21	0.850	0.691
22	0.963	0.745
23	1.013	0.766
24	0.848	0.690
25	1.056	0.784

¹All correlation coefficients are significant at the 0.05 level or better.

concerning specialization was thus not rejected, and a second regression analysis was performed eliminating specialization as a variable. The results of this analysis are presented in Tables XII and XIII. They were basically similar to the results of the first regression analysis, although the weight of centralization increased while that of configuration and formalization decreased slightly. The overall significance of the regression equation increased.

The effects of centralization and formalization were in the predicted negative direction. The positive effect of configuration, on the other hand, was in the opposite direction to that which was foreseen.

5. Major Findings

The prediction that program departments with low degrees of centralization would have a higher degree of organizational effectiveness than program departments with higher levels of centralization was supported. Similarly, the prediction concerning program departments with low degrees of formalization having higher degrees of organizational effectiveness than departments with higher levels of formalization was also supported.

The null hypothesis pertaining to specialization was not rejected. This variable was not found to have a regression coefficient significantly different from zero.

PRESENTATION OF RESULTS

92

Table X
Multiple Regression Analysis I

Variable	Regression Coefficient
Configuration	0.783
Centralization	-0.209
Specialization	0.003
Formalization	-0.026

PRESENTATION OF RESULTS

93

Table XI
Overall Significance
of Regression Equation I

Source	SS	df	MS	F
Hypothesis	1.5898	4	0.3975	3.885*
Error	2.0621	20	0.1031	

*Significant at the 0.018 level

The regression coefficient associated with configuration was significantly different from zero; its positive direction, however, was the opposite to that predicted.

A discussion of these results and an interpretation of their theoretical significance is presented in the following chapter.

Table XII
Multiple Regression Analysis II

Variable	Regression Coefficient
Configuration	0.772
Centralization	-0.217
Formalization	-0.024

Table XIII
Overall Significance
of Regression Equation II

Source	SS	df	MS	F
Hypothesis	1.5685	3	0.5228	5.2700*
Error	2.0834	21	0.0992	

*Significant at the 0.007 level

CHAPTER IV

DISCUSSION OF RESULTS

A discussion and an interpretation of the results are presented in the following manner. Section One examines the application of the structural measures to school board program departments, relating it to the use of these measures in other organizations. Section Two interprets the measures of effectiveness obtained. The findings concerning the relation of each structural variable to effectiveness are discussed in the light of previous theoretical and empirical writings in Sections Three, Four and Five. Finally, Section Six presents the implications of the findings for educational practice, as well as suggestions for future research. The summary and conclusions of the study follow.

1. Measures of Structure in School Board Program Departments

Three abbreviated forms of the Aston measures as described by Reimann (1973) were used to gauge levels of centralization, specialization and formalization in this study. Samuel and Mannheim's (1970) hierarchical control index was used as a measure of configuration. Modifications in wording were made in the centralization and specialization scales to render them directly relevant to the school board setting. (See Appendix 1, page 143.)

The hierarchical control index used to measure configuration incorporated the height of the hierarchy, the average span of control and the cumulative authority and responsibility vested in each level in terms of subordinates. Expressed as a proportion of the difference between maximum and minimum possible values with the effect of size removed, the measure was capable of discriminating among the twenty-five program departments in the sample.

Compared to industrial organizations, the program departments had slightly fewer vertical levels, with a mean of 5.0 and a standard deviation of 1.8, as compared to Reimann's (1973) mean of 6.1 and standard deviation of 1.2 in American manufacturing firms, and Pugh et al.'s (1968) mean of 6.71 and standard deviation of 1.42 in varied British organizations. The number of levels was quite similar, however, to that found in Ontario Colleges of Applied Arts and Technology by Goodwin (1978), having a mean of 5.2 and a standard deviation of 0.73. These comparisons are made in consideration of the fact that program departments are actually sub-units nested within the larger school board organization.

The mean hierarchical control index of 0.24, with a standard deviation of 0.18, is low in comparison to the results reported in manufacturing firms by Reimann (1973)

with a mean of 11.4 and a standard deviation of 7.7. The program departments thus had flatter configurations than the American manufacturing firms.

Centralization was measured using a scale identifying the levels at which specific decisions were made as well as the degree of participation in planning and information sharing. The decisions specified by Reimann (1973) were modified in wording to reflect similar decisions relevant to program departments. (See Appendix 1, page 143.) Centralization scores consisted of an average ranking on the eight items in the index, with possible values ranging from 1.0 to 4.0. Across the sample of twenty-five program departments, the mean centralization score was 2.11, with a standard deviation of 0.51. (See Table II, page 79.)

These results are somewhat higher than an industrial mean of 1.85 and standard deviation of 0.38 found by Reimann (1973) and an educational mean of 1.52 and standard deviation of 0.34 reported by Goodwin (1978). The program departments were therefore more centralized in their decision making than the American manufacturing organizations and the Ontario colleges.

The specialization scale tallied the number of functions from a set list performed by at least one person

who fulfilled that and no other function. The wording of the items in the scale was modified to reflect parallel functions in the educational sector. In program departments, few different categories of functions were in fact specialized, as many roles, such as public relations and building maintenance, were performed by other subunits of the larger school board structure. The mean of these general functions was 5.26 with a standard deviation of 1.68. It was possible, however, to distinguish more clearly among program departments by taking account of the number of different subject matter specialties defined as independent functions in each department. (See Item 3.16, Appendix 1, page 146.) The mean functional specialization score thus obtained was 22.70 with a standard deviation of 11.58. (See Table III, page 80.)

In the manufacturing sector, Reimann (1973) reported a mean specialization score of 12.6 with a standard deviation of 2.5. In Ontario colleges, Goodwin (1978) found a mean specialization measure of 8.95 with a standard deviation of 2.54, while in Alberta colleges Holdaway *et al.* (1975) reported a mean of 5.35 and a standard deviation of 2.10. The program departments were thus generally more specialized than these organizations, although the scores were widely dispersed.

Formalization was gauged by the number of specific role-defining documents from a set list which existed in the department, and the extent of their application. The mean formalization score was 11.22 with a standard deviation of 5.86. (See Table IV, page 82.)

This compares to Reimann's (1973) industrial mean of 14.6 with a standard deviation of 2.5, and to Goodwin's (1978) educational mean of 17.75 with a standard deviation of 1.64. The program departments were therefore less formalized than the American manufacturing organizations and the Ontario colleges. Like the specialization scores, however, the formalization measures were quite dispersed.

Both separately and in combination, the four structural scales were found to be relevant and functional in their application to school board program departments, discriminating clearly among departments, although very time-consuming in their use. It was apparent that the instrument could not be self-administered, since much discussion and clarification frequently preceded the response of a chief executive officer to different items. Consistent explanations by the researcher were essential to assure consistent interpretations of the various questions posed.

None of the four structural variables were found to be significantly correlated with any other structural variable. (See Table V, page 83.) This result supports Hall's (1963) contention and the conclusion of the Aston studies (eg., Pugh et al., 1968) that bureaucracy is not unidimensional, that Weber's bureaucratic characteristics (1958) in fact exist to varying degrees in different organizations.

Of the four structural variables, only specialization was found to be significantly correlated with organizational size. (See Table VII, page 87.) This finding agrees with the educational sector results of Goodwin (1978) and Holdaway et al. (1975), although Goodwin (1978) also found a significant negative relation between size and centralization. Thus, in contrast to Ontario colleges, larger program departments do not necessarily employ less centralized decision-making patterns. (It will be recalled that the measure of configuration used in this study removed the effects of organizational size.)

2. Effectiveness Measures

The use of the modified Georgopoulos-Mann (1962) instrument to gauge employee perception of organizational

effectiveness (Appendix 2, page 149) had several advantages. Simple in format, the scale was quickly and clearly understood by respondents. The only debate which occurred during completion of it was the appropriate rating to assign to each item; the meaning of the items and the distinctions among rating levels were readily apparent.

The instrument adequately covered the operative goals of the program departments in the study. Supplementary comments made by respondents generally related to explanations for ratings assigned on individual items. The participants were clearly concerned with the accuracy of their judgments and were prepared to give evidence to support each decision made. The significantly high interrater reliability coefficients within each board and across all boards (Table IX, page 90) suggest that these ratings were indeed accurate, demonstrating that a substantial level of agreement among different raters existed concerning a single department.

All levels of the scoring scale were in fact used on each item. Respondents were not reluctant to assign ratings of "outstanding" or "poor" when they felt these were appropriate. Understandably, the ratings at the extremes of the scale were the ones most frequently

accompanied by explanatory notes and specific examples. The raters were able to clearly distinguish curriculum development phases which were well handled in their department from those which were weak.

The use of operative goals as opposed to formal goals in the instrument, as advocated by Etzioni (1964: 6), enabled respondents to readily relate the questions asked to the roles their departments fulfilled. Indeed, the use of formal goals would have been impossible, for frequently no formal written statement of goals existed. The operational task of the program department, however, was never a point of debate.

