STRUCTURAL AND ATTITUDINAL EFFECTS ON ORGANIZATIONAL PRIORITIES

Dissertation for the Degree of Ph. D.

MICHIGAN STATE UNIVERSITY
HARLOWE G. HATLE

1975

This is to certify that the

thesis entitled

STRUCTURAL AND ATTITUDINAL EFFECTS
ON ORGANIZATIONAL PRIORITIES

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Sociology

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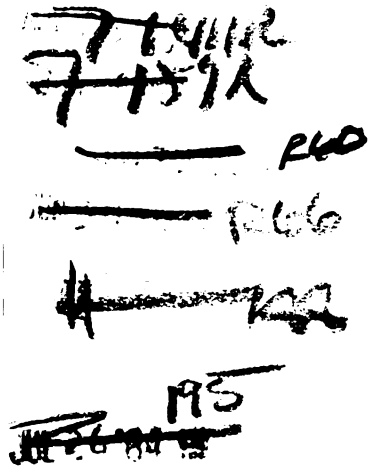
Date 4/22/75

O-7639



ABSTRACT

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by

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The problem under investigation in this study was the effect of (a) organizational variables and (b) perceived need for increased supervision on salary priorities given selected activities in an institution of higher education. Specifically, the investigation attempted to determine (a) if the organizational variables, affluence, size, faculty salaries, complexity and faculty qualifications influenced perceived need for closer hierarchical control and/or closer collegial control of bureaucratic and/or professional activities; and (b) what influence the above organizational and attitudinal variables had on the activities of academic advising of students, job counseling of students, personal values and ethics, popularity with students, publications, research, service activities in the community and service activities in the university.

The data forming the organizational variables were gleaned from official university records, while the data on supervision and salary priorities were obtained from a mailed questionnaire given on a medium sized north central state

university. The 151 respondents were divided into five colleges/schools based on their departmental affiliation. The five colleges/schools were then ranked on each of the organizational variables. The study utilized percentage analysis, Yule's Q and multiple regression.

The data indicate that faculty do not see an overwhelming need for closer supervision from any source, but if there is to be closer supervision, strong preference is given to collegial versus hierarchical supervision and to closer supervision of bureaucratic versus professional activities.

Increased size and complexity raised the probability that greater need for closer hierarchical versus closer collegial supervision would be perceived, while increased faculty qualifications and salary raised the probability that greater need for closer collegial versus closer hierarchical supervision would be perceived. Increased affluence reduced the probability that greater need for closer supervision from any source would be perceived.

Regarding salary priorities, neither size nor complexity were as strong as influence as anticipated, but both increased size and complexity indicated a slight raise in the probability that greater priority would be given to the discipline oriented activities versus local oriented activities. Increased faculty salaries affected salary priorities in a manner similar to size and complexity.

Faculty qualifications were positively correlated to increased priority for local oriented activities while affluence had a positive correlation with both local oriented and discipline oriented activities.

General statements are offered in regards to (1) source of supervision, (2) type of activity supervised, (3) the effect of organizational resources and organizational structure on supervision, and (4) goals and reward priorities. Some suggestions for future research are offered.

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By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology

1975

ACKNOWLEDGEMENTS

This dissertation owes its completion to the help of several individuals and organizations. On a technical level, particular appreciation is given to Philip Marcus, my major professor, and Professors Jay Artis, James McKee and Donald Olmstead, my committee members. The people of the Computer Center at the University of South Dakota were invaluable during the data analysis, as was the environment which Donald Habbe of the College of Arts and Sciences was able to create for this project. On a less technical level, the succession of people who have assisted in typing and coding the questionnaires, often for no compensation, are priceless. My friends on the faculty who have joked with me on delayed completion have provided help, both technical and social. On a totally nontechnical level, my wife, Lynne, my sons, Michael and Aaron, and my parents, Carl and Esther (who can all now wave at the camera) have been a constant and essential support. Maybe a vacation this year without the sheaf of papers.

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CHAPTER I

INTRODUCTION

The Problem

On a theoretical level, this study attempts to link (a) the organizational theories which advance the proposition that structural factors determine the type of control system in the organization and (b) the social psychological theories which advance the proposition that perception determines activity.

This research explores the relationships among (a) organizational structure, (b) perceived need for supervision relative to professional and bureaucratic orientations, and (c) perceived roles, goals and functioning of the university. At a time when higher education faces increasing pressure, both from inside and outside the system, we require additional understanding of the relations between organizational structure and employee perceptions. The primary purpose of this study will be to determine if organizational structure affects the identification of certain activities as professional, indicating collegial control, or bureaucratic, indicating hierarchical control. A secondary purpose will be to determine if the difference between a professional orientation and a bureaucratic orientation results in a different perception of the university.

Review of Literature

Structural Factors

One distinguishing aspect of organizations is that they are social inventions which, as Etzioni states, specialize in "getting things done."[1] The organization's effectiveness is based on its ability (1) to effectively coordinate its members and the subunits which comprise the organization,[2] and (2) to adjust to a dynamic task environment and general milieu.[3] A major assumption underlying this research is that this coordination necessarily presumes such a degree of interdependence that changes in any structural variable, or set of structural variables, has ramification throughout the organization.

The higher education system is certainly not immune to the dual necessity of coordination and adjustment despite the commonly held fallacy that academicians operate in an "ivory tower" and need not concern themselves with mundane efforts directed toward preserving and improving the organizations, i.e., colleges and universities, which provide the settings for intellectual work.

The ivory tower myth is presently more likely recognized as a myth due to a number of developments which have impacted on higher education:

(1) a rise in expenditures for higher education from 1.1 to 2.5 percent of GNP during the past decade;

(2) recent increases in overt dissent and disruption on campuses;

(3) public attention focused on the contribution higher education may give in helping solve social problems of all types;

(4) the increase of public policy control as exemplified by increased regulatory control in all aspects of society;[4]

(5) the propagation of research centers and institutes which actively solicit outside recognition and funding.

The crux of these developments has been increased visibility for the university. Unlike the old saw attributed to Hollywood aspirants during the early days of motion pictures--"Any publicity is good publicity"--higher education must operate in a system where not all publicity is good. The Carnegie Commission on Higher Education[5] predicts a slowing down of the rates of enrollment growth for the 1970's and a situation in which the rates "will temporarily cease entirely in the 1980's." The Carnegie Commission predicts that at this stage expanding fields will not be "add-ons" but rather "replacements" in higher education.[6]

Facing this austere future, the only apparent substantive and unanimous agreement among researchers is that higher education institutions have increased in size and complexity in recent times.[7] Even in this agreement, Ben-David points out that universities were large even in the middle ages; therefore, large size is not a totally recent development.[8]

If there is agreement on the existence of both increasing size and increasing complexity in higher educational institutions, this agreement disappears when the topics of their interrelations and consequences are broached. Goodman,[9] Hutchins,[10] and Brown[11] each decry the deterioration of academics due to the intrusion of bureaucratic mechanisms. The title of Presthus' article, "University Bosses: The Executive Conquest of Academe," is perhaps the best succinct description of the position taken by the above scholars of education.[12] Dykes writes, "the ability of faculties to play a meaningful role in decision making is increasingly challenged as institutions grow larger and more complex and as the decision-making processes become more bureaucratized and formalized."[13]

Cowley[14] and Blau,[15] for different reasons, disagree with the previous writers regarding size and complexity. Cowley's argument appears a variant of Blau and Scott's cui bono classification system of organization.[16] Cowley believes that professors have lost sight of those for whom the education system was created, i.e., students and the general society, and consequently have developed a collegial system to control higher education for the benefit of professors.[17] The development of hierarchical mechanisms is perceived as one means of returning control and benefit to their rightful place.

Blau disagrees with the critics of increased size and complexity on a number of grounds. Blau states that

"universities and colleges have administrative structures that are similar to those of other bureaucracies," but that the same structural features do not have the same significance for each.[18] Blau also illustrates that larger universities have disproportionately smaller administrative units and instead of being rigid, are more likely than smaller institutions to innovate by the development of new fields of study. Larger size also tends to reduce the "paternalistic" centralization of authority possible in a smaller institution. Blau believes that the increases in size and complexity actually serve to give professors increased autonomy and research possibilities rather than binding them by greater bureaucratic restraints.[19] It should be noted that some of the bureaucratic features may have "deleterious consequences for educational performance," particularly for undergraduates.[20]

Much of the debate regarding the consequences of structural changes either explicitly or implicitly revolves around professional-bureaucratic poles, with the professional pole usually regarded as faculty supportive and the bureaucratic pole as administrative supportive. The difficulty with this conception is the zero sum dimension; any increase in administrative control or influence must be at the expense of the faculty and vice versa.[21]

This posture appears erroneous. Dyke's position that "faculty power and administrative power are, in a sense, fused,"[22] with each depending on the other, appears more

nearly to approximate the real situation. Even a cursory examination of the origin of prestigious (hopefully correlated with quality) institutions indicates the presence of "powerful" administrators during their development.[23]

The preceding portion of this literature review limited itself to studies of organizations engaged in higher education, but universities have much in common with other types of organizations. Dykes, for example, writes, "as universities grow larger and more complex, they tend to take on characteristics of other large organizations; structural superordination and subordination are accentuated, rules and regulations become more important, hierarchical authority increases, and universities move away from the characteristics of community and collegiality. In a word, they become bureaucratic."[24] In reference to administrative structure, Blau states the "structure of universities and colleges is amazingly homologous to that of other types of organizations."[25] With at least a degree of commonality established between organizations engaged in higher education and organizations engaged in other functions, the review will expand into the both more abundant and more abstract methodological and theoretical literature on organizations.

The remainder of this review draws heavily from the work of Blau, both singly and in collaboration, direct and indirect, with his students and colleagues.

Heydebrand compiled an inventory of structural variables for the "systematic, quantitative-comparative analysis of

large-scale, complex, formal organizations" regardless of whether the analysis be interorganizational or intraorganizational in nature.[26] Using his review, we will stress those studies connected to particular structural variables most relevant to our work, i.e., (a) complexity, (b) size, and (c) resources.

Complexity refers to the degree of differentiation within an organization, and is usually defined along two dimensions, horizontal and vertical. The latter refers to levels in the authority system, and the former refers to either (a) the number of distinct occupations in a unit or (b) the number of distinct subunits in an organization.[27] Since this study is not concerned with authority levels as such, attention focuses on horizontal complexity, as measured by the number of subunits, i.e., departments in a college/school.

Complexity as utilized here approaches Hage and Aiken's indicators of occupational specialties,[28] but is more nearly analogous to Blau and Schoenherr's "major subunits" of employment security agencies which were termed "the first order of horizontal structural differentiation in an organization."[29] Blau and Schoenherr operationalized a major subunit as one in which the "head . . . always reports to the top management of an organization."[30] The organizational chart of the university investigated places the dean of each college/school directly responsible to the university president.

Size can be defined along a number of dimensions. Hall, Haas and Johnson operationalize size in terms of the number of members,[31] while Hage and Aiken[32] and Blau[33] and the majority of his colleagues operationalize size in terms of the number of employees. Other variables have also been used to measure size. Price[34] cites Melman as using five: (1) number of production personnel, (2) total assets, (3) average number of wage earners per establishment, (4) average value added by manufacture per establishment, and (5) net sales.[35] Despite defensible alternatives, organizational literature generally defines size in terms of personnel, either as members or employees. This research will define size in terms of employees.

Size, one of the first structural variables used in organizational analysis, was initially considered the causal variable affecting the degree of complexity in organizations or societies. Simmel contended: "The size immediately determines the form."[36] Durkheim thought that increasing population density led to increasingly complex patterns of organization.[37] Weber saw size as one of the major factors which lead to bureaucracy and the development of the rational-legal authority so necessary to effectively coordinate emerging complex systems.[38] Michels saw size as one of the factors which led to the "Iron Law of Oligarchy."[39] According to Michels, increased size leads to increased complexity leads to increased specialization and finally increased centralization of information for coordination purposes.

Utilization of the latter allows those occupying the higher positions to perpetuate their control with eventual development of an oligarchy.

Recent research more likely posits a relationship between a development in unit size and development in the administrative component of an organization rather than retention of specific personnel in administrative positions. Terrien and Mills in their study of elementary school districts substantiated the hypothesis, "The relationship between the size of an administrative component and the total size of its containing organization is such that the larger the size of the containing organization the greater will be the proportion given over to its administrative component."[40] Anderson and Warkov investigated the same phenomenon using data gathered from Veterans Administration hospitals in order to reassess Terrien and Mills' hypothesis.[41] Anderson and Warkov did not refute Terrien and Mills' conclusions, but added important qualifying conditions. Sheer growth in organizational size does not always result in disproportional increase in the administrative component; "the explanatory variable is organizational complexity rather than organizational size."[42] The administrative component increases directly as (a) the number of tasks performed at the same place increases, and (b) the number of places at which the tasks are performed increases. The size of the administrative component decreases as the number of people performing the same task at the same place increases.[43]

Boland in a study of publicly supported colleges and universities mentions "degree of organizational complexity" as of "particular importance" in the distribution of power in the university system,[44] yet the strong impact of size is evident when he summarizes the relationship as highlighting "the considerable importance of numbers in understanding these matters."[45] Blau's position with respect to the importance of size has been mentioned earlier.[46]

Many researchers have viewed resources, particularly resource surpluses, as the property of a system or organization which allows it to protect or expand its present domain.[47] Surplus resources are necessary to increase in size and to develop a high degree of division of labor yet each of the latter two contribute to the accumulation of resources.

Resources may be either concrete or abstract in nature. The abstract element of prestige has received less attention in the literature of organizations that the concrete element of finance, but of the major organizational assets, Thompson believes prestige is one of the most valued assets and yet one of the "cheapest."[48] Lenski states that "power will determine the distribution of nearly all of the surplus," and power leads to prestige, but to be "complete" Lenski states this conception needs to indicate "some feedback from prestige to power."[49]

Blau states that "the antecedent conditions that extend most influence . . . can all be conceptualized as resources

. . . human and institutional as well as financial assets."[50] Blau believes the last makes the first two possible; affluent institutions pay better salaries, have better qualified and larger faculties and "tend to be decentralized with respect to educational affairs."[51] Blau sees resources as a major factor in effectively allowing structural innovations in higher education.

Attitudinal Sets (Professional and Bureaucratic)

Thus far we have emphasized variables which will function as the original independent variables in this study. We now turn to dependent variables, professional and bureaucratic, which function as dependent variables in the first portion of the findings, particularly as they refer to hierarchical and collegial control.

Weber believed "bureaucracy and rationality necessarily went hand in hand"[52] (Constas is one who disagrees[53]) while his more recent successors have concentrated on demonstrating an inverse relationship between the presence of "rationality" (now more likely termed professional) and "bureaucratic characteristics."[54] Udy found support for the hypothesis that "mutual positive associations tend to exist between bureaucratic elements and also between rational elements, but that rational elements tend to be negatively associated with bureaucratic elements."[55]

This study will investigate the relation of activities operationalized as professional or bureaucratic activities

specific to the organization studied, without an assumption of rational or nonrational distinctions.