Even in their supplementary comments, the focus of respondents on operative task-related goals was noticeably predominant. Informal, non-task-related goals were rarely mentioned. The situations in which their existence was commented upon suggested that two major staffing policies had two different effects on employee focus. In many boards, curriculum workers were assigned to specific projects; when the project ended, the workers returned to their original schools or positions. As reflected in the curriculum workers' comments, this approach resulted in an almost total focus on the project itself as opposed to informal personal or group goals. In contrast, some boards had permanently

tenured curriculum positions in the various subject areas. It was only curriculum workers in these positions or those who worked in such a setting who mentioned non-task-related conflicts; for example, friction between subject area "empires", and difficulties with particular personalities were used as explanations for some of the ratings assigned. Doubtlessly curriculum workers assigned on a project basis also pursued informal and sometimes dysfunctional goals; however, the pursuit of such goals logically could not become as entrenched as it did in situations which had existed and in all probability would continue to exist for many years.

The relevant qualitative data gathered agreed well with the scores on the quantitative measure of effectiveness. Chief executive officers of program departments rated more effective on this instrument, in response to the open-ended question about pressing concerns, for example, typically focused on the need to keep challenging their very competent workers as various curriculum projects were completed, or on budgetary frustrations. Administrators in departments rated less effective, on the other hand, often spoke of managing personal conflicts among employees, or the need to motivate workers -- comments that suggested that all was not

well within the department. A tally of individual curriculum workers' comments on the strengths and weaknesses of their departments revealed a similar dichotomy. Those in boards rated more effective on the instrument were proud of their curriculum accomplishments and described financial, Ministerial, and other external factors as their most serious problems. Workers in boards rated less effective, on the other hand, were very critical of the actual curriculum development process within their departments.

Subjective ratings by external experts (Ministry of Education officials, curriculum administrators or consultants) were tallied, provided the individual involved met three criteria, as was the case in the original development of the Georgopoulos-Mann instrument: a knowledge of the program department in question, a basis for the comparison of its effectiveness with that of other departments, and an apparent lack of bias. Some comments were obtained in this way on all twenty-five boards; a minimum of three comments in agreement were obtained for fifteen boards. The program departments thus rated excellent by the external experts all scored in the top third on the quantitative measure. Those rated as weak or poor scored in the bottom seven.

As in the original study, the differences obtained

on the Georgopoulos-Mann instrument were also examined in relation to the personal data obtained on the curriculum workers and to the details concerning the various school boards. It was thus found that the differences in the effectiveness scores could not be attributed to the age, experience, sex, qualifications or rank of the employees; nor could they be attributed to the geographical area, size or religious status of the board.

It was thus concluded that the differences obtained on the quantitative measure of effectiveness were in fact real differences, which agreed well with the available qualitative data, and that the instrument used was both valid and reliable in the present study.

In summary, the Georgopoulos-Mann measure of effectiveness was well understood by all participants and was used by them to rate their program departments in a highly coherent manner. Its simplicity and ease of administration were further readily apparent benefits in the research process.

3. Centralization, Formalization and Effectiveness

It was predicted that departments with lower levels of centralization or formalization would have a higher

level of organizational effectiveness than departments with higher degrees of these two variables. This prediction was supported by the data. (See Table X, page 92.)

The results of this study thus offer support for Blau's comments (1969: 252) concerning Weber's ideal bureaucratic structure: given a complicated task and highly trained workers in a setting no longer condoning rigid class distinctions, highly centralized or highly formalized bureaucratic control was not found to be the most effective method of operation.

The task of curriculum development, a "problem-solving" endeavour in Bennis' terms (1959), was more effectively accomplished, as Bennis predicted it would be, when workers had considerable control over work decisions. The negative relation of centralization to effectiveness found in the present study supports Bennis' taxonomy.

Because the curriculum task constantly requires novel solutions and approaches, as Heydebrand (1973: 3) found, the need for shared decision making was accompanied by a need for flexible work procedures. This relation was confirmed in the present study by the negative relation of formalization to effectiveness. The creative characteristics of the curriculum task thus appeared to be more effectively accomplished in a less centralized and less formalized organizational structure.

The negative relationships of centralization and formalization with effectiveness can also be explained in terms of the professional employees involved. Because of their confidence in their own training and experience as the best basis for decision-making concerning educational programs, the teachers working in program departments functioned more effectively when able to participate fully in the decision-making process, and create flexible work procedures adapted to the task at hand. These findings are consistent with those of Hall (1968) and Heydebrand (1967), who found centralization and professionalization to constitute alternative modes of coordination which could not exist simultaneously. The results also support the findings in a later study by Hall (1977) which reported professionalization and formalization to be incompatible: the more professionalized the work force, the more likely it was that formalization would lead to bureaucratic dysfunctions. In the program departments in the present study, professionals indeed functioned more effectively in less formalized and less centralized structures.

The negative relation of centralization and formalization to effectiveness can be explained as well in terms of

the nature of the environment in which the program departments functioned. Comments were frequently made by curriculum workers concerning the unpredictability of their resource supply, with severe budget cuts becoming ubiquitous and public criticism of school programs becoming increasingly rampant. Workers primarily concerned with one project frequently found it necessary, because of these environmental constraints, to concentrate on other projects or to change direction in mid-project. As Lawrence and Lorsch (1967) maintained was essential, this environmental uncertainty resulted in flexible structural adaptations being more effective than rigid ones. Program departments with more decentralized decision making and fewer formalized roles or procedures were more effective in their curriculum development than highly centralized and formalized boards.

Thus, the findings in this study supported the findings of previous studies concerning the effects of centralization and formalization given a creative task, professional employees and an unpredictable environment. Organizational structure was indeed found to be related to organizational effectiveness, as Weber (1947) and Etzioni (1959) theorized.

4. Specialization and Effectiveness

It was hypothesized that program departments with lower levels of functional specialization would be more effective in curriculum development than departments with higher levels of specialization. This hypothesis was not supported by the data. (See Table X, page 92.) Indeed, the relation of specialization to effectiveness was not found to be significantly different from zero.

The specialization hypothesis was based on the argument that effective accomplishment of a creative task in an uncertain environment would require a great deal of flexibility (Bennis, 1959). Specialized divisions appropriate at one point in time, it was suggested, could therefore be totally inappropriate at another point in time. Furthermore, restrictions placed on professionals by narrowly-defined specialties would result in hostility, which would be dysfunctional.

The occurrence of two unforeseen factors suggests a dual explanation for the absence of a relationship between this structural variable and effectiveness. First, the number of specialized functions was significantly correlated with school board size, and, hence, with financial assets. The larger the board, therefore, the more specialized the

program department, and the narrower the functional role descriptions became. Even the largest school boards, however, could not afford to be completely specialized. The number of potential curriculum specializations in a modern educational system is considerable; a matrix of the subjects offered and the levels taught in Ontario schools suggests only part of its magnitude. Integrated studies of many forms are also common. Clearly, no school board could afford to specialize its program department to a point where each curriculum area became a separate function. In all the boards in this sample, the definitions of specialties in fact covered a range of curriculum areas. Hence, considerable shifting was necessary for each curriculum project. "Language Across the Curriculum," for example, "Heritage Languages," and "Multiculturalism," all current Ministry of Education thrusts at the time of the study, could not be accommodated under any single subject heading. Where many specialties existed, curriculum workers were continually forming new teams to work on new projects. A rigid division of responsibilities, the sort of highly specialized structure which was predicted to be dysfunctional for the curriculum development task, did not in fact exist in any of the boards studied. The number of formally titled functions reflected

only size -- not different approaches to the curriculum development task.

A second explanation for the lack of support for this hypothesis is the reaction expressed by the curriculum workers themselves to specialization. The predicted professional hostility to restrictive specialty descriptions simply did not exist. Comments were frequently made that better results could be achieved if more people were available, or if more money were available to hire more people. These comments were usually accompanied by a recognition of the unlikelihood of any budget increases occurring in program departments during a time of widespread economic restraint, and an acceptance of the challenge of constantly adapting, of working in many areas rather than in one specialty. Thus, instead of finding professionals hampered by rigidly specialized role definitions, this study found professionals constantly challenged regardless of how their jobs were labelled.

Thus, variations in effectiveness may have been related to the effectiveness of the teaming-adapting-sharing process; from this point of view it seems logical that variations in effectiveness would not be related to the number of so-called specialties, or formal titles, that

existed. Unlike the specialization scores obtained in research on manufacturing organizations or other types of educational institutions, the specialization score in school board program departments did not reflect how rigidly divided the functions within those departments were.

5. Configuration and Effectiveness

It was hypothesized that program departments with flatter configurations would be more effective in curriculum development than departments with steeper hierarchies. This prediction was based on the large body of small group studies (eg., Bavelas, 1968; Hare, 1976; Heinicke and Bales, 1953) which found status differences in work groups to reduce normal social interaction and support, to undermine the process of competition for respect and to distort the error-correcting function of social interaction (Blau and Scott, 1962). It was also based on organizational research, such as that by Heydebrand (1973), which related effective complex task achievement to nonbureaucratic, associational forms of administration, and on research concerning professionals, such as that by Meyer (1968b), suggesting serious conflicts between the professional view of authority and the bureaucratic definition of hierarchical power.