Much of the research to this time has operationalized professional and bureaucratic according to the proportion of administrative staff relative to "productive staff," i.e., those directly in the workflow pattern. The Terriens and Mills and Anderson and Warkov studies are two examples of this approach.[56] A second common way of operationalizing professional and bureaucratic is according to entrance qualification and routinization of work activities. Hage and Aiken's work utilizes this second approach.[57]

In regard to the first approach, the conceptualization is overly simplistic, particularly since earlier studies did not properly account for the degree of labor-intensiveness in production. Blau, looking at the social structure rather than technology, writes that rather than viewing few managers as indicative of wider spans of control, hence less supervision and more autonomy for employees, it is possible to view few managers as implying a more "centralized authority structure, which encourages . . . one-sided directives with little feedback . . . thus reducing the autonomy of subordinates."[58] Concerning the increasing internal division of labor and the resultant smaller supervision ratio, Heydebrand indicates the relation holds "only at the low levels of professionalization."[59] Reliance on the ratio of administrative to actual production employees does not appear a true measure of professionalization/bureaucratization

for all situations. The second approach also has drawbacks as an absolute indicator of professional standing since qualifications can vary quite widely. For example, Stinchcombe refers to the efficiency of the "highly professionalized manual labor force" in the construction industry,[60] while Blau, Heydebrand and Stauffer operationalize professionalization as "the proportion of the operating staff . . . who are required to have, at least, a college degree with a specified major."[61] Skill levels, per se, do not equate to professionalization. A third approach, similar to the one which will be advanced later in the methodology portion of this paper, incorporates each of the above dimensions plus the type of work involved in fulfilling work expectations. Hage and Aiken refer to "highly non-routine" positions as an indication of a professional position.[62] Not having a source to cite, perhaps because "what everyone believes no one believes with conviction," I would advance the assumption that all work positions contain some elements of both routine and non-routine activities, albeit the mixture is different. Reaching further, the assumption advanced is that there is a degree of isomorphism between professional organizations and the professional positions in them.

Higher education faculty have been both included and excluded as professionals.[63] This paper will follow the lead of Blau and his colleagues in considering higher education faculty as professionals.[64] This paper will also refer to units, i.e., colleges/schools, according to degree of

professionalism and/or bureaucracy, again analogous to a procedure used by Blau, Heydebrand and Stauffer.[65]

The university will be considered a professional organization since it meets the criteria advanced by Montagna: "(1) professional groups define and achieve the primary organization goals, (2) the majority of the people in the organization are professionals . . ." (true, if students are excluded as "in the organization"), "(3) administrative hierarchy of authority lies within the firm, whereas authority in professional matters is placed in the hands of the professional association, and (4) the profession promotes norms of personal autonomy and altruistic action in all matters relating to use of the body of knowledge."[66]

A caution, suggested by Price, is mentioned. Professionalization is a quality of an occupation, not of an organization nor any other social system.[67] The nature of the occupations in the organization, not the organization per se, is what designates an organization as a professional organization.

The position taken in this study regarding the nature of professional and bureaucratic will differ from that of Weber, who considered the two phenomena not only compatible but a logical outgrowth of each other.[68] The position taken here will also differ from that which views the two phenomena as independently or inversely related. V. Thompson has come closest to expressing the latter position in lay terms when he writes of "the growing gap between the right to decide

which is authority, and the power to do, which is specialized ability."[69] Kornhauser also reflects this orientation when he insists that examining professionals in bureaucracies is examining "the relation between two institutions, not merely between organizations and individuals."[70]

Dispensing with negatives, the position taken is similar to Hall who sees "the assumption of inherent conflict between the professional or the professional group and the employing organization . . . to be unwarranted."[71] In a society in which many professions are becoming bureaucratized and many bureaucracies are becoming professionalized,[72] insistence on their incompatibility appears forced.

Hall's study of professionalization and bureaucratization deals with both structural and attitudinal attributes.[73] The former consists of such items as formal education, entrance exams, etc., while the latter consists of such items as a sense of calling to the field, colleagues as the major work reference group, etc.

By the criteria advanced earlier, the structural attributes of professionalization can be taken as a given for this study. The respondents, due to their relationship with the university, are labeled as professionals. The attitudinal attributes, by virtue of their nature, cannot be created by fiat; therefore, their existence cannot be assumed.

Perceived need for professional autonomy, autonomy being one of the major attributes of the professional ideal type,[74] is an attitudinal attribute and a valid area for further research.

Hall states that "an equilibrium may exist between the levels of professionalization and bureaucratization in the sense that a particular level of professionalization may require a certain level of bureaucratization to maintain social control."[75]

If Hall is correct, on both the existence of an attitudinal attribute and some type of equilibrium, a logical extrapolation is that professionals in organizations develop attitudinal stances regarding their work activities as professional, hence subject to collegial control, or bureaucratic, hence subject to hierarchical control. I would interpret the statement in the Carnegie Commission report, Governance of Higher Education, "Selective independence--not autonomy--is the issue as we see it,"[76] to reflect a call for closer alignment of professional and bureaucratic spheres.

Respondents in Dyke's study of faculty involvement in decision making showed a "strong tendency to dichotomize decisions into 'educational' and 'noneducational' categories," a dichotomy Dykes termed "arbitrary and impractical" because of the interrelatedness of decisions. "If the faculty's influence is to be truly effective, surely it must be manifested in all areas."[77]

Faculty have proven an ability to deliberate, but not as great an ability to decide. Faculty should have input to the decision-making process, but to the present researcher, the distinction between educational and noneducational is neither arbitrary nor impractical; it is a matching of the

valid type of control system to the proper jurisdiction, and if faculty recognize this distinction, they should more likely be praised than blamed. "An institution cannot be well governed unless each of its components clearly recognized its obligations as well as its rights in the promotion of the common end."[78] Defining the boundaries, if existent, for collegial and hierarchical control appears a logical starting place if obligations and rights are to be clearly recognized.

This review has surveyed the literature on structural variables for (a) size, (b) complexity, and (c) resources, particularly as they occur in institutions of higher education. The review has also attempted to briefly trace the development of the study of bureaucracy and professionalism from the unity of existence Weber ascribed to them, to the inverse relation noted by Udy, to Hall who views them as phenomena which may need their influence balanced to some optimal equilibrium point if the organization is to be effective.

The introduction of Hall's division of structural and attitudinal attributes in conjunction with professional and bureaucratic work activities provides the stimulus to explore the relationships between the structural variables of an organization and attitudinal orientations relative to selected work activities.

Hypotheses

Blau's work with the structural analysis of organizations and Hall's work differentiating professional and bureaucratic characteristics by both their structural and attitudinal attributes were the major sources for the development of the hypotheses to be tested in this study. Combining the two, the following hypotheses are proposed. Table I.1, on pages 19 and 20, shows the hypotheses.

For the sake of parsimony the following shorthand will be utilized in stating the hypotheses: ↑ = greater, increase, etc.; ↓ = lesser, decrease, etc.; and → = affects, causes, etc. This same shorthand method will be used later in the study.

Table I.1 Hypotheses

Structural Factors	Attitudinal Set	Personal Beliefs
Size		
1) ↑number of faculty in→ the college	↑professionalization (↓bureaucratization)→	(a) ↓priority for academic advisement of students
		(b) ↓priority for job coun- counseling and career guidance of students
		(c) ↓priority for personal values and ethical standards
		(d) ↓priority for popularity with students
		(e) ↑priority for publica- tions
		(f) ↑priority for research activities
		(g) ↑priority for service activities in community
		(h) ↓priority for service activities in university

Table I.1 (continued)

Structural Factors	Attitudinal Set	Personal Beliefs
Complexity		
2) ↑number of departments→ in the college	↑professionalization (↓bureaucratization)→	same consequences for priorities as given in hypothesis 1
Resources		
3) ↑faculty qualifications→	↑professionalization (↓bureaucratization)→	same consequences for priorities as given in hypothesis 1
4) ↑average faculty salary→ in the college	↑professionalization (↓bureaucratization)→	same consequences for priorities as given in hypothesis 1
5) ↑affluence→	↑professionalization (↓bureaucratization)→	same consequences for priorities as given in hypothesis 1

Footnotes

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2. James Thompson. Organizations in Action. New York: McGraw-Hill. 1967. pp. 39-50.

3. Ibid., pp. 66-82.

4. Carnegie Commission on Higher Education. Governance of Higher Education. New York: McGraw-Hill. 1973. pp. 20-21.

5. Ibid., p. 8.

6. Ibid., p. 8.

7. Ibid., plus see Walter R. Boland. "Size, External Relations, and the Distribution of Power: A Study of Colleges and Universities" in Comparative Organizations, edited by Wolf V. Heydebrand. Englewood Cliffs, New Jersey: Prentice-Hall, 1973; Peter M. Blau. The Organization of Academic Work. New York: John Wiley and Sons. 1973.

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CHAPTER II

DATA AND METHODOLOGY

Collection of Data

The data were drawn from a project conducted on a medium-sized campus located in the North Central Plains. Two major sources of information were used to gather the data analyzed in this research: (a) a mailed questionnaire and (b) university records.

The mailed questionnaire was distributed May 6, 1972. The mailing of the questionnaires was preceded by publicity in the student newspaper and an introductory letter mailed three days before the mailing of the questionnaire. The time difference between first return and last return was forty-six days. This does present a time lapse with potential for responding to a changed environment, but nothing of great moment appeared to have happened during that span which would greatly alter responses on the campus.

Other data were provided by the following three university documents:

(1) the University's Operating Budget 1971-72 (fiscal year 1972),

(2) the University's Salary List 1971-72 (fiscal year 1972), and

(3) the registrar's corrected spring computer class enrollment printout.

The Operating Budget 1971-72 publication provided (1) the number of departments in each college or school, and (2) the total budget allocated to each college or school.[1]

The Salary List 1971-72 provided (1) the number of faculty in each college or school, (2) the number of faculty with and without professional degrees, and (3) the average salary in each college or school.[2]

The registrar's spring enrollment printout provided the total number of students enrolled in each college or school in the spring of 1972.

Since these documents are important to the operation of the University and are subject to scrutiny by the Board of Regents, the state legislature and the general public, it is assumed they are reliable and accurate. (See Appendix A.)

Operationalization of Variables

The organizational setting for this study is a medium-sized university, and much of the data is drawn from individual questionnaires, but the unit of analysis will be neither the University nor its personnel, but the subunits designated as colleges or schools on the University's main campus.

The investigation of organizations using comparative structural attributes of the organization as variables allows for analysis using the organization as a whole, not as characteristics of particular individuals. This approach means the organization, per se, becomes the unit of investigation rather than merely the environment in which the study

occurs. It is by the study of the organization, per se, not as setting, that "the special needs of the field--needs generated by the emergent properties of this type of social unit," will be answered.

Prior to specifically operationalizing each variable, the general class of variable as determined by their properties will be advanced following the guides developed by Lazarsfeld and Menzel.[4] It should be noted that each of the three types of properties--analytical, structural and global--describe collectives; organizations in this instance, not individuals.

According to Lazarsfeld and Menzel, global properties are those characterized "by properties which are not based on information about the properties of individual members."[5] The complexity variable in this study is developed from the global properties of the university.

The analytical "properties of collectives . . . are obtained by performing some mathematical operation on some property of each single member."[6] Size and the average faculty salary variables in this study are developed from the analytical properties of the university.

The structural "properties of collectives . . . are obtained by performing some operation on data about the relations of each member to some or all of the others."[7] The resources variables (with the exception of "average faculty salary" which is analytical) are developed from what Lazarsfeld and Menzel would term the structural

properties of the university. The terminology used by Lazarsfeld and Menzel for this property may be somewhat confusing since the term is the same as that used through the rest of this study to refer to the whole set of variables which are neither attitudinal nor phenomenological in nature.

The supervision indices are developed from analytical properties of the organization as are the priorities for faculty salary.

The operationalization of the structural variables will draw heavily from Blau and his associates.

Complexity

Price notes that complexity is discussed, among other terms, as division of labor, specialization, functional differentiation, departmentalization, etc.[8] Blau writes, "The index of the formally instituted academic division of labor is the number of departments."[9]

The indication of complexity for this study will be the number of departments in the college/school listed in the Operating Budget 1971-72.[10]

Size

Operationalization of size follows Blau's approach of using employees rather than members. Blau operationalizes size as "Total number of faculty, both full-time and part-time."[11] This research will modify Blau's operationalization along the lines suggested by Hall, Haas, and Johnson[12]

and will determine full-time equivalent faculty according to the percent employment listed in the university Salary List 1971-72.[13]

Resources

Resources will be operationalized using definitions advanced by Blau. One indicator of resources is affluence, the ratio of total budget to the total number of students in the college/school. This operationalization is analogous to Blau's designation which is operationalized as "the total revenue in dollars divided by total enrollment of both undergraduate and graduate students."[14]

A second indication of resources, average faculty salary, is operationalized as average academic year salary for 1971-1972. This operationalization is limited to an academic year and full-time equivalent faculty, but it is analogous to Blau's generationalization which defines salary as "average annual salary of full-time faculty . . ."[15]

A third indicator of resources, faculty qualifications, is operationalized as the ratio of faculty with a professional or Ph.D. degree to faculty members without a professional or Ph.D. degree. Blau defines faculty qualifications as "The percentage of the total faculty with Ph.D.'s or professional degrees."[16]

Professional and Bureaucratic Attributes

Self-regulation and autonomy are two related concepts widely used when characterizing professions. Self-regulation

is to grow out of "the concept of community" which "presupposes an organization in which functions are differentiated and in which specialization must be brought together, or coordination, if you will, is achieved not through a structure of superordination and subordination of persons and groups but through a dynamic of consensus."[17] Control in a profession is collegial control which develops out of technical competence rather than hierarchal position.[18]

Autonomy means the professional should not only be charged with the "supervision" of his peers, but should be free to select the manner and techniques by which he accomplishes the goals defined by him and his professional peers. The professional "ought to be able to make his own decisions without external pressures from clients, those who are not members of his profession, or from his employing organization."[19]

The elements above are disavowed in a bureaucracy. Friedrich refers to one of his six elements of bureaucracy as "centralization of control and supervision (hierarchical aspects)."[20]

The division of source of supervision to (a) legislature as bureaucratic (hierarchical control) and (b) peer as professional (collegial control) is along accepted dimensions differentiating the two concepts.

The division of type of activity into professional or bureaucratic is done on the basis of (a) complex routinization of activity and (b) specialized knowledge required for

each activity. Higher degrees of each of the above are assumed to be present in the activities: (a) content of courses, (b) selection of books and (c) assignments given, and consequently these activities are termed professional activities. Lower degrees are assumed to be present in the activities: (a) faculty absence from the classroom, (b) office hours for student appointments and (c) student advising.

The data for professional and bureaucratic designations were generated by the following portion of the questionnaire.

1. In your opinion should the faculty of USD be under closer supervision by the legislature in regards to the following?

   CHECK (✓) ONLY ONE ALTERNATIVE FOR EACH ACTIVITY.

	Definitely yes	Undecided, probably yes	Undecided, probably no	Definitely no
1) Content of courses taught	[ ]	[ ]	[ ]	[ ]
2) Selection of books	[ ]	[ ]	[ ]	[ ]
3) Assignments given	[ ]	[ ]	[ ]	[ ]
4) Faculty absence from the classroom	[ ]	[ ]	[ ]	[ ]
5) Office hours for student appointments	[ ]	[ ]	[ ]	[ ]
6) Student advising	[ ]	[ ]	[ ]	[ ]

2. In your opinion, should the faculty of USD be under closer supervision by their faculty peers in regards to the following?

   CHECK (✓) ONLY ONE ALTERNATIVE FOR EACH ACTIVITY.

	Definitely yes	Undecided, probably yes	Undecided, probably no	Definitely no
1) Content of courses taught	[ ]	[ ]	[ ]	[ ]
2) Selection of books	[ ]	[ ]	[ ]	[ ]
3) Assignments given	[ ]	[ ]	[ ]	[ ]
4) Faculty absence from the classroom	[ ]	[ ]	[ ]	[ ]
5) Office hours for student appointments	[ ]	[ ]	[ ]	[ ]
6) Student advising	[ ]	[ ]	[ ]	[ ]

Four variables were formed from the above.

Legpro which reflects attitudes toward closer supervision by the legislature of activities which are professional in nature (items 1 through 3 of question 1).

Legbur which reflects attitudes toward closer supervision by the legislature of activities which are bureaucratic in nature (items 4 through 6 of question 1).

Perpro which reflects attitudes toward closer supervision by faculty peers of activities which are professional in nature (items 1 through 3 of question 2).