In the present study, configuration was significantly related to effectiveness; the positive direction of the

relationship was, however, the opposite to that which had been predicted. Program departments with steeper hierarchies were found to be more effective in curriculum development than departments with flatter configurations.

A basis for an explanation of this unforeseen result can be found in the work of Blau (1968), Heydebrand (1973), Meyer (1968c) and Stauffer et al. (1966), concerning the reaction of professionals to bureaucratic structure. The explanation is comprised of two elements.

First, these researchers found professionals to have considerable confidence in their own decision-making abilities. In fact, they demanded control over every aspect of their work situation. Their full participation in decision making placed great strain on the hierarchical structure, however. In order to facilitate the volume of two-way communication which had to occur to eliminate conflict between bureaucratic and professional elements, a narrower span of administrative control and so a higher ratio of managers was necessary (Heydebrand, 1973). This narrower span of control was not so much related to closeness of supervision as it was to the debating and sharing of a large number of decisions, to freer, more open communication (Meyer, 1968c). In program departments, therefore, the steeper hierarchies may have facilitated significantly

higher levels of two-way communication and so increased the effectiveness of the professionals involved in curriculum development.

A second explanation for these results may lie in the reaction of these particular professionals to an authority structure somewhat unusual in comparison to that found in other organizations. Professional hostility to hierarchical authority has been explained as a rebellion against legitimate as opposed to expert power (Blau, 1969). Hence in a hospital, for example, doctors objected to intrusions by non-medical administrators into what they perceived as their own area of expertise (Heydebrand, 1973). In the present study, however, the administrators were qualified in the professional as well as the administrative aspects of their work. Because of the newness of the field, professional training in curriculum work per se had only recently become available at the time of the study. Most curriculum workers in these program departments had a solid background in educational studies and experience, with only one or two courses in the theory and practice of curriculum itself. Their supervisors, as superintendents or consultants, typically had a parallel if somewhat more extensive background. Thus, while mutually respecting differing areas of experience in educational practice for

the differing professional insights they rendered possible, both supervisors and subordinates in these program departments tended to regard themselves as having similar backgrounds in curriculum theory, and as breaking new ground together in curriculum practice. Indeed, a number of supervisors and subordinates had taken their curriculum courses together. Given this history, curriculum workers tended to regard their departments, supervisors included, as professional teams. The authority granted supervisors was, thus, perhaps an expert authority voluntarily granted by professionals to competent peers, rather than a legitimate authority granted by subordinates to superordinates because of the hierarchical structure. The bureaucratic dysfunction of professional hostility towards hierarchical control was quite possibly lower in these program departments than that which might be expected in other organizations.

In this way, the positive relation of configuration and effectiveness in the present study may be related to two factors: the increased volume of communication and so shared decision making which a steeper hierarchy rendered possible, and the lack of hostility experienced in this somewhat unique organization by professional workers regarding the authority of their supervisors.

6. Implications of the Study

As suggested in Weber's (1947) theory of bureaucracy, the organizational structure of school board program departments had a significant relationship with goal achievement in this study. As argued by Hall (1963) and others, it was not only the more bureaucratic extremes of Weber's elements that were associated with increased effectiveness, however. Less centralized, less formalized departments and steeper configurations were significantly related to effective curriculum development.

The implications for educational practice are several. In organizing program departments administrators should be very aware of the complex nature of the curriculum task, the unpredictability of the environment in which it must be accomplished, and the professionalism of their curriculum workers. Each of these characteristics is related to the effectiveness of certain forms of organizational structure.

The results of this study suggest that decision making processes are of prime importance to the professionals who work in program departments. Genuinely participative approaches for all major decisions, and hence ready access to both superiors and peers, facilitating a considerable

volume of communication, should be established. Steeper hierarchical structures with narrower spans of control should be arranged.

Because of the constantly changing demands placed on program departments, rigidly formalized roles should be avoided. Less emphasis on written procedures and records should be sought.

The degree of specialization was not related to effectiveness in this study; however, it is clear that an effective program department should have a combined range of competencies in its curriculum workers equal to the projects it attacks.

These recommendations can be summarized in the following guidelines.

1. Communication

With professional employees, much expertise can be wasted if continuous consultation is not sought. Moreover, resentment and lessened motivation may result if the professionals are not able to participate fully in all aspects of their work situation. This rule has two corollaries.

- (a) Hierarchical Structure

The logistics of a large volume of two-way communication demand narrower spans of control, and hence steeper hierarchical structures. Program departments

should be organized so that each curriculum worker has ready access to his supervisor and so that each supervisor can share all relevant decisions with all curriculum workers.

(b) Administrative Expertise

Professionals react badly to naked bureaucratic authority; expertise is an essential element of leadership with highly trained subordinates. Superintendents of Program and program department supervisors should have extensive backgrounds not only in general educational training and experience but also in curriculum theory and practice. The expert authority granted voluntarily by curriculum workers to a competent colleague, rather than the legitimate authority wrrenched from them by bureaucratic sanctions, lessens the danger of professional hostility to the organizational structure.

2. Decision Making Procedures

In an organization with a creative problem-solving task and an unpredictable environment, there can be no single correct or superior solution. The varied expert insights of every professional employee are essential for effective goal achievement. In program departments, therefore, to centralize is to paralyze. Participative decision making is a prerequisite of success. Genuinely shared decision making

procedures in all areas of program department function, including work procedures as well as actual curriculum decisions, are related to more effective curriculum development.

3. Work Procedures

Highly formalized roles and procedures may shackle employees. While an effective management technique for simple and repetitive tasks, strict regulation of behavior is dysfunctional for creative task accomplishment. It further inhibits effective survival in an unpredictable environment and alienates professional workers who have considerable confidence in their own training and experience as the best basis for selecting suitable procedures in any given work situation. Program department roles should, therefore, be loosely defined. Written procedures and documentation should be limited to the basic essentials. A focus on ultimate goals rather than day-to-day behavior may free professional employees to use their expertise more fully, as well as to adapt to the changing demands of their creative task and unpredictable environment.

4. Cooperation

No single curriculum worker can be an expert in all program department functions. For this reason sharing

and adapting must be continuous processes in program departments, as the varying expertises of different professionals are brought to bear on various projects. School boards should therefore budget for people, not roles. Clearly, a range of backgrounds equal to the demands of the projects being tackled is essential. Equally important, however, is the ability of the individuals involved to adapt and to form teams capable of moving beyond the limitations of narrow specialties or role definitions.

While intended as simple rules of thumb and not as immovable laws, these guidelines are nevertheless empirically based. The implication of the present study is that they will if followed be related to increased organizational effectiveness in school board program departments.

In the area of educational research, this study has demonstrated the usefulness of four structural scales in examining school boards. The indices as adapted were indeed capable of discriminating differences in organizational structure. The Georgopoulos-Mann measure of effectiveness was also found to be a practical and reliable tool.

This research contributes to organizational theory in three ways:

1. It provides support for the contention that bureaucratic structure is multi-dimensional.

2. It suggests that organizational size is related to the structural dimension of specialization, but not to centralization or formalization.
3. It identifies the relationship of organizational structure to effectiveness in situations combining creative tasks, unpredictable environments and professional employees.

These generalizations must be regarded in consideration of the population from which the sample was drawn: Ontario school boards with minimum enrollments of 10,000 pupils. Because the study is a cross-sectional one, it must also be realized that these results could be a function of a particular period of Ontario's educational history.

Several suggestions for future research emerge from this study. Replications of the present procedure in other provinces are necessary to confirm its findings. An examination of other school board departments combining a creative task and uncertain environment with professional employees (such as special education departments) would enable firmer conclusions to be drawn. Longitudinal analyses of the changes in structure and effectiveness in such departments over time would also be valuable.

Other research might include a study of the communication and decision-making patterns of professionals in steep and flat organizational configurations; an

examination of the perception of superordinate authority by subordinate curriculum workers; and a task analysis of the actual functions performed by curriculum workers designated as specialists in a particular area.

The summary and conclusions of the study follow.

SUMMARY AND CONCLUSIONS

Based on the theoretical and empirical writings concerning bureaucracies, the effectiveness of school board program departments was described as being mediated by their organizational structure. In consideration of their creative task, uncertain environment and professional employees, it was postulated that program departments with flatter configurations and lower degrees of centralization, specialization and formalization would be more effective than departments with steeper hierarchies and higher levels of centralization, specialization and formalization.

A randomly-selected sample of twenty-five Ontario school board program departments was examined using Samuel and Mannheim's (1970) measure of configuration and the Aston scales (Reimann, 1973) for the three remaining structural variables. A modified Georgopoulos-Mann (1962) instrument measured the effectiveness of operative goal achievement.