Perbur which reflects attitudes toward closer supervision by faculty peers of activities which are bureaucratic in nature (items 4 through 6 of question 2).

Each of the last four variables consists of two dimensions: (a) source of supervision (legislative-external to the organization or faculty peers-internal to the organization), and (b) activity supervised (professional or bureaucratic).

Table II.1 is a correlation matrix of the items used to form the supervision indices. Table II.1 indicates that the scales have a high degree of intra-category correlation as shown in the "blocks" along the diagonal of the matrix. Reading to the right of the diagonal, the correlations are patterned in conformity to the logic advanced in the theoretical formulations. Table II.2 is developed from Table II.1. Table II.2 gives the arithmetic average of the correlations. The matrix adds support for these operationalizations since the elements appear to form both clusters of correlation and non-correlation as would be predicted from the theory.

Respondents were placed in the categories Legpro, Legbur, Perpro and Perbur based on a dichotomized summation of their scores on the items which made up the respective categories. A value of four was assigned for "Definitely yes," a value of three was assigned for "Undecided, probably yes," a value of two was assigned for "Undecided, probably no," and a value of one was assigned for "Definitely no." The scores of each respondent were summed within each category, and the study population was dichotomized in the manner prescribed by Davis.[21]

Salary Priorities

The priority responses were operationalized solely on the basis of faculty responses to the following set of statements concerning how much priority should be given selected activities when considering faculty salaries.

Table II.1 Correlation matrix of items used to form supervision indices

		Supervision											
		Legislature						Faculty Peers					
		Activity						Activity					
		Professional			Bureaucratic			Professional			Bureaucratic		
		1_L	2_L	3_L	4_L	5_L	6_L	1_P	2_P	3_P	4_P	5_P	6_P
Supervision Legislature Activity Prof.	1_L Content Courses	1.00	.63	.54	.40	.51	.46	.28	.26	.22	.15	.20	.25
	2_L Book Select		1.00	.84	.30	.34	.30	.17	.30	.28	.07	.05	.10
	3_L Class Assign			1.00	.33	.43	.33	.14	.39	.31	.10	.08	.11
Bur.	4_L Faculty Absence				1.00	.62	.56	.19	.17	.25	.28	.27	.28
	5_L Office Hours					1.00	.74	.23	.21	.23	.21	.37	.27
	6_L Student Advise						1.00	.23	.21	.19	.20	.34	.40
Faculty Peers Activity Prof.	1_P Content Courses							1.00	.57	.53	.49	.54	.47
	2_P Book Select								1.00	.70	.46	.52	.42
	3_P Class Assign									1.00	.47	.46	.35
Bur.	4_P Faculty Absence										1.00	.62	.46
	5_P Office Hours											1.00	.68
	6_P Student Advise												1.00

Table II.2 Intercorrelation averages for all activity/supervision combinations

		(a)	(b)	(c)	(d)
(a)	Legislature supervision of professional activities	.67 (Legpro)	.38	.25	.12
(b)	Legislature supervision of bureaucratic activities		.64 (Legbur)	.21	.29
(c)	Faculty peer supervision of professional activities			.60 (Perpro)	.46
(d)	Faculty peer supervision of bureaucratic activities				.59 (Perbur)

Below is a set of statements concerning salaries paid within the university. How much priority should each of the following be given when considering faculty salaries?

CHECK (✓) ONLY ONE ALTERNATIVE FOR EACH ACTIVITY.

	A high priority	Some priority	Little priority	No priority at all
(a) Academic advisement of students	[ ]	[ ]	[ ]	[ ]
(b) Job counseling and career guidance of students	[ ]	[ ]	[ ]	[ ]
(c) Personal values and ethical standards	[ ]	[ ]	[ ]	[ ]
(d) Popularity with students	[ ]	[ ]	[ ]	[ ]
(e) Publications	[ ]	[ ]	[ ]	[ ]
(f) Research activities	[ ]	[ ]	[ ]	[ ]
(g) Service activities in the community	[ ]	[ ]	[ ]	[ ]
(h) Service activities in the university (e.g., committees)	[ ]	[ ]	[ ]	[ ]

Table II.3 gives the order the faculty ranks the above activities in terms of the priority which the activities should be given when considering faculty salaries.

The order indicates the faculty's relative priorities for the various activities. While the standard deviations are close in value, the highest degree of consensus on rank priorities is for the priorities given to research and publications.

Table II.4 gives a summary of the variables used, their operationalization and their source.

Table II.3 Faculty activities in order of the priority which should be given when considering faculty salaries

Rank	Activity	Standard Deviation
1	Research	.38
2	Publications	.40
3	Student Advising	.48
4	Job Counseling	.49
5	University Service	.49
6	Community Service	.50
7	Personal Values	.50
8	Popularity with Students	.48

Data Analysis

The unit of analysis has already been presented in an earlier portion of the thesis. Thus this section will limit itself to the proposed statistical analysis.

Buhler's P-Stat computer package is used for the analysis of the data collected for this research.[22] For the percentage analysis and Yule's Q analysis, the data is dichotomized as closely as possible to the 50:50 split recommended by Davis.[23] Dichotomization which falls outside the 30:70 range is avoided unless substantive logic dictates otherwise in which case the degree of skew is specifically mentioned. In this area of statistical analysis Alfred N. Whitehead's dictum is appreciated--"Seek simplicity and distrust it."[24]

More sophisticated analysis is used in the matrix and regression analyses. The matrices developed utilize Pearson's r, while the major statistic from the multiple regression is the standard partial regression coefficient.

Table II.4 Study variables, variable operationalization, and variable source

Variable Name	Operationalization	Source
Complexity	number of departments in the college/school	Operating Budget, 1971-72
Size	number of full-time equivalent faculty in the college/school	Salary List, 1971-72
Resources		
a) affluence	ratio of the total budget to the total number of students enrolled in each college/school's spring 1972 classes	Operating Budget, 1971-72 and registrar's spring 1972 enrollment list
b) salary	average academic year salary for a full-time equivalent faculty member for the academic year 1971-72	Salary List, 1971-72
c) faculty	ratio of faculty with a professional or Ph.D. degree to faculty without a professional or Ph.D. degree	Salary List, 1971-72
Legpro	conjunction of legislative supervision and professional activities	questionnaire
Legbur	conjunction of legislative supervision and bureaucratic activities	questionnaire
Perpro	conjunction of peer supervision and professional activities	questionnaire
Perbur	conjunction of peer supervision and bureaucratic activities	questionnaire
Salary priorities	self-responses to a set of questions concerning salary priorities for selected activities	questionnaire

One of the principal uses of standard partial regression coefficients (beta weights) is as "measures of relative importance."[25] Blau used this type of regression analysis in The Organization of Academic Work, stating that the "beta weight is indicative of the direct effect of each independent on the dependent variable, controlling the other variables in the regression equation."[26] This study uses the same technique.

The beta weight is a measure of the direct effect of an independent variable on a dependent variable while controlling for the other independent variables being considered. The choice of independent variables to be included obviously affects the results of the regression. Constant sets of independent variables will be used throughout the regressions for this study in order to eliminate any accenting or suppressing effect based on exclusion or inclusion of selective independent variables.

In order to determine the direct or indirect influences by use of multiple regression techniques it is necessary to assign a sequence to the independent variables. The sequence for the structural variables is: (1) affluence, (2) size, (3) faculty salary, (4) complexity, and (5) faculty qualifications. The sequence chosen is important since the variables earlier in the sequence have a greater probability of being designated as having a direct effect on the independent variables. The variables would probably not be put in this same causal sequence by every researcher, and certainly it

must be admitted that reciprocal influences are exerted among the variables thereby making a claim of unilateral causality unrealistic. At the same time, the predominant causal sequence is believed to be reflected in the above order, and "no meaningful analysis of social structures is possible if the investigator always vacillates, attributes any concomitant variation of conditions to reciprocal influences, and refuses to commit himself to a predominant causal direction."[27] The sequence given to the independent variables follows that given by Blau.

It should be noted that the data do not meet the ideal statistical assumption of regression analysis. Much of the data are ordinal, not interval, but this does not prohibit regression analysis. As Blau notes, "A number of methodologists have noted in recent years that data that do not fully conform to the assumptions of regression analysis can be used without distorting results."[28] All of the data are at least ordinal and Boyle has illustrated the validity of data of this type in conjunction with regression techniques.[29]

The direct effect of the independent variable can be learned from the multiple regression results, while later Yule's Q analysis can indicate the influence of the independent variable interactive with other independent variables, designated and undesignated, which are implicitly included in the actual measurement of the independent variable under investigation.

Although this procedure, i.e., the recognition that unknown variables may be influencing the result, is not as

"neat" as a pure statistician would prefer, it is a reflection of the state of measurement in the social sciences, particularly in the areas outside controlled experiments. An advantage of making this point explicit is that the independent variables can correctly be conceptualized as a first attempt at developing empirical parameters within which further refining can occur. Blau states, "Since there is little rigorous theory as yet in sociology, however, the typical role of theoretical conceptions and principles nowadays is to provide a guiding framework for largely, exploratory research."[30] The nature of methodology utilized in sociology dictates its role as a guide to investigation rather than a fount of definitive proofs.

The respondents do not represent a random sample, but rather a population; consequently, statistical techniques, findings and conclusions must be limited to case study parameters rather than the broader population of higher education in toto. One of the obvious statistical consequences of the case study method is that tests of significance related to the probability of study inclusion are irrelevant. Tests of significance will not be reported.

The units of analysis, i.e., colleges and schools in a university, are not independent of each other; consequently, the problems of multicollinearity and confounding effects may be a factor in portions of the analysis. Present statistical techniques do not indicate a correction factor.

Footnotes

1. University of South Dakota. The University of South Dakota Operating Budget, 1971-72. 1972.

2. University of South Dakota. The University of South Dakota Salary List, 1971-72. 1972.

3. Amitai Etzioni. A Sociological Reader on Complex Organizations, 2nd edition. New York: Holt, Rinehart and Winston, Inc. 1969. p. 495.

4. Paul L. Lazarsfeld and Herbert Menzel. "On the Relation between Individual and Collective Properties" in Etzioni, Ibid.

5. Ibid., p. 503.

6. Ibid., p. 504.

7. Ibid., p. 505.

8. James L. Price. Handbook of Organizational Measurement. Lexington, Massachusetts: D. C. Heath. 1972. p. 70.

9. Peter M. Blau. The Organization of Academic Work. New York: John Wiley and Sons. 1973. p. 51.

10. University of South Dakota, The University of South Dakota Operating Budget, 1971-72, op. cit.

11. Blau, op. cit., p. 286.

12. Richard J. Hall, J. Eugene Haas and Norman J. Johnson. "Organizational Size, Complexity, and Formalization" in American Sociological Review (32), December, 1967, p. 905.

13. University of South Dakota, The University of South Dakota Salary List, 1971-72, op. cit.

14. Blau, op. cit., p. 286.

15. Ibid.

16. Ibid., p. 287.

17. John Millett. The Academic Community. New York: McGraw-Hill. 1962. pp. 234-235.

18. Talcot Parsons. "Introduction to Max Weber" in The Theory of Social and Economic Organization. New York: Oxford University Press. 1947.

19. Richard H. Hall. "Professionalization and Bureaucratization" in American Sociological Review (33), February, 1968, p. 94.

20. Carl J. Friedrich. "Some Observations on Weber's Analysis of Bureaucracy" in Reader in Bureaucracy, edited by Robert K. Merton, Ailsa P. Gray, Barbara Hockey and Hanan C. Selvin. New York: Free Press. 1952. p. 29.

21. James A. Davis. Elementary Survey Analysis. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1971. pp. 50-51.

22. Roald Buhler. P-STAT: A Computing System for File Manipulation and Statistical Analysis of Social Science Data. Princeton, New Jersey: Princeton University Computer Center. 1971.

23. Davis, op. cit., p. 59.

24. Alfred North Whitehead. The Concept of Nature. Cambridge: Cambridge University Press. 1920.

25. George W. Snedecor and William G. Cochran. Statistical Methods, 6th edition. Ames, Iowa: Iowa State University Press. 1967. p. 398.

26. Blau, op. cit., p. 34.

27. Ibid., p. 35.

28. Ibid., p. 39.

29. Richard P. Boyle. "Path Analysis and Ordinal Data" in American Journal of Sociology (75), 1970, pp. 461-480.

30. Blau, op. cit., p. 45.

CHAPTER III

FINDINGS

Correlation Matrices

Structural Variables

Tables III.1 and III.2 are presented to give the intercorrelations of the variables which will function as independent variables. The data in Table III.1 come from the University records.

Table III.1 Correlation Matrix of the Structural Variables

	Aff.	Size	Sal.	Comp.	Fac. Qual.
Affluence	1.00	.35	.14	.43	.10
Size		1.00	-.82	.82	-.72
Salary			1.00	-.58	.88
Complexity				1.00	-.45
Faculty Qualifications					1.00

The strong associations do raise the question of multicollinearity when the effects of the more highly correlated independent variables are considered relative to the dependent variable. The situation is not desired, but the relation exists and cannot be wished away. Blau writes that "overriding substantive interests" resulted in his using size and number of departments (correlated .83), a correlation very similar to this study's correlation of .82 between

size and complexity (number of departments).[1] Substantive interests also indicate pursue in the above areas despite the strong association between some variables.

Supervision Variables

Table III.2 gives the inter-correlations of the Supervision Indices. The data come from faculty responses to the questionnaire.

Table III.2 Correlation Matrix of the Supervision Indices

	Legpro	Legbur	Perpro	Perbur
Legpro	1.00	.51	.33	.18
Legbur		1.00	.28	.39
Perpro			1.00	.64
Perbur				1.00

The correlations indicate that the same source of supervision, either legislative (Legpro to Legbur .51) or faculty peer (Perpro to Perbur .64), tends to give the highest correlations followed by the same type of activity, either professional (Legpro to Perpro .33) or bureaucratic (Legbur to Prebur .39), with mixed source of supervision and type of activity (Legpro to Perbur .18 and Legbur to Perpro .28) having the weakest association.

Supervision Indices

Type of Activity and Source of Supervision

The relations among the major dimensions which form the indices will be investigated in this section. The major

dimensions are (a) source of supervision and (b) activity supervised. Since each supervision index consists of a combination of each of the above, their effect on each other will be given prior to their combination.

The most parsimonious presentation is to give the relations as hypotheses and show the support for each hypothesis. Three hypotheses are presented in the following.

The first hypothesis dealt with in this section is:

1. Faculty are less likely to oppose closer supervision if the source of supervision is faculty peers versus the legislature.

In order to investigate hypothesis one, Table III.3, which gives the faculty response to closer supervision of selected activities by the legislature, and Table III.4, which gives the faculty response to closer supervision of the same selected activities by faculty peers, are presented. The data are presented as percent <u>not</u> opposed to closer supervision with the other half of the dichotomy being the combined responses of faculty both opposed and undecided. The former category was chosen for reporting since it is a category more distinctly defined by the actual respondents rather than through operationalization procedures.

A cursory investigation of the table indicates that the faculty indicate less opposition for closer supervision by the faculty peers than by the legislature. In fact, the <u>least</u> opposed of any activity suggested for closer supervision by the legislature is still eleven percentage points

Table III.3 Faculty response to opinion of need for closer supervision of the following activities by the legislature

Activity	Percent not opposed to closer supervision		N
a) Content of courses taught	16%	(23)	148
b) Selection of books	9%	(13)	148
c) Assignments given	9%	(13)	148
d) Faculty absence from the classroom	37%	(55)	147
e) Office hours for student appointments	21%	(31)	146
f) Student advising	28%	(41)	146

Table III.4 Faculty response to opinion of need for closer supervision of the following activities by their faculty peers

Activity	Percent not opposed to closer supervision		N
a) Content of courses taught	70%	(103)	148
b) Selection of books	53%	(78)	148
c) Assignments given	48%	(69)	146
d) Faculty absence from the classroom	73%	(108)	148
e) Office hours for student appointments	62%	(97)	147
f) Student advising	58%	(85)	147

less than the most opposed of any activity suggested for closer supervision by faculty peers.