The null hypotheses concerning centralization and formalization were rejected, confirming that program departments with less bureaucratized structures on these two dimensions were more effective in their curriculum development task.

SUMMARY AND CONCLUSIONS

124

No significant relationship was found between specialization and effectiveness. It was postulated that this result was due to the actual absence of rigidly defined functions regardless of the number of formally-labelled "specialties" existing in a department.

The relationship between configuration and effectiveness was significant. Its positive direction, however, was the opposite to that predicted. Proposed explanations of this finding were the extensive communication, and hence participative decision making, facilitated by steeper and narrower hierarchies, as well as the expert rather than legitimate authority granted to supervisors with parallel professional backgrounds by curriculum workers.

Thus, the organizational structure of program departments was found to be multidimensional. Combinations of steeper configurations with lower degrees of centralization and formalization were found to be related to higher levels of effectiveness, supporting the prediction that certain requirements were placed upon these structures by the creative nature of the curriculum development task, the unpredictability of the environment in which it must be achieved, and the professional workers who must accomplish it.

Recommendations for educational practice suggested that program departments be structured with a serious

concern for the needs of professional workers. Steeper hierarchies, decentralized decision making and less formalized role definitions were advocated.

The contributions of this study were twofold. Providing an application of the Aston methodology to school boards, it extended and tested organizational theory in relation to effective structures for a particular task, environment, and type of employee. Secondly, it established a guide for the organization of effective program departments. Given the crucial role of these departments in the achievement of society's educational goals, and the crucial role of such goal achievement in the development of future civilization, the establishment of such a guide was seen as a contribution of considerable importance.

REFERENCES

- Aiken, M., & Hage, J. Organizational alienation: A comparative analysis. American Sociological Review, August 1966, 31 (4), 497-507.
- Aiken, M., & Hage, J. Organizational interdependence and intra-organizational structure. American Sociological Review, December 1968, 33 (6), 912-930.
- Argyris, C. Integrating the individual and the organization. New York: John Wiley and Sons, Inc., 1966.
- Argyris, C. Effectiveness and planning of change. In D. Sills (Ed.) International encyclopedia of the social sciences. New York: Macmillan and The Free Press, 1968.
- Back, K., Festinger, L., Hymovitch, B., Kelley, H., Schachter, S., & Thibaut, J. The methodology of studying rumor transmission. Human Relations, 1950, 3 (3), 307-312.
- Bakke, E.W. Concept of the social organization. In M. Haire (Ed.) Modern organization theory. New York: John Wiley & Sons, Inc., 1967, 16-75.
- Baldrige, J.V., & Burnham, R.A. Organizational innovation: Individual, organizational, and environmental impacts. Administrative Science Quarterly, June 1975, 20 (2), 165-176.
- Barnard, C.I. The functions of the executive. Cambridge: Harvard University Press, 1938.
- Barnes, L.B. Organizational systems and engineering groups. Boston: Harvard University Press, 1967.
- Bavelas, A. Communication patterns in task-oriented groups. In D. Cartwright & A. Zander (Eds.) Group dynamics. New York: Harper & Row, Publishers, 1968, 503-511.
- Beauchamp, G.A. Curriculum theory. Wilmette, Illinois: The Kagg Press, 1975.
- Becker, H.S. The teacher in the authority system of the public school. Journal of Educational Sociology, November 1953, 27 (3), 128-141.
- Ben-David, J. The professional role of the physician in bureaucratized medicine: A study in role conflict. Human Relations, August 1958, 11 (3), 255-274.

- Bennis, W.G. Leadership theory and administrative behavior: The problem of authority. Administrative Science Quarterly, December 1959, 4 (3), 259-301.
- Bennis, W.G. Toward a 'truly' scientific management: The concept of organizational health. General Systems Yearbook, 1962, 7, 269-282.
- Blau, P.M. The hierarchy of authority in organizations. American Journal of Sociology, January 1963, 73 (4), 453-467.
- Blau, P.M. The dynamics of bureaucracy. Chicago: University of Chicago Press, 1969.
- Blau, P.M. A formal theory of differentiation in organizations. American Sociological Review. April 1970, 35 (2), 201-218.
- Blau, P.M. On the nature of organizations. Toronto: John Wiley and Sons, 1974.
- Blau, P.M., & Scott, W.R. Formal organizations: A comparative approach. San Francisco: Chandler Publishing Company, 1962.
- Blau, P.M., Falbe, C.M., McKinley, W., & Tracy, P.K. Technology and organization in manufacturing. Administrative Science Quarterly, March 1976, 21 (1), 20-40.
- Bruner, J.S. The process of education reconsidered. In G. Hass, J. Bondi & J. Wiles (Eds.) Curriculum planning. Boston: Allyn and Bacon, Inc., 1974, 172-181.
- Burns, T., & Stalker, G. M. The management of innovation. London: Tavistock, 1968.
- Cameron, K. Measuring organizational effectiveness in institutions of higher learning. Administrative Science Quarterly, December 1978, 23 (4), 604-629.
- Child, J. Organizational structure and strategies of control: A replication of the Aston study. Administrative Science Quarterly, June 1972, 17 (2), 163-177.
- Child, J. Strategies of control and organizational behavior. Administrative Science Quarterly, March 1973, 18 (1), 1-17.

- Child, J. Managerial and organizational factors associated with company performance -- part I. Journal of Management Studies, 1974, 11, 175-139.
- Child, J. Managerial and organizational factors associated with company performance -- part II. Journal of Management Studies, 1975, 12, 12-27.
- Cohen, A.R. Upward communication in experimentally created hierarchies. Human Relations, February 1953, 11 (1), 41-53.
- Dewar, R., & Hage, J. Size, technology, complexity and structural differentiation: Toward a theoretical synthesis. Administrative Science Quarterly, March 1973, 23 (1), 111-136.
- Donaldson, L., & Warner, M. Structure of organizations in occupational interest associations. Human Relations, October 1974, 27 (3), 721-738.
- Duncan, R.B. Multiple decision-making structures in adapting to environmental uncertainty: The impact on organizational effectiveness. Human Relations, June 1973, 26 (3), 273-291.
- Etzioni, A. Authority structure and organizational effectiveness. Administrative Science Quarterly, June 1959, 4 (1), 43-67.
- Etzioni, A. Modern organizations. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.
- Evers, F.T., Bohlen, J.M. & Warren, R.D. The relationships of selected size and structure indicators in economic organizations. Administrative Science Quarterly, June 1976, 21 (2), 326-342.
- Fayol, H. General and industrial management. Translated by Constance Storrs. London: Sir Isaac Pitman and Sons, Ltd., 1959.
- Festinger, L. Informal social communication. Psychological Review, September 1950, 57 (5), 271-282.
- Filley, A.C. & House, R.J. Managerial process and organizational behavior. Glenview, Illinois: Scott, Foresman and Company, 1969.

- Frank, A.G. Administrative role definition and social change. Human Organization, Winter 1963-1964, 22 (4), 238-242.
- Friedlander, F., & Pickle, H. Components of effectiveness in small organizations. Administrative Science Quarterly, September 1968, 13 (2), 289-304.
- Friedrich, C.J. Some observations on Weber's analysis of bureaucracy. In R.K. Merton (Ed.) Reader in bureaucracy. New York: The Free Press, 1952, 27-33.
- Georgopoulos, B., & Mann, F. The community general hospital. New York: MacMillan, 1962.
- Georgopoulos, B., & Tannenbaum, A. A study of organizational effectiveness. American Sociological Review, October 1957, 22 (5), 534-540.
- Ghorpade, J. Study of organizational effectiveness: Two prevailing viewpoints. Pacific Sociological Review, Winter 1970, 13 (1), 31-40.
- Goffman, E. The presentation of self in everyday life. Garden City: Doubleday Anchor Books, 1959.
- Goldman, P. Size and differentiation in organizations. Pacific Sociological Review, January 1973, 16 (1), 89-105.
- Goodlad, J.I. The development of a conceptual system for dealing with problems of curriculum and instruction. Los Angeles: University of California, 1966.
- Goodwin, J.R. Bureaucratic structural dimensions and their relationship to the variable organizational size: Application of the Aston methodology (Ontario colleges). Ph.D. dissertation, University of Ottawa, 1978.
- Goodwin, J.R., & O'Reilly, R.R. Context and structure of educational organizations: Application of Aston methodologies to community colleges. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, 1979.
- Gouldner, A.W. Organizational analysis. In J. Ghorpade (Ed.) Assessment of organizational effectiveness. Pacific Palisades, Calif.: Goodyear Publishing Company, Inc., 1971, 9-32.

Greenwood, E. The elements of professionalization. In H.M. Vollmer & D.L. Mills (Eds.) Professionalization. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966, 10-19.

Greenwood, R., & Hinings, C.R. Centralization revisited. Administrative Science Quarterly, March 1976, 21 (1), 151-155.