Table III.5 Mean percentage of the faculty not opposed to closer supervision of the faculty by source of supervision

Source	Percent not opposed to closer supervision
Legislature	20%
Faculty Peers	61%

The percentage difference of 41 percent between the means supports the first hypothesis. Supervision originating from a source internal to the organization is less likely to be opposed than supervision originating from a source external to the organization.

The second hypothesis states:

2. Faculty are less likely to oppose closer supervision of bureaucratic activities versus professional activities.

Referring to Tables III.3 and III.4, where parts a), b), and c) are professional activities and parts d), e), and f) are bureaucratic activities, Table III.6 and Table III.7 can be generated.

In each table, the percentage not opposed to closer supervision was higher for the bureaucratic activities than for the professional activities. Relative to legislative supervision, bureaucratic activities had a difference of seventeen percentage points over professional activities,

and relative to faculty peer supervision the difference was thirteen percentage points. Support is thus found for the second hypothesis. Supervision of bureaucratic activities is less likely to be opposed than supervision of professional activities.

Table III.6 Mean percentage of the faculty not opposed to closer legislative supervision of the faculty by activity supervised

Activity	Percent not opposed to closer supervision
Bureaucratic	28%
Professional	11%

Table III.7 Mean percentage of the faculty not opposed to closer faculty peer supervision of the faculty by activity supervised

Activity	Percent not opposed to closer supervision
Bureaucratic	64%
Professional	57%

It should be noted that hypothesis two is supported regardless of whether the source of supervision is the legislature or faculty peers.

The third hypothesis states:

3. Faculty are more likely to give greater weight to the source of supervision than the activity being supervised.

Referring to Tables III.6 and III.7, where parts a), b), and c) are professional activities and parts d), e), and f) are bureaucratic activities, Table III.8 can be generated.

Table III.8 Percentage differences between intra-source and inter-source supervision relative to activity supervised

Intra-source difference: Bureaucratic/Professional	Percent difference
Legislative	17%
Faculty Peers	7%
Inter-source difference: Faculty Peers/Legislature	**Percent difference**
Bureaucratic	36%
Professional	46%

Table III.8 shows that the largest differences in opposing closer supervision are attributable more to the source of supervision than to the activity being supervised. The percentage mean of the intra-source values is 12 percent whereas the percentage mean of the inter-source values is 41 percent. Support is thus found for the third hypothesis. Faculty are more concerned with the source of supervision than with the activity being supervised.

Summing up the findings, each hypothesis was found to be supported by the data. Faculty are less likely to oppose peer supervision than legislative supervision. Faculty are less likely to oppose supervision of bureaucratic than

professional activities, and the source of supervision is more influential in generating opposition to supervision than is the type of activity.

Structural Influences on the Supervision Indices

Complexity

The review of literature pointed to a complexity as one of the major qualifiers of the effect of size on administrative components. Perceptions of supervision were predicted to be influenced by the complexity of the unit in which the respondent was employed. Table III.9, Correlation of complexity of the college/school with the supervision indices, gives the correlations for the variables.

Table III.9 Correlation of complexity of the college/school with the supervision indices

Supervision Indices	Yule's Q
Legpro	+.02
Legbur	-.11
Perpro	-.41
Perbur	-.28

Legpro and legbur are not significant (+.02 and -.11, respectively) while perpro and perbur are significant (-.41 and -.28, respectively). The ordinal ranking for the supervision indices is opposite that predicted from the hypothesis, perpro having the largest negative correlation (-.41) and legpro having a positive correlation (+.02). Support

is thus not found for the first two variable relationships of hypothesis 1 (see page 19).

Size

The review of literature showed that one of the consequences of increasing size was to alter the administrative unit of an organization. Perceptions of supervision were predicted to be influenced by the size of the unit in which the respondent was employed. Table III.10, Correlation of size of the college/school with the supervision indices, gives the correlations, and they support the position that size does influence perceived need for selective types of supervision.

Table III.10 Correlation of size with the supervision indices

Supervision Indices	Yule's Q
Legpro	+.03
Legbur	-.16
Perpro	-.34
Perbur	-.39

Legpro is directly related to size (+.03), but the correlation is not significant. Legbur is inversely related to size (-.16), but again the correlation is not significant. Both perpro and perbur are inversely related to size and are significant (-.34 and -.39, respectively). Support is

thus not found for the first two variable relationships of hypothesis 2 (see page 20).

Resources

Faculty qualifications. The review of literature indicates that as professional qualifications increase there is less need for, and less utility derived from, hierarchical supervision. Perceptions of supervision were predicted to be influenced by faculty qualifications such that the more highly professional colleges/schools would favor closer collegial supervision, while the less qualified would more likely favor closer hierarchical supervision. Table III.11, Correlation of faculty qualifications with the supervision indices, gives the correlations.

Table III.11 Correlation of faculty qualifications with the supervision indices

Supervision Indices	Yule's Q
Legpro	-.12
Legbur	-.03
Perpro	+.30
Perbur	+.29

The first thing noted on Table III.11 is that the ordinal ranking is exactly that predicted. Legpro is the highest negatively correlated (-.12) and perpro is the highest positively correlated (+.30). Again, legpro and legbur were not significant (-.12 and -.03, respectively) while

perpro and perbur were significant (+.30 and +.29, respectively). Support is found for the first two variable relationships of hypothesis 3 (see page 20).

Faculty salaries. The review of literature indicates that the best paid faculty tend to be the most productive and the most professional faculty. Perceptions of supervision were predicted to be influenced by faculty salaries such that colleges/schools with the highest average salaries would be the colleges/schools most likely to favor closer collegial versus closer hierarchical supervision.

Table III.12 shows that another indicator of resources correlates as predicted.

Table III.12 Correlation of faculty salaries with the supervision indices

Supervision Indices	Yule's Q
Legpro	-.26
Legbur	+.04
Perpro	+.27
Perbur	+.28

Legpro, predicted to be the least likely to be positively correlated with faculty salaries, is a negative significant, -.26, whereas perpro and perbur, predicted to be most likely to be negatively correlated to salary, are significant at +.27 and +.28, respectively. Legbur is not significant (+.04), but ranks with the predicted order.

Support is found for the first two variable relationships of hypothesis 4 (see page 20).

Affluence. The first resource indicator is affluence of the college/school. The variable is the result of the ratio of finances to output; therefore, a clarification should be stated. The variable is not, nor is it intended to be, a measure of efficiency. In fact, the variable is more likely a measure of the degree to which a college/school can afford to be inefficient in the pursuit of being effective. Again, the predicted relation was the higher the ratio of budget/student, the more likely to favor collegial control.

Table III.13 Correlation of affluence with the supervision indices

Supervision Indices	Yule's Q
Legpro	-.11
Legbur	-.10
Perpro	-.36
Perbur	-.39

Table III.13 indicates legpro and legbur are not significant (-.11 and -.10, respectively), while both perpro and perbur are significant (-.36 and -.39, respectively). The total budget to student majors is the only resource connected variable in the study which does not support the hypothesis predicted (see page 20).

Summary of Structural Variables to Supervision Indices Relationships

The following significant relationships were discovered.

1. Complexity is negatively related to perpro and perbur.
2. Size is negatively related to perpro and perbur.
3. Faculty qualification is positively related to perpro and perbur.
4. Faculty salary is negatively related to legpro, and positively related to perpro and perbur.
5. Affluence is negatively related to perpro and perbur.

Support is thus found for the hypothesized relationships between the first two variables in hypotheses 3 and 4 on pages 19 and 20 of this study. The findings reject the original hypothesized relationships between the first two variables of hypotheses 1, 2, and 5, and give support to conclusions opposite the originally proposed relations.

Increased size and increased complexity both appear to have a dampering effect on perceived need for collegial supervision, while higher faculty qualifications and higher faculty salaries both appear to encourage closer collegial supervision. The resource variable, affluence, introduces a variant in the pattern developed by the other relations. As the ratio gets larger, need for closer supervision of any activity from any source is perceived as less necessary. This "abberation" in the apparent pattern is not disruptive, but is expected.

If alternate types of supervision are conceptualized as one means of (1) more successfully coordinating the internal organization and (2) more favorably influencing the task environment of the organization, then if the organization is receiving the greatest share of resources per unit produced, it desires closer supervision from neither a hierarchical source which may institute more austere practices, nor from a "less prosperous" peer whose potential jealousy might disrupt the present favorable situation.

Legpro, hierarchical supervision of professional activities, can be viewed as a mismatched supervision system which is least likely to be favored in a professional organization. Perpro, peer supervision of professional activities, can be viewed as a matched supervision system which is most likely to be favored in a professional organization. A juxtaposition of these two indices, which shows their relative relationship regardless of their individual statistical significance, might be of interest.

Table III.14, Diagrams of structural variables to legpro and perpro, serves the dual function of clarifier and summarizer for this section. The same shorthand system is used as that in the original hypotheses section.

Table III.14 gives a more easily visible support to the original hypotheses 3 and 4, while showing hypotheses 1, 2, and 5 are not supported. The nature of the hypothesis modification needed is also quite clear in Table III.14.

Table III.14 Diagrams of structural variables to legpro and perpro

1)	↑Size →	↑Legpro (+.03) ↓Perpro (-.34)	∴ less likely collegial supervision
2)	↑Complexity→	↑Legpro (+.02) ↓Perpro (-.41)	∴ less likely collegial supervision
3)	↑Faculty Qualifications→	↓Legpro (-.12) ↑Perpro (+.30)	∴ more likely collegial supervision
4)	↑Faculty Salaries→	↓Legpro (-.26) ↑Perpro (+.27)	∴ more likely collegial supervision
5)	↑Affluence→	↓Legpro (-.11) ↓Perpro (-.36)	∴ less likely either collegial or hierarchical supervision

Multiple Regression of the Supervision Indices on the Structural Variables

The first tables presented will utilize the structural variables as independent variables and the supervision indices as dependent variables. Beta weights will be given for all relations, but if the beta weight is less than twice its standard error, they are considered to have no appreciable effect.[2]

Only affluence and faculty salary are indicated as having significant direct effects on the belief that there should be closer supervision of the faculty's professional activities by the legislature. In the former instance a negative effect is registered, while in the latter a positive effect appears.

Table III.15 Legpro[a]

	Beta Weight	Simple Correlation
1. Affluence	.14**	-.06
2. Size	-.40	.21
3. Salary	-.61	-.09
4. Complexity	.01	.01
5. Qualifications	.20	-.04

R^2=.04

**more than three times its standard error

[a]The title in the table always refers to the dependent variable and the row stubs to the independent variables.

Table III.16 Legbur

	Beta Weight	Simple Correlation
1. Affluence	-.24**	-.16
2. Size	.00	-.08
3. Salary	.31*	.02
4. Complexity	.14	-.06
5. Qualifications	-.20	-.01

R^2=.04

*More than twice its standard error

**More than three times its standard error

Again affluence, the ratio of the total college budget to the total number of college majors, and faculty salary, the average academic year salary, are indicated as the only two having a significant direct effect on the belief that there should be closer supervision of the faculty's bureaucratic activities. The beta weights indicate a selective

factor operating with the more affluent colleges/schools being more likely to favor closer legislative supervision of bureaucratic activities. The higher salaried colleges/schools indicate preferences exactly contrary to those of the more affluent colleges/schools.

Table III.17 Perpro

	Beta Weight	Simple Correlation
1. Affluence	.02	-.07
2. Size	.03	-.17
3. Salary	-.17	.13
4. Complexity	-.24	-.20
5. Qualifications	.20	.14

R^2=.05

None of the relations between the structural variables and perpro indicate a significant direct effect.

Table III.18 Perbur

	Beta Weight	Simple Correlation
1. Affluence	-.21*	.16
2. Size	-.07	-.18
3. Salary	.17	.12
4. Complexity	.12	-.12
5. Qualifications	.00	.12

R^2=.05

*More than three times its standard error

Only affluence is indicated to have a significant effect on the belief that faculty peers should exert closer supervision over the bureaucratic activities of faculty members.

It is interesting to note that only the structural variables which are based on resources had significant direct impact on the belief sets concerning supervision. Size and complexity have received much more emphasis in organizational literature relative to appropriate styles of supervision, but in this instance resources appear to exert a greater effect. As indicated earlier in the review of literature, most studies of size now explicitly consider the additional factor complexity in explanatory or predictive schema; perhaps both size and complexity should be conceptualized as intervening variables between resources and the phenomenon to be explained.

Multiple Regression of the Salary Priorities on the Structural Variables

This section will present the tables generated by the multiple regression of salary priorities on the structural variables. Table III.19 presents the multiple regression on the priority student advising.

Affluence, faculty salary and faculty qualifications are the three variables indicated to have a direct effect on beliefs regarding the priority which should be given the activity student advising when considering faculty salaries. The higher-salaried colleges/schools are indicated as putting

a lower priority on this activity than their less wealthy counterparts, but the more affluent and more highly qualified colleges/schools are indicated as placing a higher priority on this activity than their less highly qualified counterparts.

Table III.19 Student advising

	Beta Weight	Simple Correlation
1. Affluence	.21*	.00
2. Size	-.14	-.06
3. Salary	-.88*	.03
4. Complexity	-.26	-.08
5. Qualifications	.68*	.15

R^2=.11

*More than three times its standard error

In view of the high correlation between faculty salary and faculty qualifications, this finding is unexpected. One possible explanation, which cannot be investigated with the present data since the necessary questions were not asked, is that more junior faculty with doctoral degrees are being hired, but due to their lack of seniority in the colleges/schools they are (a) less well paid and (b) relegated to the task of student advising. Consequently, the junior faculty feel that student advising, since advising is the work the junior faculty is doing, is the activity that should have a high priority when salaries are considered.

Table III.20 presents the multiple regression on the priority job counseling.

Table III.20 Job counseling

	Beta Weight	Simple Correlation
1. Affluence	.02	-.05
2. Size	.10	-.08
3. Salary	-.44*	.05
4. Complexity	-.24	-.11
5. Qualifications	.49*	.14

R =.06

*More than three times its standard error

Faculty salary and faculty qualifications are indicated as having direct effect, negative and positive, respectively, regarding the salary priority which should be given to job counseling and career guidance of students. Again the apparent lack of common effect from two variables closely correlated was not expected.

Table III.21 presents the multiple regression on the priority personal values.

Complexity is the only variable indicated as having a direct effect on beliefs regarding salary priorities for personal values and ethical standards. The effect of complexity is negative.

Table III.22 presents the multiple regression on the priority popularity with students.

Table III.21 Personal values

	Beta Weight	Simple Correlation
1. Affluence	-.06	-.15
2. Size	-.15	-.12
3. Salary	-.11	.03
4. Complexity	-.33*	-.21
5. Qualifications	.08	-.02

R^2=.06

*More than two times its standard error

Table III.22 Popularity with students

	Beta Weight	Simple Correlation
1. Affluence	-.37*	.20
2. Size	.82*	-.10
3. Salary	.45*	.06
4. Complexity	-.44*	-.23
5. Qualifications	.08	.05

R^2=.12

*More than three times its standard error

Affluence, size, salary and complexity are each indicated as having a direct effect, the first and last having negative effects while the middle two have positive effects.

Table III.23 presents the multiple regression on the priority publications.

Faculty salary is indicated to have a direct positive effect on the belief that publications should be regarded when considering faculty salaries.

Table III.23 Publications

	Beta Weight	Simple Correlation
1. Affluence	.03	.07
2. Size	-.14	-.01
3. Salary	.32*	.05
4. Complexity	.20	.05
5. Qualifications	-.31	-.02

R^2=.03

*More than two times its standard error

Table III.24 presents the multiple regression on the priority research.

Table III.24 Research

	Beta Weight	Simple Correlation
1. Affluence	.10*	.19
2. Size	.00	.08
3. Salary	.39**	.03
4. Complexity	.16	.12
5. Qualifications	-.28	-.03

R^2=.06

*More than two times its standard error

**More than three times its standard error

Affluence (positive effect) and faculty salary (positive effect) are the two variables that have a significant effect on beliefs regarding the priority which should be given to research when considering salaries. Colleges/

schools that are more affluent are more likely to promote research than their less affluent counterparts, and the higher salaried colleges/schools are more likely to promote research relative to the lower salaried colleges/schools.

Table III.25 presents the multiple regression on the priority community service.

Table III.25 Community Service

	Beta Weight	Simple Correlation
1. Affluence	.02	.10
2. Size	.22	-.25
3. Salary	.35*	.36
4. Complexity	-.13	-.20
5. Qualifications	.12	.33

R^2=.14

*More than two times its standard error

Only faculty salary is indicated as having a significant effect on salary priority for community service, the higher-salaried colleges/schools being more likely to perceive service activities in the community as valid criteria regarding salary priorities.

Table III.26 presents the multiple regression on the priority university service.

The more affluent colleges/schools are more likely to promote service in the university than are the less endowed colleges/schools. The higher salaried colleges/schools are more likely to reject university service as a priority. The

more affluent units are more nearly consistent in their approach to service both in the university and the community, while the higher salaried units support community service as a priority while rejecting university service. It should be noted that no compensation is allocated for university service, while additional monetary rewards usually accompany community service.

Table III.26 University service

	Beta Weight	Simple Correlation
1. Affluence	.26**	.01
2. Size	-.29	-.32
3. Salary	-.33*	.30
4. Complexity	-.29	-.32
5. Qualifications	.20	.28

R^2=.15

*More than two times its standard error

**More than three times its standard error

Multiple Regression of the Salary Priorities on the Supervision Indices

The additional information gained about salary priorities by means of multiple regressions on the supervision indices was not extensive. In the interest of parsimony the tables will not be presented since the only independent variable which has a significant direct effect is perpro which has a positive effect on both publications and research. The more likely a perceived need for closer supervision of

professional activities by faculty peers, the more likely a favoring of publications and research as salary priorities.

Influence of the Structural Variables on Salary Priorities, Controlling for the Supervision Indices

This section will present the findings regarding the effect of the structural variables upon the perception of how much priority should be given selected activities when considering faculty salaries. Since the supervision indices will be utilized as test variables, listwise deletion is used rather than pairwise deletion.

Rosenberg states, "In a sense, all relationships may be considered conditional . . . ."[3] At this stage, all the relationships will be termed conditional relationships with no attempt made to designate contingent associations as due to, for example, a suppressor variable versus a distorter variable. This strategy is employed with the intention of later attempting to develop an explanation which succeeds in simultaneously accommodating all, or most, of the divergent contingent associations into an integrated interpretation rather than developing separate interpretations for each pair of contingent associations.

Only correlations in which (1) the conditional Q's differ by 10 or more units and (2) both conditional tables meet the standards for expected cell frequencies will be treated as being significantly influenced by the supervision indices.

The activities to be considered in regard to faculty salary priorities are (a) academic advisement of students,

(b) job counseling and career guidance of students, (c) personal values and ethical standards, (d) popularity with students, (e) publications, (f) research activities, (g) service activities in the community, and (h) service activities in the university, e.g., committees. A correlation matrix of the activities is given in Table III.27.

Table III.28 presents the zero order correlations of all the salary priority activities by all the structural variables.

Affluence

The findings of this section concern the effect of affluence on salary priority considerations controlling for the supervision indices. Table III.29, Correlation of affluence and salary priorities by supervision indices, presents the correlations.

Zero Order Correlations: Affluence

Academic advising (+.38), job counseling (+.33), service in the community (+.44), service in the university (+.59), and research (-.34) are each significantly related to more affluent colleges/schools. With the exception of service in the community the relations are as hypothesized.

The zero order correlations of affluence and salary priorities tend to indicate that affluent colleges/schools are more likely to promote salary priorities based on service to the local student, university or community rather than discipline advancement.

Table III.27 Correlation matrix of salary priority activities

		1	2	3	4	5	6	7	8
1.	Academic Advising	1.00	.76	.37	.21	-.15	-.12	.11	.19
2.	Job Counseling		1.00	.41	.36	-.12	-.20	.14	.27
3.	Personal Values			1.00	.28	-.02	-.09	.03	.15
4.	Popularity Students				1.00	-.05	-.13	.13	.09
5.	Publications					1.00	.84	.09	.06
6.	Research						1.00	.03	.04
7.	Service Community							1.00	.52
8.	Service University								1.00

Table III.28 Zero order correlations of the structural variables and salary priorities

	Affluence	Size	Salary	Complexity	Faculty Qualifi-cations
Academic Advising	+.38	-.12	+.06	-.18	+.34
Job Counseling	+.33	-.16	_.10	-.23	+.30
Personal Values	+.22	-.23	+.06	-.42	+.05
Popularity Students	+.19	-.21	+.13	-.46	+.11
Publications	-.14	-.01	+.12	+.12	-.04
Research	-.34	+.21	+.07	+.31	-.08
Service Community	+.44	-.48	+.67	-.41	+.67
Service University	+.59	-.60	+.60	-.64	+.61

Table III.19 Correlation of affluence and salary priorities by supervision indices

Priority Activity (by) Affluence	(by) Supervision Indices								
	zero order	Legpro		Legbur		Perpro		Perbur	
		hi	lo	hi	lo	hi	lo	hi	lo
Academic Advising	+.38	$+.14_{nv}$	+.41	+.11	+.57	$+.68_{nv}$	+.17	+.10	+.68
Job Counseling	+.33	$-.20_{nv}$	+.44	+.08	+.53	$+.51_{nv}$	+.18	+.14	+.70
Personal Values	+.22	$+.18_{nv}$	+.23	+.02	+.35	-.10	+.38	+.02	+.62
Popularity Students	+.19	$+.80_{nv}$	+.07	+.47	-.10	+.47	-.05	+.27	-.14
Publications	-.14	$+.45_{nv}$	-.26	$-.09_{nv}$	-.29	+.08	$-.17_{nv}$	-.26	$+.12_{nv}$
Research	-.34	$+.52_{nv}$	-.31	$-.20_{nv}$	-.44	-.31	$-.22_{nv}$	-.49	$+.27_{nv}$
Service Community	+.44	$+.33_{nv}$	+.46	+.36	+.50	+.28	+.51	+.19	+.89
Service University	+.59	$+.56_{nv}$	+.60	+.48	+.68	+.54	+.61	+.46	$+1.00_{nv}$
n* =	121	22	99	53	67	38	83	83	38

*From academic advising priority only. Job counseling n = 119; personal values n = 119; popularity with students n = 120; publications n = 119; research n = 119; service community n = 116; and service university n = 119.

nv=The subscript nv indicates that the expected cell frequency in one or more cells was below five and consequently Q calculations are not valid.

An examination of the affluent colleges/schools reveals that these colleges/schools have (1) the smallest average class enrollments, (2) the highest faculty/student ratio and (3) the least number of service courses to nonmajor students. These conditions encourage the development of primary relationships between faculty and student and consequently greater emphasis on these relations as salary priorities for the faculty.

A possible reason why the more affluent colleges/schools are more active in university activities is that this participation is one means of retaining a favorable position in the allocation of resources.

The only hypothesis for which significant results are generated supportive to that hypothesized was service to the community. Although a surprise, the lack of support for the hypotheses in this area does logically follow from findings later in this study. The implications will be considered at a later point in the analysis.

First Order Correlations:
Affluence

Legpro as test variable. Utilizing the above criteria, none of the correlations formed when legpro was used as the test variable are valid correlations to designate as significant or non-significant. This result is statistically determined, although the ultimate source of determinacy is substantive. The faculty's rejection of legislative supervision of professional activities, legpro, is so definitive

that the legpro cannot be utilized in any first order correlations in this study. There simply were so few faculty members who supported closer supervision by the legislature that the type of statistical analysis used in this study would not be valid. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor nonsupport can be claimed for any of the hypotheses concerning size and priority activities by legpro.

Legbur as test variable. A high legbur score significantly decreases the positive relation between more affluent colleges/schools and beliefs concerning priorities for academic advising, job counseling, personal values, service in the community and service in the university. In no instance is the effect of a high legbur score strong enough to change the relation from a positive to a negative value.

The significant correlations indicate a high legbur score for an individual tends to dampen the effect of a positive relation between the organizational variable affluence and the priorities for academic advising, job counseling, personal values, service in the community and service in the university. With the exception of popularity with students and service in the community, support is not found for the last two variable relations advanced in hypothesis 5. (Publications and research, while not significant, changed in the opposite direction hypothesized.)

Perpro as test variable. Only three priority activities, personal values, popularity with students and service to the community, meet the statistical requirements for significance. The effect of perpro was opposite that predicted on popularity with students and service to the community, but was as predicted for personal values.

Perbur as test variable. Four of the priority activities, academic advising, job counseling, personal values and service to the community, meet the statistical requirements for significance.

The effect of a high score on perbur is to dampen the positive effect of the organizational variable affluence on the priority activities academic advising, job counseling, personal values, and service to the community. Only for service to the community does the effect not support the hypothesized relations.

Summary of Supervision Indices as Test Variables on Affluence and Priority Activities

Due to the relatively small n (22) of respondents scoring high on legpro and consequent lack of statistical significance, legpro will not be included in the summary.

Utilizing the same shorthand system established earlier, Table III.30, Diagram of the effect of high supervision scores on the significant relationships between salary priority activities and size, is presented.

Analysis of Table III.30 shows that regardless of the supervision index being investigated a high score on the

Table III.30 Diagram of the effect of high supervision scores on the significant correlations between salary priority activities and affluence

Supervision Index	Direction of Correlation Change	Activities	
↑ Legbur →	↓	Academic Advising	(.11)*
	↓	Job Counseling	(.08)
	↓	Personal Values	(.02)
	↑	Popularity Students	(.48)
	↓	Service Community	(.36)
	↓	Service University	(.48)
↑ Perpro →	↓	Personal Values	(-.10)
	↑	Popularity Students	(.47)
	↓	Service Community	(.28)
↑ Perbur →	↓	Academic Advising	(.10)
	↓	Job Counseling	(.14)
	↓	Personal Values	(.02)
	↑	Popularity Students	(.27)
	↓	Service Community	(.19)

*The correlation coefficient is the Yule's Q from the high supervision conditional table formed when the supervision indices are used as test variables. The zero order correlations are given in Appendix A.

indices decreases the positive correlations between personal values and affluence, and increases the positive correlation between popularity with students and affluence. Perceived need for supervision per se appears to have a uniform, general effect on the ranking of these two salary priorities. Both of these variables can be conceptualized as resulting in large degree from the individual's personality factors, and thus the general effect which develops, while not predicted, certainly does not distract from the discriminating value of the indices regarding the organization's professional and bureaucratic dimensions. Personal factors, in this instance the desire, or non-desire, for personal popularity and/or the desire, or non-desire, to proselytize personal values, are excluded from the ideal type of both professional and bureaucratic models.

Looking at the remaining significant relationships, the direction of change for academic advising and job counseling (the two activities most likely associated with undergraduate education) is the same for legbur and perbur and while not at a significant level, opposite that for perpro. The only other activity which is significantly affected by a high score on each of the supervision indices is service in the community.

Size

The findings of this section concern the effect of size on salary priority considerations, controlling for the

supervision indices. Table III.31, Correlation of size and salary priorities by supervision indices, presents the correlations.

Zero Order Correlations: Size

Only two activities, (a) service activities in the community (-.48) and (b) service activities in the university (-.60), are significantly related to size. Both of these activities would appear to be focused on issues of local concern.

Of the relations not significantly supported, the two priority activities least negatively related to size were (a) publications (-.01) and (b) research (+.21). These relations are noted since they concern activities which appear most likely to be focused on issues of extra-local concern. If a pattern develops along these dimensions the concepts of localite and cosmopolitan may have some explanatory value for the conclusions chapter.

First Order Correlations: Size

Legpro as test variable. Utilizing the criteria advanced earlier, none of the correlations formed when legpro was used as the test variable are valid correlations to designate as significant or non-significant. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor non-support can be claimed for any of the hypotheses concerning size and priority activities by legpro.

Table III.31 Correlation of size and salary priorities by supervision indices

Priority Activity	(by) Size	(by) Supervision Indices							
	zero order	Legpro		Legbur		Perpro		Perbur	
		hi	lo	hi	lo	hi	lo	hi	lo
Academic Advising	-.12	$-.14_{nv}$	-.13	.12	-.31	-.27	.03	.22	-.48
Job Counseling	-.16	$.20_{nv}$	-.23	.12	-.39	-.38	.01	.10	-.62
Personal Values	-.23	$-.18_{nv}$	-.25	.00	-.38	-.08	-.26	-.13	-.38
Popularity Students	-.21	$-.80_{nv}$	-.08	-.40	-.02	-.66	.12	-.27	.03
Publications	-.01	$-.45_{nv}$	.08	-.27	.18	-.25	.02	.11	-.27
Research	.21	$-.52_{nv}$	.14	.02	.34	$.16_{nv}$	$.08_{nv}$	.36	-.39
Service Community	-.48	$-.33_{nv}$	-.52	-.36	-.60	-.45	-.50	-.29	-.81
Service University	-.60	$-.56_{nv}$	-.62	-.75	-.42	-.66	-.57	-.53	-.86
n* =	121	22	99	53	67	38	83	83	38

*From academic advising priority only. Job counseling n = 119; personal values n = 119; popularity with students n = 120; publications n = 119; research n = 119; service community n = 116; and service university n = 119.

nv=The subscript nv indicates that the expected cell frequency in one or more cells was below five and consequently Q calculations are not valid.

Legbur as test variable. According to the criteria advanced earlier, legbur influences the relationship between size and each of the priority activities.

Among the high scores on legbur, the conditional correlations between size and academic advisement (+.12), job counseling (+.12), personal values (.00), and service community (-.36) were significantly more positive than their zero correlations. Popularity with students (-.40), publications (-.27), research (+.02), and service university (-.75) were significantly less positive than their zero order correlations.

A high legbur score appears to cause a more positive increase in the correlation between size and academic advisement, job counseling, personality values, and service community, while a high legbur score appears to cause a more negative increase in the correlation between popularity with students, publications, research, and service university. There does not, however, appear to be a discernible pattern at this time which can be pointed to in the data.

Perpro as test variable. According to the criteria advanced earlier, perpro influences the effect of size on salary priority activities in five out of eight activities.

Only in personal values is the difference between conditional correlations more positive for the high scores on perpro. Among the high scores on perpro, the differences between the conditional correlations were significantly less positive for academic advisement, job counseling, popularity of students, and publications.

Perpro's influence appears to more constantly have an inverse effect on the correlations of size and priority activity than does legbur. With this exception, again there does not appear to be a discernible pattern of selective influence.

Perbur as test variable. According to the criteria advanced earlier, legbur influences the relationship between size and salary priority activities in seven out of eight activities.

Among the high scores on perbur, the differences between the conditional correlations were significantly more positive for academic advisement, job counseling, personality values, publications, service community, and service university. Of the significant differences, only popularity of students becomes more negative with a high score on perbur.

Again, the only discernible pattern for perbur tends to be general in its influence, with the impact causing a more direct relationship between size and priority activities.

Summary of Supervision Indices as Test Variables on Size and Priority Activities

Due to the relatively small n (22) of respondents scoring high on legpro and consequent lack of statistical significance, legpro will not be included in the summary.

Utilizing the same shorthand system established earlier, Table III.32, Diagram of the effect of high supervision

scores on the significant relationships between salary priority activities and size, is presented.