Guetzkow, H. Differentiation of roles in task-oriented groups. In D. Cartwright & A. Zander (Eds.) Group dynamics. New York: Harper and Row, Publishers, 1968, 512-526.

Gulick, L. Notes on the theory of organization. In L. Gulick and L. Urwick (Eds.) Papers on the science of administration. New York: Institute of Public Administration, 1937, 3-45.

Haas, E., Hall, R.H., & Johnson, H.J. The size of the supportive component in organizations: A multi-organizational analysis. Social Forces, October 1963, 42 (1), 9-17.

Hage, J. An axiomatic theory of organizations. Administrative Science Quarterly, December 1965, 10 (3), 289-320.

Hage, J., & Aiken, M. Program change and organizational properties: A comparative analysis. American Journal of Sociology, March 1967, 72 (5), 503-519.

Hage, J., & Aiken, M. Routine technology, social structure and organizational goals. Administrative Science Quarterly, September 1969, 14 (3), 366-376.

Hage, J., & Aiken, M. Social change in complex organizations. New York: Random House, 1970.

Haire, M. Biological models and empirical histories of the growth of organizations. In M. Haire (Ed.) Modern organization theory. New York: John Wiley and Sons, Inc., 1967, 272-306.

Hall, R.H. Intraorganizational structural variation: Application of the bureaucratic model. Administrative Science Quarterly, December 1962, 7 (3), 295-308.

Hall, R.H. The concept of bureaucracy: An empirical assessment. American Journal of Sociology, July 1963, 69 (1), 32-40.

- Hall, R.H. Professionalization and bureaucratization. American Sociological Review, February 1966, 33 (1), 92-104.
- Hall, R.H. Organizations: Structures and process. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1977.
- Hall, R.H., & Tittle, C.R. A note on bureaucracy and its 'correlates'. American Journal of Sociology, November 1966, 72 (3), 267-272.
- Hall, R.H., Haas, E., & Johnson, H. Organizational size, complexity, and formalization. American Sociological Review, December 1967, 32 (6), 903-912.
- Hare, A.P. Handbook of small group research. New York: The Free Press, 1976.
- Heinicke, C., & Bales, R.F. Developmental trends in the structure of small groups. Sociometry, February 1953, 16 (1), 7-38.
- Heron, R.P. Growth stages in the development of college structures. Ph.D. dissertation, University of Alberta, 1972.
- Heron, R.P. The development of educational bureaucracies. Canadian Administrator, January 1973, 12 (4), 17-20.
- Heydebrand, W.V. The study of organizations. Social Science Information, October 1967, 6 (5), 59-86.
- Heydebrand, W.V. Hospital bureaucracy. New York: Dunellen Publishing Company, Inc., 1975.
- Heydebrand, W.V., & Noell, J.J. Task structure and innovation in professional organizations. In W.V. Heydebrand (Ed.) Comparative organizations. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973, 294-322.
- Hickson, D.J. A convergence in organizational theory. Administrative Science Quarterly, September 1966, 11 (2), 224-237.
- Hickson, D.J., Pugh, D.S., & Pheysey, D.C. Operations technology and organization structure: An empirical reappraisal. Administrative Science Quarterly, September 1969, 14 (3), 378-397.

- Hickson, D.J., Hinings, C.R., McMillan, C.J., & Schwitter, J.P. The culture-free context of organization structure: A tri-national comparison. Sociology, January 1974, 8 (1), 59-80.
- Hinings, C.R., & Foster, B.D. The organization structure of churches: A preliminary model. Sociology, January 1973, 7 (1), 93-106.
- Hinings, C.R., & Lee, G.L. Dimensions of organization structure and their context: A replication. Sociology, January 1971, 5 (1), 83-93.
- Hinings, C.R., Pugh, D.S., Hickson, D.J., & Turner, C. An approach to the study of bureaucracy. Sociology, January 1967, 1 (1), 61-72.
- Hirsch, P.M. Organizational effectiveness and the institutional environment. Administrative Science Quarterly, September 1975, 20 (3), 327-344.
- Holdaway, E.A., Newberry, J.F., Hickson, D.J., & Heron, R.P. Dimensions of organizations in complex societies: The educational sector. Administrative Science Quarterly, March 1975, 20 (1), 37-55.
- Homans, G.C. The human group. New York: Harcourt, Brace and Company, 1950.
- Hurwitz, J.I., Zander, A.F., & Hymovitch, B. Some effects of power on the relations among group members. In D. Cartwright & A. Zander (Eds.) Group dynamics. New York: Harper and Row, Publishers, 1958, 291-297.
- Inkson, J.H.K., Pugh, D.S., & Hickson, D.J. Organizational context and structure: An abbreviated replication. Administrative Science Quarterly, September 1970a, 15 (3), 347-363.
- Inkson, J.H.K., Schwitter, J.P., Pheysey, D.C., & Hickson, D.J. A comparison of organization structure and managerial roles: Ohio, U.S.A. and The Midlands, England. Journal of Management Studies, October 1970b, 7 (3), 347-363.
- Jones, H.R. Jr. A study of organization performance for experimental structures of two, three and four levels. Academy of Management Journal, September 1969, 12 (3), 351-365.

- Katz, D., & Kahn, R.L. The social psychology of organizations. New York: Wiley, 1966.
- Keeley, M. A social-justice approach to organizational evaluation. Administrative Science Quarterly, June 1978, 23 (2), 272-292.
- Kelley, H.K. Communication in experimentally created hierarchies. Human Relations, January 1951, 4 (1), 39-56.
- Khandwalla, P.N. Mass output orientation of operations technology and organizational structure. Administrative Science Quarterly, March 1974, 19 (1), 74-97.
- Khandwalla, P.N. The design of organizations. New York: Macourt Brace Jovanovich, Inc., 1977.
- Kirst, M.W., & Walker, D.F. An analysis of curriculum policy-making. Review of Educational Research, December 1971, 41 (5), 479-509.
- Knoop, H.R.G. Dimensions of job satisfaction as determinants of organizational effectiveness. Ph.D. dissertation, University of Ottawa, 1976.
- Kowitz, A.C., & Knutson, T.J. Decision making in small groups. Boston: Allyn and Bacon, Inc., 1980.
- Lawrence, P.R., & Lorsch, J.W. Organization and environment: Managing differentiation and integration. Boston: Harvard University Press, 1967.
- Lawrence, P.R., & Lorsch, J.W. Developing organizations: Diagnosis and action. Don Mills: Addison-Wesley Publishing Company, 1969.
- Levy, P., & Pugh, D.S. Scaling and multivariate analyses in the study of organizational variables. Sociology, 1969, 3, 193-215.
- Likert, R. New patterns of management. New York: McGraw-Hill Book Company, 1961.
- Lippitt, R.L., Polansky, N., & Rosen, S. The dynamics of power. Human Relations, 1952, 5 (1), 37-64.
- Litwak, E. Models of bureaucracy which permit conflict. American Journal of Sociology, September 1961, 67 (2), 177-184.

REFERENCES

134

- Mahoney, T. Managerial perceptions of organizational effectiveness. Management Science, 1967, 14 (2), 76-91.
- Mahoney, T., & Weitzel, W. Managerial models of organizational effectiveness. Administrative Science Quarterly, September 1969, 14 (3), 357-365.
- Mansfield, R. Bureaucracy and centralization: An examination of organizational structure. Administrative Science Quarterly, December 1973, 18 (4), 477-488.
- March, J.G., & Simon, H.A. Organizations. New York: John Wiley and Sons, Inc., 1958.
- Melcher, A.J. Structure and process of organizations. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1976.
- Meyer, M.W. The two authority structures of bureaucratic organization. Administrative Science Quarterly, September 1968a, 13 (2), 211-228.
- Meyer, M.W. Automation and bureaucratic structure. American Journal of Sociology, November 1968b, 74 (3), 256-264.
- Meyer, M.W. Expertness and the span of control. American Sociological Review, December 1968c, 33 (6), 944-951.
- Meyer, M.W. Size and the structure of organizations: A causal analysis. American Sociological Review, August 1972, 37 (4), 434-440.
- Ministry of Education of Ontario. The Formative Years. Toronto: Queen's Printer, 1975.
- Ministry of Education of Ontario. The Education Act. Toronto: Queen's Printer, 1976.
- Mohr, L.B. Organizational technology and organizational structure. Administrative Science Quarterly, December 1971, 16 (4), 444-459.
- Mooney, J.D. The principles of organization. New York: Harper and Row, Publishers, 1947.
- Moore, D.G., & Renck, R. The professional employee in industry. Journal of Business, January 1955, 28 (1), 58-66.

Mott, P.T. The characteristics of effective organizations. New York: Harper and Row, Publishers, 1972.

Negandhi, A.R., & Reimann, B.C. Task environment, decentralization and organizational effectiveness. Human Relations, 1973, 26, 203-214.

Newberry, J.F. A comparative analysis of the organizational structure of selected post-secondary educational institutions. Ph.D. dissertation, University of Alberta, 1971.