The effect of a high supervision score on personal values and popularity as explained earlier under affluence also holds for the relation between size and salary priorities.

Looking at the remaining significant relationships, the direction of change for academic advising and job counseling (the two activities most likely associated with undergraduate education) is the same for legbur and perbur, as noted earlier in the affluence section, but opposite for perpro. This apparent association is unexpected since it modifies the earlier position that similarity based on source of supervision would be more influential in affecting choices than similarity based on type of activity supervised.

A similar effect on the correlations between size and salary priority activities appears more likely to be the result of indice commonality regarding type of activity rather than source of activity.

Faculty Salaries

The findings of this section concern the effect of faculty salary on salary priority considerations, controlling for the supervision indices. Table III.33, Correlation of faculty salary and salary priorities by supervision indices, presents the correlations.

Table III.32 Diagram of the effect of high supervision scores on the significant correlations between salary priority activities and size

Supervision Index	Direction of Correlation Change	Activities	
↑ Legbur →	↑	Academic Advising	(.12)*
	↑	Job Counseling	(.12)
	↑	Personal Values	(.00)
	↓	Popularity Students	(-.40)
	↓	Publications	(-.27)
	↓	Research	(.02)
	↑	Service Community	(-.36)
	↓	Service University	(-.75)
↑ Perpro →	↓	Academic Advising	(-.27)
	↓	Job Counseling	(-.38)
	↑	Personal Values	(-.08)
	↓	Popularity Students	(-.66)
	↓	Publications	(-.25)
↑ Perbur →	↑	Academic Advising	(.22)
	↑	Job Counseling	(.10)
	↑	Personal Values	(-.13)
	↓	Popularity Students	(-.27)
	↑	Publications	(.11)
	↑	Service Community	(-.29)
	↑	Service University	(-.53)

*The correlation coefficient is the Yule's Q from the high supervision conditional table formed when the supervision indices are used as test variables. The zero order correlations are given in Appendix A.

Table III.33 Correlation of faculty salary and salary priorities by supervision indices

Priority Activity	(by) Faculty Salary	(by) Supervision Indices							
	zero order	Legpro		Legbur		Perpro		Perbur	
		hi	lo	hi	lo	hi	lo	hi	lo
Academic Advising	.06	$-.37_{nv}$	.15	-.39	.41	.25	-.09	-.27	$.50_{nv}$
Job Counseling	.11	$-.60_{nv}$	.26	-.24	.37	.40	-.09	-.09	$.48_{nv}$
Personal Values	.06	$.14_{nv}$	.07	-.12	.18	.04	.07	-.01	.17
Popularity Students	.13	$.73_{nv}$	-.01	.12	.09	.46	-.14	.09	-.15
Publications	.12	1.00_{nv}	-.00	$.32_{nv}$	-.00	.17	$.24_{nv}$	.12	$.12_{nv}$
Research	.07	1.00_{nv}	-.04	$.54_{nv}$	-.15	.05	$.31_{nv}$	.05	$.27_{nv}$
Service Community	.67	$.27_{nv}$	.74	.52	.79	.71	.65	.56	.89
Service University	.60	$.63_{nv}$	.60	.37	.76	.62	.58	.54	$.81_{nv}$
n* =	121	22	99	53	67	38	83	83	38

*From academic advising priority only. Job counseling n = 119; personal values n = 119; popularity with students n = 120; publications n = 119; research n = 119; service community n = 116; and service university n = 119.

nv=The subscript nv indicates that the expected cell frequency in one or more cells was below five and consequently Q calculations are not valid.

Zero Order Correlations:
Faculty Salary

Service in the university (.67) and service in the community (.60) are both significantly related to higher salaried colleges/schools. The hypothesis of a direct relation between higher salaried colleges/schools and service activities in the community is supported while the hypothesis of an inverse relation between higher salaried colleges/schools and service in the university is not supported.

The zero order correlations for the higher salaried colleges/schools tend to indicate a relatively high local profile. Investigation of the colleges/schools finds the schools of Medicine, Law, Business, and Education in the higher salaried category. Each of these schools has developed a very pragmatic interpretation of their role as that of developing specialized vocational training. Each had operated, until the spring of 1974 University reorganization, its own placement bureau and/or program for their graduates. Each school has what might be termed a separate "Recognition Program" in which community (state-wide) leaders and faculty members are honored for achievements in the advancement of the "profession" represented by the particular schools. Each is supported by a distinct cohesive constituency in the state.

The School of Education has been particularly active in promoting and encouraging their faculty to involve themselves in service to the University. A high priority by the Education and Business Schools is the probable reason for the

discrepancy between the priorities set by the higher salaried and more affluent colleges/schools.

The zero order correlations tend to indicate that the higher salaried colleges/schools tend to place a greater emphasis on activities which are more easily visible to larger numbers of people in the local area.

First Order Correlations:
Faculty Salaries

Legpro as test variable. Utilizing the above criteria, none of the correlations formed when legpro was used as the test variable are valid correlations to designate as significant or non-significant. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor non-support can be claimed for any of the hypotheses concerning size and priority activities by legpro.

Legbur as test variable. Six of the priority activities, academic advising, job counseling, personal values, popularity with students, publications, research, service in the community and service in the university, meet the statistical requirements for significance.

A high score on legbur dampened the positive relations between high salaried colleges/schools and each of the above salary priorities. Support is thus found for the hypothesized relations with the exception of service in the community which was hypothesized to effect a more positive relation between higher salaried colleges/schools and belief in service in the community as a high salary priority.

Perpro as test variable. Only one priority activity, popularity with students, meets the statistical requirements for significance. The effect of a high perpro score on the relation between higher salaried colleges/schools and the priority belief concerning popularity with students, was to accentuate the positive relationship between the latter two. This was not the predicted effect.

Perbur as test variable. Only two of the priority activities, personal values and service in the community, meet the statistical requirements for significance. The effect of perbur is to dampen the apparent positive relations between higher salaried colleges/schools and the priority beliefs. The dampening effect is as predicted for personal values, but is opposite in effect to that predicted for service in the community.

Summary of Supervision Indices as Test Variables on Faculty Salaries and Priority Activities

Analysis of Table III.34 does not indicate any clear pattern which follows from imposing the supervision indices as controls, although the earlier trend of type of activity commonality, i.e., legbur and perbur versus perpro, is noted if non-significant results are included. (The high perbur cells considered are valid cells.)

Although the results of the discipline oriented activities, publication and research, were non-valid, the direction of change of the significant results of the undergraduate activities, academic advising and job counseling, are

Table III.34 Diagram of the effect of high supervision scores on the significant correlations between salary priority activities and faculty salary

Supervision Index	Direction of Correlation Change	Activity	
↑ Legbur	↓	Academic Advising	(-.39)*
	↓	Job Counseling	(-.24)
	↓	Personal Values	(-.12)
	↓	Service Community	(.52)
	↓	Service University	(.37)
↑ Perpro	↑	Academic Advising	(.25)
	↑	Job Counseling	(.40)
	↑	Popularity Students	(.46)
↑ Perbur	↓	Personal Values	(-.01)
	↓	Service University	(.56)

*The correlation coefficient is the Yule's Q from the high supervision conditional table formed when the supervision indices are used as test variables. The zero order correlations are given in Appendix A.

interesting when compared with the structural variables investigated earlier. For the structural variables affluence and size, introduction of legbur and perbur caused a positive change in the original relation and the introduction of perpro caused a negative change. For the structural variable faculty salary, the direction of change is exactly opposite. At the present, a logical explanation of this finding escapes the present writer since the finding is so completely at odds with the original hypotheses advanced.

Complexity

The findings of this section concern the effect of complexity on salary priority considerations, controlling for the supervision indices. Table III.35, Correlation of complexity and salary priorities by supervision indices, presents the correlations.

Zero Order Correlations: Complexity

Personal values (-.42), popularity with students (-.46), research (.31), service in the community (-.41), and service in the university (-.64) are each significantly related to complexity. The only priorities with a positive relation to complexity are publications (.12, non-significant) and research (.31). The evidence tends to indicate that a higher degree of complexity is related to discipline oriented activities while a low degree of complexity is more likely related to more locally oriented activities.

Table III.35 Correlation of complexity and salary priorities by supervision indices

Priority Activity	(by) Complexity	(by) Supervision Indices							
	zero order	Legpro		Legbur		Perpro		Perbur	
		hi	lo	hi	lo	hi	lo	hi	lo
Academic Advising	-.18	$-.47_{nv}$	-.14	-.16	-.18	$-.07_{nv}$	-.09	-.05	$-.27_{nv}$
Job Counseling	-.23	$.00_{nv}$	-.28	-.00	-.43	$-.18_{nv}$	-.15	-.09	$-.48_{nv}$
Personal Values	-.42	$.15_{nv}$	-.52	-.20	-.56	-.27	-.46	-.41	-.41
Popularity Students	-.46	$-.64_{nv}$	-.42	-.57	-.32	-.70	-.23	-.54	-.15
Publications	.12	$-.24_{nv}$	.19	-.04	.26	-.32	.29	.23	$-.12_{nv}$
Research	.31	$.68_{nv}$	.23	$.24_{nv}$	.40	-.05	.39	.45	$-.27_{nv}$
Service Community	-.41	$-.43_{nv}$	-.40	-.28	-.52	-.49	-.36	-.23	-.74
Service University	-.64	$-.71_{nv}$	-.63	-.43	-.83	-.71	-.60	-.60	$-.81_{nv}$
n* =	121	22	99	53	67	38	83	83	38

*From academic advising priority only. Job counseling n = 119; personal values n = 119; popularity with students n = 120; publications n = 119; research n = 119; service community n = 116; and service university n = 119.

nv=The subscript nv indicates that the expected cell frequency in one or more cells was below five and consequently Q calculations are not valid.

Of the significant correlations, only the hypothesized direct relationship between complexity and service in the community was not supported.

First Order Correlations:
Complexity

Legpro as test variable. Utilizing the above criteria none of the correlations formed when legpro was used as the test variable are valid correlations to designate as significant or non-significant. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor non-support can be claimed for any of the hypotheses concerning size and priority activities by legpro.

Legbur as test variable. Six of the priority activities, job counseling, personal values, popularity with students, publications, service to the community and service to the university, met the statistical requirements for significance.

The effect of a high score on legbur was to dampen the negative effect of the organizational variable complexity on four of the priority activities. The exceptions were the activities popularity with students and publications, for which a high legbur score increased the apparent negative relation between them and complexity.

The hypotheses advanced were supported, with the exception of the hypothesis regarding service to the community.

Perpro as test variable. Six of the priority activities, personal values, popularity with students, research,

publications, service to the community and service to the university, met the statistical requirements for significance.

The effect of a high score on perpro was to accentuate the negative direction in five out of six of the relations. The lone exception was the relation between complexity and personal values, in which a high perpro score dampened the negative relation present in the non-controlled situation.

Only two of the controlled situations support the hypotheses advanced. A high perpro score does accentuate the negative relation between complexity and popularity with students while it dampens the negative relation with service in the university.

Perbur as test variable. Two of the priority activities, popularity with students and service in the community, meet the statistical requirements for significance.

The effect of a high score on perbur is to accentuate the negative relation between complexity and popularity with students, while dampening the effect of the negative relation between complexity and service in the community.

Both of the controlled situations support the hypotheses advanced. A high perbur score accentuates the negative relation between more complex colleges/schools and the belief that popularity with students should have a high salary priority while a high perbur score dampens the negative relationship between more complex colleges/schools and the

belief that service to the community should have a high salary priority.

Summary of Supervision Indices as Test Variables on Complexity and Priority Activities

Due to the relatively small n (22) of respondents scoring high on legpro and consequent lack of statistical significance, legpro will not be included in the summary.

Utilizing the same shorthand system established earlier, Table III.36, Diagram of the effect of high supervision scores on the significant relationships between salary priority activities and complexity, is presented.

Analysis of Table III.36 shows that regardless of the supervision index being investigated, a high score on the indices affects the relation between complexity and the priority of popularity with students in a negative fashion. Service in the community is affected in a negative manner by legbur and perbur, but in a positive manner by perpro. Service in the community still continues to be a salary priority which is more likely affected by the distinction between type of activity supervised versus source of supervision.

Further patterns resulting from the imposition of the supervision indices as control variables are not apparent.

Faculty Qualifications

The findings of this section concern the effect of faculty qualifications on salary priority considerations,

Table III.36 Diagram of the effect of high supervision scores on the significant correlations between salary priority activities and complexity

Supervision Index	Direction of Correlation Change	Activity	
↑ Legbur	↑	Job Counseling	(-.00)*
	↑	Personal Values	(-.20)
	↓	Popularity Students	(-.57)
	↓	Publications	(-.04)
	↑	Service Community	(-.28)
	↑	Service University	(-.43)
↑ Perpro	↑	Personal Values	(-.27)
	↓	Popularity Students	(-.70)
	↓	Research	(-.05)
	↓	Service Community	(-.49)
	↓	Service University	(-.71)
↑ Perbur	↓	Popularity Students	(-.54)
	↑	Service Community	(-.23)

*The correlation coefficient is the Yule's Q from the high supervision conditional table formed when the supervision indices are used as test variables. The zero order correlations are given in Appendix A.

controlling for the supervision indices. Table III.37, Correlation of complexity and salary priorities by supervision indices, presents the correlations.

Zero Order Correlations:
Faculty Qualifications

Academic advising (.34), job counseling (.30), service in the community (.67) and service in the university (.61) are each significantly related to higher qualified colleges/schools. Only for the relationship between higher qualified colleges/schools and the belief that service in the community should have high priority in salary considerations is the hypothesis supported.

It is of interest that the only negative correlations, albeit on a non-significant level, are the discipline oriented activities of publication and research. The stronghold of discipline research and publication does not appear to be in the more highly qualified schools/colleges but rather in the less qualified schools/colleges.

This set of correlations could be interpreted as supporting the position that for the majority of university faculty the "peak" professional resocialization is manifested immediately after leaving the shelter of graduate school before the weight of routine faculty obligation dims the ideal.

First Order Correlations:
Faculty Qualifications

Legpro as test variable. Utilizing the criteria advanced earlier, none of the correlations formed when legpro

Table III.37 Correlation of faculty qualifications and salary priorities by supervision indices

Priority Activity	(by) Faculty Qualifications	(by) Supervision Indices							
	zero order*	Legpro		Legbur		Perpro		Perbur	
		hi	lo	hi	lo	hi	lo	hi	lo
Academic Advising	.34	$-.37_{nv}$	.47	-.18	.69	$.75_{nv}$	.12	.04	$.74_{nv}$
Job Counseling	.30	$-.60_{nv}$	.48	-.04	.53	$.56_{nv}$	.12	.16	$.53_{nv}$
Personal Values	.05	$.14_{nv}$	.04	-.11	.14	-.22	.15	-.13	$.45_{nv}$
Popularity Students	.11	$.73_{nv}$	-.03	.22	-.03	.26	-.07	.10	$.05_{nv}$
Publications	-.04	1.00_{nv}	-.20	.13	-.14	.00	$.08_{nv}$	-.05	$-.05_{nv}$
Research	-.08	1.00_{nv}	-.22	$.39_{nv}$	$-.27_{nv}$	$-.11_{nv}$	$.16_{nv}$	-.11	$.12_{nv}$
Service Community	.67	$.27_{nv}$	.74	.58	.73	.60	.71	.50	1.00_{nv}
Service University	.61	.63	.61	.47	.69	.50	.65	.49	1.00_{nv}
n** =	121	22	99	53	67	38	83	83	38

*From academic advising priority only. Job counseling n = 119; personal values n = 119; popularity with students n = 120; publications n = 119; research n = 119; service community n = 116; and service university n = 119.

nv=The subscript nv indicates that the expected cell frequency in one or more cells was below five and consequently Q calculations are not valid.

is used as the test variable are valid correlations to designate as significant or non-significant. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor non-support can be claimed for any of the hypotheses concerning size and priority activities by legpro.

Legbur as test variable. A high legbur score significantly dampens the positive relationship between higher qualified colleges/schools and individual beliefs about the priorities which should be given to academic advising, job counseling, personal values, popularity with students, publications, service in the community and service in the university.

The effect of legbur on the relationship between higher qualified colleges/schools and beliefs regarding priorities for academic advising, job counseling, personal values, publications, and service in the community is opposite that predicted. The hypothesized effect of legbur on popularity with students and service in the university is supported.

Perpro as test variable. Perpro has a significant effect on the relationship between higher qualified colleges/schools and beliefs regarding salary priorities. The negative effect on the relationship involving the priorities personal values and service in the university supports the hypotheses advanced while the effects of perpro on the relationships involving popularity with students and service in

the community, positive and negative effects respectively, were not as hypothesized.

Perbur as test variable. Utilizing the above criteria none of the correlations formed when perbur was used as the test variable are valid correlations to designate as significant or non-significant. Since none of the correlations meet the criteria for significance advanced earlier, neither support nor non-support can be claimed for any of the hypotheses concerning size and priority activities by legpro.

The non-valid statistical situation exists because so few faculty of the low faculty qualification colleges/schools placed low priority on any of the salary priority activities.

Summary of Supervision Indices as Test Variables on Faculty Qualifications and Priority Activities

Due to the relatively small n (22) of respondents scoring high on legpro and consequent lack of statistical significance, legpro will not be included in the summary.

Utilizing the same shorthand system established earlier, Table III.38, Diagram of the effect of high supervision scores on the significant relationships between faculty qualifications and priority activities, is presented.

Analysis of Table III.38 shows that for the first time perbur joins legpro as a test variable whose application results in the developing of conditional cells which are non-valid for each priority activity. Legbur and perpro are thus the only two supervision indices which will be dealt with in this summary.

Table III.38 Diagram of the effect of high supervision scores on the significant relationships between salary priority activities and faculty qualifications

Supervision Index	Direction of Correlation Change	Activity	
↑ Legbur	↓	Academic Advising	(-.18)*
	↓	Job Counseling	(-.04)
	↓	Personal Values	(-.11)
	↑	Popularity Students	(.22)
	↑	Publications	(.13)
	↓	Service Community	(.58)
	↓	Service University	(.47)
↑ Perpro	↓	Personal Values	(-.22)
	↑	Popularity Students	(.26)
	↓	Service Community	(.60)
	↓	Service University	(.50)

*The correlation coefficient is the Yule's Q from the high supervision conditional table formed when the supervision indices are used as test variables. The zero order correlations are given in Appendix A.

The effect of legbur and perpro is the same for the significant relations they have in common. The imposition of either increases the positive relation between complexity and the priority popularity with students, while either effects a negative change on the relation between complexity and the priorities personal values, service in the community and service in the university.

The zero order correlations of complexity and salary priorities most nearly approaches the impressionistic reward system which four years of participatory observation have formed. The high priorities on student advising and service activities with low priority for research and publications certainly match the perceived system.

The conclusions chapter will attempt to integrate what appears to be a set of diverse findings with few unifying relations into a more abstract, but more cohesive, set of explanatory statements.

Footnotes

1. Peter M. Blau. The Organization of Academic Work. New York: John Wiley and Sons. 1973. p. 40.

2. Blau uses this procedure for determining whether or not the independent variable has a significant effect on the dependent variable.

3. Morris Rosenberg. The Logic of Survey Analysis. New York: Basic Books. 1968. p. 156.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Introduction

The main focus of this study is on the effects of selected organizational variables, supervision, and beliefs concerning the organization's salary priorities.

The organizational variables dealt with are affluence, size, faculty salaries, complexity and faculty qualifications. The supervision indices are developed around two dimensions: source of supervision, hierarchical or collegial, and type of activity supervised, bureaucratic or professional. The supervision indices represent every possible combination of source of supervision and type of activity supervised.

The salary priorities are academic advising of students, job counseling and career guidance of students, personal values and ethical standards, popularity with students, publications, research, service activities in the community and service activities in the university.

Supervision and Structural Variables

The data indicate that faculty do not see an overwhelming need for closer supervision from any source, but if there is to be closer supervision, strong preference is given to collegial versus hierarchical supervision. The

faculty also are less opposed to supervision of bureaucratic activities than of professional activities.

The data indicate that even in professional organizations an increase in size or complexity results in greater perceived need for bureaucratic supervision and less perceived need for collegial control. These findings support Dyke's conclusions that increased size and complexity leads to increased need for bureaucratic supervision.

The data do not appear to support Blau's conclusion that while "universities and colleges have administrative structures that are similar to those of other bureaucracies . . . the same features do not have the same significance."[1] Larger schools/colleges appear more likely to generate hierarchical structures than collegial structures. The university system thus faces a dilemma in that larger units which help create greater opportunity for specialization also create greater pressure for bureaucratic controls which create pressures for routinization standards which reduce the faculty member's autonomy and allowable discretion in pursuit of his specialty. An increase in the structural dimensions of the organization which generate the opportunities for specialization also generate barriers to effective specialization. A professional organization which desires to retain a collegial atmosphere must weigh the advantages and disadvantages of growth and complexity since increased size and increased complexity appear a mixed blessing regarding these results.

Few organizations consciously resist expansion because of any or all of the excellent reasons Starbuck advances for growth;[2] consequently, if the deleterious effects of expansion on professional dimensions is to be avoided, some moderating variables need to be considered simultaneously with size and complexity. The three possible moderating variables studied were (1) affluence, (2) faculty salaries and (3) faculty qualifications.

Faculty qualifications and faculty salaries both increase the probability that collegial supervision will be favored over hierarchical supervision. The effect of expansion on supervision would appear capable of modification if the expansion which occurs involves highly qualified faculty who warrant high salaries. This study does not have hard data on the hiring policies in expanding colleges/schools, but this researcher's nonsystematic observation of expansion practice in higher education indicates that the majority of expansion occurs on the junior faculty levels involving master's degree or A.B.D. personnel who are less expensive to acquire. If a collegial atmosphere is worth keeping, resistence to, or at least more caution regarding, expansion based on junior faculty appears warranted.

High affluence lessens the probability that either increased collegial or hierarchical supervision would be emphasized. Expansion in an affluent unit also appears less likely to result in an increase in hierarchical pressure

since the affluent unit is more likely able to hire higher qualified and higher salaried faculty as additional staff.

In sum, the university as an example of a collegial system appears likely to weaken its collegial supervision system if its expansion takes place within either the confines of economic contingencies or high affluence. If a person feels compelled to find a silver lining, the effect of the present retrenchment in institutions of higher education may result in the revitalization of the collegial system among the less affluent colleges.

The following sections summarize the findings regarding the structural variables.

Affluence

Blau states "the antecedent conditions that exert most influence . . . can all be conceptualized as resources . . . human and institutional as well as financial assets."[3] Affluence is a measure of resources, and its range of effects on the colleges/schools of this study indicates its importance.

Given the causal sequence developed for the multiple regression procedure, affluence has a direct significant relation with the presence of legpro, legbur, and perbur. The direct effect on legbur and perbur is negative, while the direct effect on legpro and perpro (non-significant) is positive.

The evidence tends to indicate that more affluent colleges/schools do not perceive a need for closer supervision

regardless of whether the control be hierarchical or collegial, but if closer supervision exists, it should be directed at professional activities.

Looking at the effect on salary priorities, affluence has a direct effect on student advising (positive), popularity with students (negative), research (positive) and service in the university (positive).

The effect of introducing attitudes toward supervision as a conditional variable on the structural variables and beliefs about salary priorities was mixed.

The effect of using legpro as a conditional variable was not ascertainable for this section or any of the other sections of this study since the number of faculty who favored legislative supervision of professional activities was too few to be validly analyzed by the statistics utilized. This fact does, however, illustrate that the faculty still considers regulation of professional activities almost exclusively their domain.

The effect of the faculty believing there should be closer supervision of bureaucratic activity by the legislature is to significantly decrease the positive relation between more affluent colleges and beliefs about the salary priority which should be given to academic advising, job counseling, personal values, service in the community and service in the university while accentuating the positive relation between affluent colleges/schools and popularity with students. A low legbur score increases to a significant

degree the probability that individuals in high affluence colleges/schools will oppose publication and research as salary priorities. An attitude which fosters rejection of hierarchical control over bureaucratic activities thus results in a greater likelihood that local-oriented activities versus discipline-oriented activities will receive higher priorities in more affluent colleges/schools than in less affluence schools/colleges. It is a plausible interpretation that those not opposing closer legislative supervision of bureaucratic activities are neglecting obligations in this area in order to concentrate more attention on research and publication. It is also plausible that those not opposing closer legislative supervision have a better grasp of the detrimental consequences which accompany Parkinson's Law.

The introduction of perpro on affluence displays an unusual effect in that a high perpro score increases the probability that high priority should not be given for personal values and ethical standards, while the same combination of affluence and perpro results in increasing the probability that popularity with students should be used as a salary priority. Both priorities, personal values and popularity with students, are not representative of elements included in ideal types of either the bureaucratic or professional model. A high perpro score in an affluent college/school is also more likely to result in lower priority for service in the community.

The effect of a high perbur score is to cause a less positive direct relation between affluence and most of the salary priorities, the lone exception being the priority popularity with students.

One of the most interesting effects is noted when perbur and legbur are compared. Perbur and legbur, whose commonality is based on type of activity supervised, have the same negative effect on academic advising and job counseling (most likely undergraduate student oriented) while they have the opposite effects on research and publication (most likely discipline oriented). When a perceived need for closer supervision from either a hierarchical or a collegial source is introduced, the effect is to reduce the positive correlations for the local oriented activities, but the effect is selective for the discipline oriented activities. A low perceived need for closer hierarchical supervision of research and publication activities has the same effect on the relation between affluence and discipline oriented activities as a high perceived need for collegial control has for these activities. In more affluent colleges/schools a perceived need for supervision is more selective regarding source of supervision for professional oriented activities than for bureaucratic oriented activities.

Attitudes toward source of supervision and type of activity supervised do constitute discriminating conditions which influence the nature of the relationship between the organizational variable affluence and individual beliefs

regarding the salary priorities which selected activities should receive.

Affluent units are most likely to resist closer supervision from any quarter than are less affluent units, and affluent units are more likely to promote both local and professional activities.

A paradox exists here for both the advocate of strict organizational supervision and the individual who believes a zero sum effort exists which must be divided between teaching (local) or research/publication (professional). Increased affluence appears to lead to increased emphasis given to both local and professional activities. Although it may be disquieting to the bureaucratic oriented administrator and more expensive for the parent organization, it is greater affluence for the subunit which leads to an effort to meet all three charges given to higher education--instruction, research and service. Blau's conclusion regarding the importance of affluence as a major factor is supported.

Affluence is the only structural variable in this research which has a direct relationship with both local and professional priorities. The most obvious conclusion to be drawn from this section is that the development of a "university" must be attended to <u>in toto</u> rather than in a patch work fashion, and, as in most instances, one dimensional solutions, e.g., paying higher salaries or hiring more highly qualified staff, do not lead to a balanced university.

Size

Blau writes, "The size of an academic institution unquestionably has a predominant effect on its character. . . ."[4] Size is operationalized for this study by the number of full-time equivalent faculty members in each college/school. Although the present researcher still intuitively strongly believes in the importance of the effect of size on an organization, this study does not indicate empirical support for this position. Utilizing multiple regression techniques, size did not have a significant direct effect on any of the supervision indices.

The only salary priority activity, popularity with students, on which size has a significant direct effect is the priority most susceptible to influence, being significantly affected by four out of five of the structural variables. The placement of size in the causal sequence was not detrimental to its probability of being identified as a significant factor since more instances of significant direct effects occurred after the position occupied by size than occurred before the position occupied by size. Even in the Yule's Q analysis, size has a significant effect on only two activities, service in the community and service in the university. The introduction of the supervision indices as control variables on size did produce the greatest number of significant differences.

A number of reasons may be advanced as to why size does not appear to be the important variable it was originally

hypothesized to be. The most acceptable reason still appears to be the confounding effect of the other structural variables. The units of analysis are not identical but rather distinctively different. One of the difficulties of this situation is that traditionally "productive" variables, i.e., producers of significant results, may not appear as singularly important as they appear in studies investigating similar organizations. This "difficulty" also represents an advance since, as Perrow suggests, an approach which recognizes that particular configurations of variables and perspectives (not theories) have valid and nonvalid applications dependent of the type of organization being investigated is superior to an approach which, if by no other means than fiat, forces results into "the" universal model or "the" universal theory.[5]

The effect of the faculty of larger schools/colleges believing there should be closer supervision of bureaucratic activities by the legislature is to significantly increase the probability that the activities, academic advising, job counseling, personal values and service in the community, will be given higher salary priority while the effect of the faculty in larger schools/colleges not believing there should be closer supervision of bureaucratic activities by the legislature is to significantly increase the probability that the activities popularity with students, publications, research and service in the university will be viewed as higher priorities for salary considerations.

The effect of the introduction of legbur as a control variable on size is similar to the effect legbur has as a control on affluence. In the larger schools/colleges an attitude which fosters rejection of hierarchical control over bureaucratic activities results in a greater likelihood that discipline-related activities will receive higher priorities for salary than will local activities. The probable interpretations presented for affluence are also applicable here.

Faculty of the larger colleges/schools who believe in closer supervision of professional activities by faculty peers caused a positive increase in the probability that personal values be considered a higher faculty salary priority. Belief in closer supervision of professional activities by faculty peers reduced the relation between size and the priorities academic advising, job counseling, popularity with students and publications.

The above findings are surprising in that peer supervision is expected to be the preferred method of supervision in a professional organization such as a university, but the findings indicate that perception of the need for closer supervision from this source causes a reduced priority for both local and discipline oriented activities.

One assumption implicit in the data collection instrument, which should be made explicit, is that the question does ask "should the faculty . . . be under closer supervision," thereby placing both those who feel the present

actual amount of supervision is satisfactory and those who feel it excessive into the same category--plus we have no measure of the actual level of supervision. Given this situation, it is possible that the individuals scoring high on the supervision indices are non-discriminatory seekers of supervision, thereby not predictable in terms of a logical selection of priorities. This possibility appears small if the patterns of responses for the other structural variables and supervision indices are explored.

What appears to remain as a vocation linked priority for salary considerations among the larger college/school faculty advocating closer collegial control is some as yet undefined intangible. A not new criticism of the collegial system.

The effect of the faculty of larger colleges/schools believing there should be closer faculty peer supervision over bureaucratic activities is to increase the probability that every activity but popularity with students be given consideration in salary determination. This finding, in conjunction with those where legbur and perpro were used as control variables, is a surprise. The type of activity, bureaucratic, appears to exert a greater influence than the source of supervision on outcomes. The results of controlling for perbur approximates, with exceptions to be noted, more nearly those where legbur is controlled than where perpro is controlled.

The opposite effects of controlling for legbur and perbur occur on the activities of publications, research and service in the university, where the effect of legbur is negative and the effect of perbur is positive. The reverse effect on publication and research is in the direction expected since collegial supervision is more likely identified with discipline oriented activities.

The combination of the faculty in larger colleges/schools perceiving a need for closer collegial supervision of bureaucratic activities is the only combination which improves the probability that both local oriented and discipline oriented activities be given higher priorities when salaries are considered.

This study indicates that size, per se, is neither the beneficial nor deleterious factor proposed in many other studies. Although the particular correlations were not significant in this study, the finding comes closest to Blau's conclusions; the direction indicates size increases the priority given to research while decreasing the priorities for other educational activities.