O'Reilly, C.A. III, & Roberts, K.H. Information filtration in organizations: Three experiments. Organizational Behavior and Human Performance, April 1974, 11 (2), 253-265.

Ouchi, W.G. The relationship between organizational structure and organizational control. Administrative Science Quarterly, March 1977, 22 (1), 95-113.

Ouchi, W.G., & Johnson, J.B. Types of organizational control and their relationship to emotional well being. Administrative Science Quarterly, June 1978, 23 (2), 293-317.

Owens, R.G. Organizational behavior in schools. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970.

Pennings, J.M. The relevance of the structural-contingency model for organizational effectiveness. Administrative Science Quarterly, September 1975, 20 (3), 393-410.

Perrow, C. A framework for the comparative analysis of organizations. American Sociological Review, April 1967, 32 (2), 194-206.

Pheysey, D.C., Payne, R.L., & Pugh, D.S. Influence of structure at organizational and group levels. Administrative Science Quarterly, March 1971, 16 (1), 61-75.

Pondy, L.R. Effects of size, complexity and ownership on administrative intensity. Administrative Science Quarterly, March 1969, 14 (1), 47-60.

Price, J.L. Organizational effectiveness. Homewood, Ill.: Richard D. Irwin, Inc., 1968.

Price, J.L. Handbook of organizational measurement. Lexington: D.C. Heath and Company, 1972a.

- Price, J.L. The study of organizational effectiveness. Sociological Quarterly, Winter 1972b, 13 (1), 3-15.
- Pugh, D.S. Modern organization theory. Psychological Bulletin, October 1966, 66 (4), 255-251.
- Pugh, D.S., & Hickson, D.J. The comparative study of organizations.. In D. Pym (Ed.) Industrial society. Middlesex: Penguin Books Ltd., 1968, 374-396.
- Pugh, D.S., & Hickson, D.J. Causal inference and the Aston studies. Administrative Science Quarterly, June 1972, 17 (2), 275-276.
- Pugh, D.S., Hickson, D.J., Hinings, C.R., Macdonald, K.M., Turner, C., & Lupton, T. A conceptual scheme for organizational analysis. Administrative Science Quarterly, December 1963, 8 (3), 289-315.
- Pugh, D.S., Hickson, D.J., Hinings, C.R., & Turner, C. Dimensions of organization structure. Administrative Science Quarterly, June 1968, 13 (1), 65-105.
- Pugh, D.S., Hickson, D.J., Hinings, C.R., & Turner, C. The context of organization structures. Administrative Science Quarterly, March 1969a, 14 (1), 91-114.
- Pugh, D.S., Hickson, D.J., & Hinings, C.R. An empirical taxonomy of structures of work organizations. Administrative Science Quarterly, March 1969b, 14 (1), 115-126.
- Read, W.H. Upward communication in industrial hierarchies. In G. A. Yukl & K.H. Wexley (Eds.) Readings in organizational and industrial psychology. New York: Oxford University Press, 1971, 71-81.
- Reimann, B. On the dimensions of bureaucratic structure: An empirical reappraisal. Administrative Science Quarterly, December 1973, 18 (4), 462-476.
- Reimann, B. Organizational effectiveness and management's public values: A canonical analysis. Academy of Management Journal, June 1975, 18 (2), 224-241.
- Robey, D., Bakr, M.M., & Miller, T.S. Organizational size and management autonomy: Some structural discontinuities. Academy of Management Journal, September 1977, 20 (3), 378-397.

- Rushing, W.A. The effects of industry size and division of labor on administration. Administrative Science Quarterly, 1967, 12 (2), 273-295.
- Sackney, L.E. A comparative analysis of the organizational structures and relationships of behavior in selected secondary schools. Ph.D. dissertation, University of Alberta, 1976.
- Samuel, Y., & Mannheim, B.F. A multidimensional approach toward a typology of bureaucracy. Administrative Science Quarterly, June 1970, 15 (2), 216-228.
- Schein, E.A. Organizational psychology. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970.
- Schwab, J.J. The practical 3: Translation into curriculum. The School Review, August 1973, 81 (4), 501-522.
- Scott, W.R. Reactions to supervision in a heteronomous professional organization. Administrative Science Quarterly, June 1965, 10 (1), 65-81.
- Scott, W.R. Professionals in bureaucracies: Areas of conflict. In H.M. Vollmer & D.L. Mills (Eds.) Professionalization. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966, 265-275.
- Sherif, M. A preliminary experimental study of inter-group relations. In J.H. Rohrer & M. Sherif (Eds.) Social psychology at the crossroads. Freeport: Harper and Row, Publishers, Inc., 1970, 388-424.
- Simpson, R.L., & Gulley, W.H. Goals, environmental pressures and organizational characteristics. American Sociological Review, June 1962, 27 (3), 344-351.
- Starbuck, W.H. Organizational growth and development. In J.G. March (Ed.) Handbook of organizations. Chicago: Rand McNally and Company, 1965, 451-533.
- Stauffer, R.E., Blau, P.M., & Heydebrand, W.V. Organizational complexities of public personnel agencies. Public Personnel Review, January 1966, 27 (1), 82-87.
- Steers, R.M. Problems in the measurement of organizational effectiveness. Administrative Science Quarterly, December 1975, 20 (4), 546-558.

- Stinchcombe, A.L. Bureaucratic and craft administration of production: A comparative study. Administrative Science Quarterly, September 1959, 4 (2), 168-187.
- Taba, H. Curriculum development: Theory and practice. New York: Harcourt, Brace and World, Inc., 1962.
- Thompson, V.A. Hierarchy, specialization, and organizational conflict. Administrative Science Quarterly, March 1961, 5 (4), 485-521.
- Thompson, V.A. Bureaucracy and innovation. Administrative Science Quarterly, June 1965, 10 (1), 1-20.
- Thompson, J.D., & Bates, F.L. Technology, organization and administration. Administrative Science Quarterly, December 1957, 2 (3), 325-343.
- Torrance, E.P. Some consequences of power differences on decision making in permanent and temporary three-man groups. In A.P. Hare, E.F. Borgatta & E.F. Bales (Eds.) Small groups. New York: Alfred A. Knopf, 1955, 482-492.
- Tyler, R.W. Basic principles of curriculum and instruction. Chicago: The University of Chicago Press, 1949.
- Udy, S.H. Jr. Bureaucracy and rationality in Weber's organization theory: An empirical study. American Sociological Review, December 1959, 24 (6), 791-795.
- Udy, S.H. Jr. Administrative rationality, social setting and organizational development. American Journal of Sociology, November 1962, 68 (3), 299-303.
- Udy, S.H. Jr. The comparative analysis of organizations. In J.G. March (Ed.) Handbook of organizations. Chicago: Rand McNally and Company, 1965, 678-709.
- Udy, S.H. Jr. Organization of work. New Haven: Hraf Press, 1967.
- Webb, R.J. Organizational effectiveness and the voluntary organization. Academy of Management Journal, 1974, 17 (4), 663-677.
- Weber, M. The theory of social and economic organization. Translated by A.M. Henderson & T. Parsons. Glencoe, Ill.: The Free Press, 1947.

- Weber, M. Essays in sociology. Translated by M.H. Gerth & C.W. Mills. New York: Oxford University Press, 1958.
- Weiss, E.C. Relation of personnel statistics to organizational structure. Personnel Psychology, Spring 1957, 10 (1), 27-42.
- Weiss, R.S. Processes of organization. Ann Arbor: University of Michigan Press, 1956.
- Wexley, K.N., & Yukl, G.A. Organizational behavior and personnel psychology. Homewood, Ill.: Richard D. Irwin, Inc., 1977.
- Wilensky, H.L. The professionalization of everyone? American Journal of Sociology, September 1964, 70 (2), 137-158.
- Woodward, J. Industrial organization: Theory and practice. London: Oxford University Press, 1966.
- Yuchtman, E., & Seashore, S.E. A system resource approach to organizational effectiveness. American Sociological Review, December 1967, 32 (6), 891-905.
- Zaleznik, A., Christensen, C.R., & Roethlisberger, F.J. The motivation, productivity, and satisfaction of workers. Boston: Harvard University Press, 1958.
- Zander, A. Groups at work. San Francisco: Jossey-Bass Publishers, 1977.
- Zwerman, W.L. New perspectives on organization theory. Westport, Conn.: Greenwood Publishing Corporation, 1970.

APPENDIX 1

THE INSTRUMENT TO MEASURE
BUREAUCRATIC DIMENSIONS

1.0 Hierarchical Control

This is a measure of the configuration of the organization's hierarchy incorporating (1) the height of the hierarchy, that is, the number of levels, (2) the average span of control, and (3) the cumulative authority and responsibility vested in each level -- in terms of the number of subordinates.