The introduction of the attitudinal variables as test variables on the relation between the structural variables and the activities considered for faculty salaries indicate the importance of considering both structural and attitudinal dimensions when investigating professional organizations. The size related association most affected by the introduction of structural variables is the relation between size

and research controlled by perbur, faculty peer supervision of bureaucratic activities. The zero order correlation between size and research is a non-significant .21, but the condition of a high score on perbur gives a size related significant correlation of .36, while the condition of a low perbur results in a significant -.39 correlation. Any class of variables which can result in conditional relations of the above magnitude cannot validly be ignored if the intention of the researcher is to understand the organization and its operation. The findings related to size indicate the validity of Hall's approach of using both structural and attitudinal dimensions.

Faculty Salaries

Blau writes, "Money buys a lot of things, and it helps in getting others that cannot be bought for money."[6] Faculty salaries are a major area where money helps.

Using multiple regression, faculty salaries are found to have significant direct effects on legpro (negative) and legbur (positive). The evidence tends to indicate that the higher salaried colleges/schools are more likely to favor closer hierarchical supervision of bureaucratic activities while being more likely to oppose hierarchical supervision of professional activities.

Faculty salaries is one of the most productive structural variables if measured in terms of the number of times it directly affects salary priorities. Faculty salaries

has a direct effect on the priorities given to student advising (negative), job counseling (negative), popularity with students (positive), publications (positive), research (positive), service in the community (positive) and service in the university (negative). The data support Blau's finding that higher salaries are positively associated to discipline oriented activities.

With the exception of the priority, popularity with students, the direct effect of high faculty salaries is to increase the probability that colleges/schools will promote discipline oriented versus local oriented activities for higher salary priority.

The effect of introducing attitudes toward supervision as a control variable on the structural variables and beliefs about salary priority was surprisingly uniform. Perception of the need for closer hierarchical supervision of bureaucratic activities reduced the probability that higher salaried colleges/schools would place priority on academic advising, job counseling, personal values, service in the community or service in the university.

Perceived need for closer collegial supervision of professional activities increased the probability that higher salary colleges/schools would put more priority on academic advising, job counseling, and popularity with students. Perceived need for closer collegial supervision of bureaucratic activities lessens the probability that either personal values or services to the university would receive

more priority in salary considerations. The imposition of supervision indices as controls appears to affect the local oriented priorities to a greater extent than the discipline activities. Again the evidence indicates that type of activity versus source of supervision exerts a greater influence under these conditions.

Complexity

The results of complexity in the multiple regression analysis were not very productive in terms of illustrating significant relations. Complexity did not have a significant effect on any of the supervision indices, and its only direct effects (negative) are on the priorities personal values and popularity with students--the two activities least likely associated with either the bureaucratic or professional model.

Complexity, similar to size, does not play as large a part as had been predicted. Looking at the effect of complexity on salary priorities, the zero order correlations indicate more complex colleges/schools are less likely to put higher priorities on personal values, popularity with students, service in the community and service in the university while they are more likely to put higher priority on research. The more complex schools/colleges appear less likely to give priority to local activities while they are more likely to promote discipline-oriented activities.

The introduction of legbur as a control variable has a positive effect on the relation between complexity and the

priorities job counseling, personal values, service in the community and service in the university while it has a negative effect on complexity's relation with publications. In more complex colleges/schools perceived need for closer hierarchical supervision of bureaucratic activities indicates a higher priority for local-oriented versus discipline-oriented activities.

The effect of the faculty of more complex colleges/schools believing there should be closer peer supervision of professional activities is to lessen the probability that popularity with students, publications, research, service in the community and service in the university will receive higher priority, while increasing the probability that personal values will be given higher priority. The effect of the perceived need for closer collegial supervision does not appear to affect the original complexity-priority relation in any patterned manner.

Perceived need for closer collegial supervision of bureaucratic activities does not appear an influential control for the relation between complexity and salary priorities. The presence of perbur in more complex colleges/schools decreases the probability that popularity with students will receive support as a salary priority while increasing the probability that service in the community will receive support as a salary priority.

Size and complexity are often dealt with together. In this study complexity, <u>per se</u>, appears to be a stronger and

more consistent influence than size. Complexity is significantly correlated with five of the eight activities while size is significantly correlated with only two of the eight activities. In terms of being affected by the supervision indices as test variables significant conditional relations appeared twenty times in the size relations while only thirteen times in the complexity relations.

These results support Hall's schema of both attitudinal and structural dimensions as legitimate areas of investigation while also supporting Anderson and Waskov's conclusion that complexity rather than sheer size is a more valid explanatory variable in organizational analysis.

Faculty Qualifications

The measured impact of faculty qualifications utilizing multiple regression techniques is slight. There is no significant effect on the supervision indices while student advising (positive) and job counseling (positive) are the only salary priorities which are significantly affected. The evidence indicates that higher faculty qualifications tend to promote activities more likely directed at undergraduate students as salary priority.

The Yule's Q zero order correlations indicate that more highly qualified colleges/schools tend to promote academic advising, job counseling, service in the community and service in the university as activities which should be given priority when considering faculty salaries. The evidence indicates that higher faculty qualifications increase the

probability that local oriented activities will receive priority over discipline oriented activities.

The use of the supervision indices as control variables on the faculty qualification and activity relationship resulted in only two categories, hierarchical supervision of bureaucratic activities and collegial supervision of professional activities, showing significant changes.

The effect of both supervision indices on the zero relationships is the same on the significant activities in common, i.e., there were positive changes in popularity with students and negative changes in personal values, service in the community, and service in the university for legbur and perpro.

The effect of perceiving a need for closer hierarchical supervision of bureaucratic activities appears to cause a reduction in priority for local oriented activities while increasing the probability that higher priority will be given to research oriented activities.

Dichotomization of the colleges/schools according to faculty qualifications appears to be the structural categorization schema least likely to be influenced by attitudinal dimensions.

The faculty qualification to activity zero order correlations were unexpected since they indicate that the higher qualified faculty are more likely to favor student oriented over research/publication activities as priorities for salary consideration. The majority of doctorates in

the university are, at least nominally, research oriented doctorates, but this does not appear to be the activity most emphasized in the more highly qualified colleges. The finding is unexpected because of the above reason of the type of faculty training and also because of the popular belief that the more qualified and prestigious units are professionally oriented and consequently less dependent and less responsive to local activities.

It is interesting that the combination of the structural variable high qualified faculty and the attitudinal variable high legbur is most likely to result in lower priority for local activities and higher priority for professional activities. A paradox appears since it seems that the perceived need for closer supervision of bureaucratic activities from an external source is associated with a greater likelihood that professional activities be given greater priority than local activities.

The possible reason for this unexpected finding may be that the university is primarily a teaching institution with less emphasis given to research and service. If this finding is not due to some uniqueness in the data collection setting, some major revisions will have to be made in terms of the relations presently given in the literature.

The findings certainly do not indicate any inherent conflict between professional and bureaucratic dimensions.

Salary Priority Activities Conclusions

The data thus support Blau's findings in some areas while not supporting them in others. The importance of affluence is supported while the importance of size is not supported. Blau states "The size of an academic institution unquestionably has a predominant effect on its character,"[7] but the only significant effect found in these data was for the variable popularity with students, and even the non-significant effects did not appear to point in any specific direction of influence. The effects among and between the undergraduate activities, discipline activities and service activities could be no more random than if designed to appear random.

Blau states that "Investing financial assets in high faculty salaries bears interest, as it were."[8] The data support Blau in terms of discipline oriented activities such as research and publication; however, for undergraduate oriented activities such as student advising and job counseling the interest Blau refers to appears paid rather than received. Higher salaries are negatively related to these latter categories. This finding is interpreted as supporting Blau's conclusions since he finds high salaries lead to an impersonal atmosphere which has detrimental effects for undergraduates.

The data does not give significant direct effects to support or reject Blau's conclusions on complexity but the pattern of non-significant effects supports Blau's conclusion that a high degree of complexity allows greater specialization

which is conducive to the promotion of research and detrimental to undergraduate teaching.

The data do not support Blau's finding that higher qualified faculty's "prevailing orientations . . . tend to be toward scholarly research . . . which curtails their commitment to the local institution."[9] The significant direct effects are positive for student advising and job counseling, while the non-significant effects are negative for research and publication while positive for all other local activities. As with the size related finding it should be noted that the data collection site is a teaching oriented institution which may affect the finding due to selective recruitment of faculty oriented to teaching rather than research.

General Conclusions

The conclusions of this study have been stated in study specific terms up to this point of the study. Since one of the main functions of research is to produce general statements whose applicability exceeds the specific parameters of the phenomenon investigated, the following will consist of statements on higher levels of abstraction. It must be cautioned that while support for these statements is indicated from the findings of this study, they are considered more as hypotheses to be further tested rather than definitive statements of sociological "law," if such indeed exists.

1. When considering perceived need for supervision, supervision from a source internal to the organization is preferred to supervision from a source external to the organization.

The relationship above is obviously not a new addition to organizational theory, being a specific restatement of the more established "out-group" and "in-group" preferences.

2. When considering perceived need for supervision, supervision of activities which can be unambiguously operationalized is preferred to supervision of activities which can not be unambiguously operationalized.

Unambiguously defined obligations allow the setting of standards of performance, albeit minimum standards, by which personnel can evaluate their own performance. The individual thus is not as liable to the possible capricious, personal whims of a supervisor, since performance is organizationally defined, as is the case in most bureaucracies. Ambiguously operationalized activities, however, definitionally involve phenomena which are liable to multiple interpretation, and even if an interpretation is agreed on, which of multiple treatments is to be applied varies, particularly as viewed from a later time perspective. A job whose performance contains uncertainties which must be handled by personal judgment decisions is not the type of job which the job holder wants closer supervised. It should be noted that closer supervision does not necessarily equate with more consultation or information exchanged.

3. When considering perceived need for supervision, source of supervision is more influential than activity supervised.

It is logical to assume that expert and knowledgeable supervision of any activity would not be opposed to the extent that non-expert and non-knowledgeable supervision of

any activity would be opposed. The Board of Regents is not considered expert by many in either the disciplines taught at the university or the machinations of the university bureaucracy.

4. The effect of organizational resources has more influence on perceived need for supervision than does the effect of organizational structure.

The literature has stressed size and/or complexity as major, if not the major, variables which determine organization perception. While the results of this study indicate the importance of size and complexity, the results also indicate that the effect of resources is more influential. It is logical to expect this result since effective versus efficiency criteria are more likely applied in a resource wealthy versus a resource poor organization. Personnel working by efficiency versus effective criteria in a common purpose organization are more likely concerned with maximizing performance on highly visible tasks important to the organization, in anticipation of more abundant reward. In an efficiency oriented organization pressure is generated for all to perform at visible tasks, while in effective oriented organizations less pressure is generated as long as the "work" is accomplished, hence less supervision is deemed necessary. Involvement in long range, low visibility, or "nonsense" activity does not threaten the main task of the wealthy organization since it is using its "surplus" to fund the activities. Neither size nor complexity guarantees

surplus, although the presence of resources is usually a prior reciprocating condition to both size and complexity.

Bennis writes that one of the changes which will occur in the future is accentuating the conflict resulting from different goals in the same organization, the reason being "professionals . . . who tend to identify as much with the supra-goals of their profession as with those of their immediate employer."[10] Blau states, "The coexistence of some conditions that have opposite and some that have parallel effects on the two functions is the source of the teaching-research dilemma because it shows that the conflict between the two cannot be resolved without depriving either of important benefits by simply separating them into different institutions . . . ."[11]

Two categories earlier identified as (1) most likely undergraduate oriented and (2) most likely discipline oriented allow conclusions to be advanced along this line.

5. General organizational factors promote different goals by promoting differential reward priorities.

The multiple regression sections show that increases in complexity or faculty salaries tend to depreciate undergraduate oriented priorities and service activities while appreciating discipline oriented priorities. Increased faculty qualifications appreciate undergraduate oriented activities and service activities while depreciating discipline oriented priorities. Increased affluence tends to appreciate all three undergraduate, discipline oriented and service priorities, while size appears to have little effect on any

of the priorities.

The organizational variable affluence appears to be the only variable which does not present a dilemma, but rather a problem, a problem which can be solved without having to choose between opposite purpose results. Affluence tends to be positively related to higher priorities for undergraduate activities, discipline oriented activities and service activities. The creation of more affluent units is the only organizational variable in this study which has a direct positive effect on all the activities investigated.

Future Research

In this section suggestions are advanced for further research in this area.

The findings in this study did not support a number of findings, particularly Blau's findings in his study of higher education.[12] Contrary to Blau, more affluence, and more highly qualified colleges/schools placed higher priority on undergraduate activities and lower priorities on research and publication than did their less prosperous and less qualified counterparts. Size and complexity have been used--validly and successfully--in organization study, but basic parameters have usually not been explored beyond the dichotomization larger/smaller and more/less. The effects of both size and complexity may vary within absolute ranges (plateaus) in accord with some mathematical function more complicated than a simple linear or parabolic function.

Some variable, or set of variables, has caused organization X to be larger and/or more complex than organization Y. Perhaps the effect later attributed to size or complexity is merely an accelerated result of the original causal variables being impacted through the modified organization. The tracing of the development of the original variables, while difficult, appears possible using multiple regression and/or path analysis techniques. The tracing of the original variables over a sample which varies through a wide range of size and complexity would allow detection of either plateaus of effect, if they exist, or the continuing causal variables, if they exist.

Attitudes concerning supervision relative to both source of supervision and type of activity supervised mediate in a significant fashion the effect of structural variables on faculty salary priorities.

The present study does not inform us as to whether or not the presence of a specific attitude toward supervision is the result of selective recruitment into the organization or the result of experience in the organization. More simply, is the effect because of social psychological or sociological variables? Explanation and/or modification of an organization certainly takes a different tack dependent on the origination of the mediating variable.

The findings do provide support for the position that the consideration of both the factors does provide for more accurate determination of which salary priorities will be

advanced. If the conjunction of the two sets of variables affects an area as important as reward priorities, there is a strong probability that other organization processes are also affected.

The composition of the supervision indices is exploratory and at the time the questionnaire was developed, this particular use was not anticipated. Original intentions were directed at source of supervision only, and type of activity was developed later. The combinations originated here appear capable of being developed into useful measures. Development would be assisted by measures of actual styles of supervision and preferential choices relative to the actual situation. Attention to structural variables and criteria of evaluation, e.g., efficiency or effective, relative to the development of supervision also appear to be fruitful areas for further investigation.

Footnotes

1. Peter M. Blau. The Organization of Academic Work. New York: John Wiley and Sons. 1973. p. 279.

2. William H. Starbuck. "Organizational Growth and Development" in James G. March (ed.), Handbook of Organizations. Chicago: Rand McNally. 1965. pp. 451-533.

3. Blau, op. cit., p. 251.

4. Ibid., p. 252.

5. Charles Perrow. Organizational Analysis: A Sociological View. Belmont, Calif.: Wadsworth. 1970. p. ix.

6. Blau, op. cit., p. 237.

7. Ibid., p. 252.

8. Ibid., p. 251.

9. Ibid., p. 255.

10. Ibid.

11. Ibid.

12. Ibid.

APPENDIX A

Data obtained from documents can present a number of difficulties for the researcher. This study attempted to minimize the biases introduced by utilizing this data source. The major sources of potential bias explicitly dealt with were:

(a) authenticity--the documents are official reports of the organization being studied;

(b) credibility--the documents are public information and as such are examined from above by the Board of Regents and the legislature in the capacity of funding agencies, and from below by the colleges/schools and the departments as funding recipients; this potential scrutiny makes deliberate misrepresentation less likely;

(c) statistical interpretation--the information taken from the report was raw data with all statistical techniques applied by the present researcher;

(d) verbal interpretation--although the danger exists that the present researcher may have misinterpreted the data categories, this danger appears slight since the information gleaned was all quantitative, consequently lowering the likelihood that misinterpretation occurred through connotative confusion over terms.