1.1 May I have a copy of your organization chart?

Obtained To Be Mailed

1.2 How many levels of authority are indicated on the chart/exist in this program department?

1.3 How many subordinates report to each level of the chart?

According to Reimann (1973), the hierarchical control index is computed from the following expression:

$$H = \frac{S_{act} - S_{min}}{S_{max} - S_{min}} \quad [sic] \quad (1)$$

where: H = hierarchical control index
 S = cumulative sum of the number of subordinates at all levels

The cumulative sum of the number of subordinates at all levels is computed as follows:

$$S_{act} = \sum_{i=1}^n S_i \quad (2)$$

where: S_i = number of subordinates reporting to the i th member of the organization ($0 \leq S_i \leq n-1$)
 n = total number of members in organization (including chief executive)

The maximum value of S for a given organization size would occur if every member of the organization except the bottom one had one immediate subordinate. This would be the tallest possible hierarchical structure with maximum number of levels.

In this case:

$$S_{\max} = \sum_{i=1}^n (n-i) \quad (3)$$

$$= (n-1) + (n-2) + \dots + 1 + 0 \text{ or}$$

$$S_{\max} = \frac{n(n-1)}{2} \quad [\text{sic}]$$

The minimum value of S would occur where all but one member of the organization ($n-1$) report to one chief executive. This would be the flattest possible structure. That is:

$$S_{\min} = (n-1) \quad (4)$$

Once the values of S_{act} , $S_{\max}$, and $S_{\min}$ have been determined, the hierarchical structure index can readily be computed from equation (1) above.

The sum of the cumulative number of total employees at and below each level from the bottom to the top will also give S_{act} . Special assistants, secretaries and the like are considered as belonging to the level below their immediate supervisor.

This index then measures the extent to which the cumulative authority and responsibility at all the organization's levels exceeds the minimum possible.

Since this measure is expressed as a proportion of the difference between maximum and minimum possible values of cumulative authority and responsibility, the effect of organization size is partialled out. (Reimann, 1973: 475-476).

¹ Although this is the format in which these formulae were reported by Reimann (1973), they contain obvious errors. The correct entries should be the following:

$$H = (S_{\text{act}} - S_{\min}) / (S_{\max} - S_{\min}) \quad (1)$$

$$S_{\max} = \sum_{i=1}^n (i-1)$$

$$= (n-1) + (n-2) + \dots + 1 + 0 \text{ or}$$

$$S_{\max} = \frac{n(n-1)}{2} \quad (3)$$

However, the fact that these formulae were published incorrectly did not influence in any way the computations that were made in this study.

BUREAUCRATIC DIMENSIONS

143

2.0 Centralization Index

The degree of centralization in the organization is given by the locus of decision-making on topics from a set list as well as the degree of participation and information sharing. The score is obtained by averaging the rankings obtained for all eight items.

2.1 Locus of Decision Making (Programs Developed Any One Year)

- | | |
|---|---|
| (a) Broad representation of supervisors and employees | 1 |
| (b) Chief executive and supervisors | 2 |
| (c) Chief executive alone | 3 |
| (d) Superintendents' Council or Director | 4 |

2.2 Locus of Decision Making (Development Process Followed Any One Year)

- | | |
|---|---|
| (a) Broad representation of supervisors and employees | 1 |
| (b) Chief executive and supervisors | 2 |
| (c) Chief executive alone | 3 |
| (d) Superintendents' Council or Director | 4 |

2.3 Locus of Decision Making (Implementation Process Followed Any One Year)

- | | |
|---|---|
| (a) Broad representation of supervisors and employees | 1 |
| (b) Chief executive and supervisors | 2 |
| (c) Chief executive alone | 3 |
| (d) Superintendents' Council or Director | 4 |

2.4 Locus of Decision Making (Evaluation Process Followed Any One Year)

- | | |
|---|---|
| (a) Broad representation of supervisors and employees | 1 |
| (b) Chief executive and supervisors | 2 |
| (c) Chief executive alone | 3 |
| (d) Superintendents' Council or Director | 4 |

2.5 Locus of Decision Making (Staffing Policies)

- | | | |
|-----|--|---|
| (a) | Broad representation of supervisors and employees. | 1 |
| (b) | Chief executive and supervisors | 2 |
| (c) | Chief executive alone | 3 |
| (d) | Superintendents' Council or Director | 4 |

2.6 Locus of Decision Making (Selection of Supervisors)

- | | | |
|-----|---|---|
| (a) | Broad representation of supervisors and employees | 1 |
| (b) | Chief executive and supervisors. | 2 |
| (c) | Chief executive alone | 3 |
| (d) | Superintendents' Council or Director. | 4 |

2.7 The Degree of Participation in Long-Range Planning

- | | | |
|-----|---|---|
| (a) | Broad representation of supervisors and employees | 1 |
| (b) | Chief executive and supervisors | 2 |
| (c) | Chief executive alone | 3 |
| (d) | Superintendents' Council or Director | 4 |

2.8 The Degree of Information Sharing

- | | | |
|-----|---|---|
| (a) | Considerable -- general memos or information meetings on all major aspects of the department's operation | 1 |
| (b) | Fair -- special reports on department's operations distributed to chief executive and supervisors only | 2 |
| (c) | Little -- all information kept secret from everyone except the chief executive or a few top-level supervisors | 3 |
| (d) | None | 4 |

3.0 Functional Specialization

A function is specialized when at least one person performs that function and no other function. No account is taken of either (a) the specialist's status or (b) whether an organization has many specialists or only one. For each activity for which there is a specialist, the organization scores one.

- 3.1 Develop, legitimize, and symbolize the department's charter -- for example, a public relations officer, a person who advertises the services of the department to the rest of the Board, a coordinator of publications, etc.
- 3.2 Dispose of, distribute, and service the programs produced -- for example, a person in charge of handing out guidelines, overseeing their implementation, and collecting comments on their merits.
- 3.3 Carry program outlines and resource material from place -- for example, a transportation or shipping clerk.
- 3.4 Acquire and allocate human resources -- for example, a personnel officer.
- 3.5 Develop and transform human resources -- for example, a training officer or a person in charge of internal professional development.
- 3.6 Maintain human resources and promote their identification with the department -- for example, a magazine editor, a sports or social director, a health officer.
- 3.7 Obtain and control materials and equipment -- for example, a purchasing manager, or a stock control clerk.
- 3.8 Maintain and erect buildings and equipment -- for example, an audiovisual technician or a maintenance engineer.
- 3.9 Record and control financial resources -- for example, an accountant.
- 3.10 Control the workflow -- for example, a planning director.

- 3.11 Control the quality of programs produced -- for example, a proofreader, or a person who checks draft documents over before they are produced.
- 3.12 Assess and devise ways of developing the programs.
- 3.13 Devise new programs and resources.
- 3.14 Develop and operate administrative procedures -- for example, a person in charge of filing, statistics or research.
- 3.15 Deal with the legal and insurance requirements -- for example, a person in charge of obtaining reprint permission or copyrighting programs produced.
- 3.16 Acquire information on the operational field -- for example, a subject matter specialist, child psychologist or curriculum expert.
- 3.17 Process information -- for example, a person in charge of tabulating evaluation results, or of surveying available commercial programs.

4.0 Formalization of Role Definition

The degree of formalization of role definition in the department is given by the number of specific role-defining documents, from a set list, which exist in the department, and, in some cases, the extent of their application or distribution.

4.1 Information booklets given to:

None	0
Few employees	1
Many employees	2
All employees	3

4.2 Number of information booklets:

None	0
1	1
2	2
3	3
4 or more	4

Total number:

4.3 Organization chart given to:

None	0
Chief executive only	1
Chief executive plus one other person	2
Chief executive plus all/most department members	3

4.4 Written operation instructions:

1

/ 4.5 Written terms of reference or job description:

For curriculum writers or professional development officers	1
For curriculum supervisors	1
For support personnel (clerical)	1
For chief executive	1

BUREAUCRATIC DIMENSIONS

148

- 4.6 Manual of procedures: 1
- 4.7 Written statements of policies 1
- 4.8 Written workflow (production) schedule or program 1
- 4.9 Written reports on progress and activities 1
- 4.10 Written specialized contracts of employment 1

APPENDIX 2

THE INSTRUMENT TO MEASURE
ORGANIZATIONAL EFFECTIVENESS

ORGANIZATIONAL EFFECTIVENESS

150

For each of the seven questions which follow, select one answer and mark it with an X.

- (1) On the basis of your experience and information, how would you rate the quality of CURRICULUM DEVELOPMENT that GENERALLY occurs in your program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (2) On the basis of your experience and information, how good, would you say, is the TRANSLATION OF BROAD MINISTRY OF EDUCATION GOALS INTO RELEVANT LOCAL OBJECTIVES in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (3) On the basis of your experience and information, how good, would you say, is the OUTLINING OF SUITABLY ORGANIZED EDUCATIONAL EXPERIENCES TO ACHIEVE THOSE GOALS in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (4) On the basis of your experience and information, how good, would you say, is the PROVISION FOR INDIVIDUAL DIFFERENCES IN STUDENT AND TEACHER INTERESTS AND ABILITIES in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (5) On the basis of your experience and information, how good, would you say, is the PROVISION OF GUIDELINES FOR THE EVALUATION OF STUDENT LEARNING in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (6) On the basis of your experience and information, how good, would you say, is the IMPLEMENTATION PROCEDURE in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

- (7) On the basis of your experience and information, how good, would you say, is the EVALUATION OF THE EFFECTIVENESS OF THE CURRICULUM DEVELOPMENT PROCESS in this program department?

☐ Outstanding
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Rather poor
☐ Poor

APPENDIX 3

RAW SCORES

RAW SCORES

153

Board Code	Hierarchical Control Index	Centralization Index	Functional Specialization Score	Formalization of Role Definition	Organizational Effectiveness Score
01	0.20	1.25	13.0	05.0	5.08
02	0.14	2.38	17.0	05.0	4.98
03	0.14	1.62	11.0	06.0	4.88
04	0.16	2.25	22.0	08.0	4.18
05	0.10	2.25	46.0	20.0	4.74
06	0.24	1.75	11.0	09.0	4.84
07	0.13	1.50	31.0	07.0	4.57
08	0.21	2.00	27.0	17.0	5.05
09	0.83	2.00	10.0	05.0	5.10
10	0.60	2.12	13.5	05.0	5.37
11	0.12	3.00	25.5	10.0	4.51
12	0.19	2.00	14.0	10.0	4.77
13	0.12	2.19	31.0	15.0	4.06
14	0.47	3.00	10.0	16.0	4.36
15	0.15	2.81	24.0	16.0	4.18
16	0.42	2.69	17.0	04.0	4.68
17	0.17	1.89	13.0	19.0	4.20
18	0.09	2.25	25.5	16.0	3.90
19	0.21	2.12	27.5	17.0	4.45
20	0.12	2.37	12.0	03.0	4.23
21	0.55	1.75	54.0	05.0	4.96
22	0.18	1.38	24.0	19.0	4.49
23	0.18	2.94	18.5	08.5	4.38
24	0.10	1.88	40.0	15.0	4.80
25	0.21	1.31	30.0	20.0	4.06

APPENDIX 4

A BRIEF DESCRIPTION
OF PROGRAM DEPARTMENTS

A BRIEF DESCRIPTION OF PROGRAM DEPARTMENTS

Through the investigative procedure in this study, the researcher became quite familiar with twenty-five program departments in the province of Ontario. Their common characteristics, as observed subjectively by the researcher and as suggested in the numerous comments submitted by curriculum workers, are described briefly in this appendix. The description includes their function, their structure, their relation to other departments in the school board and the striking organizational climate found within them.

Program departments, or curriculum departments as they are occasionally called, have historically consisted of a number of master teachers or consultants available to advise, but not to supervise, classroom teachers. In 1975, when the Ministry of Education made it clear that it would no longer provide detailed courses of study, that school boards were expected to develop curriculum locally in response to regional needs while still being consistent with provincial philosophy, these departments expanded and changed direction. Although some classroom consultation continued, the main function of the program departments became curriculum development.

Consultants and well-respected teachers began to be selected on a permanent or secondment basis to prepare documents in all the subject areas. At the time of the

present study, most boards had completed dozens of curriculum guides, guides which were often massive, directly relevant to the classroom teacher, and attractive enough to compete with many commercial programs. Although the writing of documents still continued, at the time of the study considerable emphasis was being placed on the implementation and evaluation phases of curriculum development.

A great deal of pride was frequently expressed concerning the quality of the educational programs which had been and were being produced. Coupled with that pride, however, was a growing concern for the level of implementation of these programs in classrooms. Change strategies of all varieties were being debated, adapted and tested. Considerable concern was also frequently expressed that adequate feedback be obtained, so that a continual process of document evaluation and revision could take place. When studied, few boards had actually begun to implement comprehensive evaluation policies, however.

Two main categories of organizational structure existed within these program departments. In some boards, documents were written mainly by the consultants and their assistants. Each of these curriculum workers had thus over the years developed many educational programs. In other

boards, however, teachers were assigned on a project basis. A writing team would develop and implement one curriculum guide, and then disband, although some provision for subsequent monitoring of the program in action was common. Occasionally, an outside expert in a particular area was hired on a contract basis to develop a particular program.

Two main categories of structural liaison also existed between the program departments and the rest of the board. Usually one or more superintendents were responsible for the program department and no other. These superintendents would report to the Director of Education, and so were on a hierarchical level equal or superior to the other superintendents in the board. Occasionally, however, and particularly in the smaller boards, several superintendents shared curriculum responsibilities as well as being in charge of schools. Thus, one administrator was responsible for two families of schools and the curriculum areas of English, music and environmental studies. Typically superintendents in this sort of situation expressed concern that their time was too limited to fulfill all of their roles, that their supervision of program development constantly suffered.

The curriculum workers themselves were all originally classroom teachers, although some had been performing consultative services for as many as twenty years. A considerable majority of these workers had, in addition to professional qualifications as teachers, some training in curriculum development as well.

It was immediately apparent that these curriculum workers envisaged their role as central to the educational process, and very important to society in general. A typical working day voluntarily extended far beyond normal teaching or office hours, and much pride and enthusiasm concerning curriculum projects was frequently expressed. Since program department employees were generally selected because of their reputations as excellent teachers, they saw themselves as composing highly qualified teams to do very important work. Needless to say, considerable frustration was frequently expressed by teachers in term positions when their time in the program department approached its end.

In summary, the program departments in this study consisted in general of highly motivated and expert teams nested within the larger school board structure. They developed curriculum guides with great enthusiasm as well as a serious sense of responsibility, and, at the time of this study, were beginning to broaden their roles

to attack the problems of implementation and evaluation
with the same vigour.

APPENDIX 5

ABSTRACT OF
The Relationship Between
Organizational Structure and Effectiveness
in School Board Program Departments

Abstract of
The Relationship Between
Organizational Structure and Effectiveness
in School Board Program Departments

Derived from a concern over the lack of empirically-based guidelines for the organization of effective program departments, this study examined the relation of four structural variables to operational goal achievement in the school board units assigned curriculum development responsibilities.

Weber's (1947) theory of bureaucracy suggested that an ideal organizational structure consisted of several specific dimensions. Subsequent theorists and researchers concluded that each of these dimensions was present to varying degrees in different organizations. Demands placed on the organization by the nature of its task, environment and employees resulted in some structures being more effective in certain classes of organizations than others.

The creative, problem-solving nature of the curriculum development task, as well as the unpredictability of the environment and the professional character of the employees working in school board program departments were analyzed, and predictions formulated concerning an optimum organizational structure for the achievement of program department goals.

It was hypothesized that program departments with flatter configurations, and lower degrees of centralization, specialization and formalization would have a higher degree of organizational effectiveness than departments with steeper

hierarchies and higher levels of centralization, specialization and formalization.

Twenty-five school board program departments were randomly selected across Ontario to participate in the study. Their organizational structures were measured in interviews with the Superintendents of Program, using Samuel and Mannheim's (1970) hierarchical control index and the abbreviated Aston measures (Reimann, 1973) for centralization, specialization and formalization. Organizational effectiveness was gauged using a modified Georgopoulos-Mann (1962) instrument with all program department employees.

A multiple regression analysis revealed that lower degrees of centralization and formalization were related as predicted to significantly higher levels of organizational effectiveness. Specialization was not found to be significantly related to effectiveness. An explanation of this unforeseen result was suggested by the observation of an actual absence of rigidly defined functions regardless of the number of formally labelled "specialties" existing in a department.

Configuration was found to be significantly related to organizational effectiveness, but in the opposite direction to that hypothesized. This finding was explained by two factors. First, the high volume of communication required by professional employees in decentralized decision

making necessitated narrower spans of control and so steeper hierarchies. This structure was not seen as relating to closer supervision, but rather to participative decision making in all areas. Second, curriculum workers appeared to grant their supervisors expert rather than legitimate power. The anticipated, dysfunctional professional hostility to hierarchical authority did not, therefore, exist. *

The following recommendations were made for educational practice. Program departments should be organized with a serious concern for the needs of the professional employees who work within them, as well as the creative nature of their task and the unpredictability of their environment. Such departments should be structured with steep configurations and narrow spans of control, enabling extensive two-way communication to take place on all matters within the department. Decision making should be decentralized, with the genuine participation of all employees in matters relevant to their functions actively sought. Finally, rigidly standardized roles and procedures should be avoided; employees should be free to establish new procedures to deal with each problem as it arises. It was suggested in this way that steeper configurations combined with lower levels of centralization and formalization would be related to more effective goal achievement.

ABSTRACT

164

The contributions of this study were twofold. Providing an application of the Aston methodology to school boards, it extended and tested organizational theory in relation to effective structures for a particular task, environment, and type of employee. Secondly, it established a guide for the organization of effective program departments. Given the crucial role of these departments in the achievement of society's educational goals, and the crucial role of such goal achievement in the development of future civilization, the establishment of such a guide was seen as a contribution of considerable importance.