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Some Correlates of Program Change in Large Academic Libraries

DISSERTATION

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

By

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1975

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Chapter I - Problem Statement

A. Problem Area - Overview

Some academic libraries have been judged successful in their attempts to meet change in their environments with concomitant change in their services and programs. Other libraries have been judged unsuccessful in such attempts. A fundamental concept underlying the research study herein reported was that whether an academic library is successful or not in meeting a changing environment is not a chance or fortuitous occurrence; rather, that there are certain organizational characteristics of academic libraries that either positively or negatively affect their ability to adopt new services and programs (program change).

Previous research (Baldridge, et. al., 1973; Baldridge and Burnham, 1973; Blau and Scott, 1962; Burns and Stalker, 1961; Hage and Aiken, 1970; Hall, 1963; Thompson, V. A., 1965; Zaltman, Duncan, and Holbek, 1973) has identified the following organizational characteristics as affecting organizational behavior: complexity, centralization, formalization, stratification, and job satisfaction. The overall 1

1Other variables which have been found to affect program change are emphases on production and efficiency over quality and worker contentment, the environment in which the organization operates, the technology which the organization uses and which is available to it, the size of the organization, its age and location, and others. The five variables examined in this research were chosen because they exist in almost all organizations (Hage, 1965, pp. 290, 291) and because they could be measured fairly unambiguously.
problem addressed by this study was the explanation of the nature
of the relation, if any, between program change in large academic
libraries and these five organizational characteristics. The
above-cited literature has suggested a positive correlation between
program change and complexity and job satisfaction; and a nega-
tive correlation between program change and centralization, formaliza-
tion, and stratification.
B. Problem Area - Discussion

This study was concerned with macro-organizational change rather than with change in individuals or in the way individuals adopt changes or innovations. It was evident that in today's highly structured, complex, and interdependent society most major innovations that have the potential for affecting large numbers of people are organizational innovations which depend for their adoption not merely on individuals' proclivities toward adoption but on the overall organization's stance toward change. The unit of analysis in this research, therefore, was the organization, not the individual.

Blau (1968, p. 454) stated that in order to answer questions about an organization's structural characteristics (as this research has proposed to do), "...it is necessary to compare different organizations and not merely to study the influence exerted on behavior by the conditions found in a single case... This method of comparison might involve...quantitative comparisons of many organizations and multivariate analysis of their characteristics." Such systematic comparison of the characteristics of a large number of organizations was thought most likely to contribute significantly to organization theory.

Not only has change seemed to be endemic to contemporary organizations, but indeed necessary for complex organizations to adapt to and cope with an unpredictable and changing environment. In order to maintain - or, in some cases, regain - their positions as viable and
efficacious institutions, academic libraries must change to meet the demands of their constituencies: no longer can they afford the luxury of operating in the same way they did ten or twenty years ago. Demands from faculty, students, and administrators for better and faster library service, for innovative ways of delivering the libraries' collections and services to their constituencies, and for new and innovative services to offer increasingly sophisticated and information-intensive publics somehow must be met by academic libraries. All this must be done within realistic budget limitations, which limitations in themselves provide impetus for change.

Some broad national trends affecting academic libraries can be seen by contrasting general environmental trends in the 1960's and the 1970's. The 1960's was a boom time for academic libraries, public and private: a great deal of federal assistance was provided for such things as collection development, new buildings, demonstration projects, and new technology, as well as for basic research into library problems. Most universities experienced substantial increases in enrollments and in the numbers of new courses and curricula offered, both of which increases were reflected in quantitative growth of

2 It would be inappropriate to speak of an academic library "failing" (in the sense that a commercial company "fails" and goes out of business) due to its inability to adopt needed changes. Such a library simply may cease to be an efficacious subsystem of the college or university: potential patrons will go elsewhere for their library-related needs, or will use the library as little as possible; opportunities for service will be lost; the importance of the library to the instructional and learning process will be diminished.
library collections. Contrastingly, in the 1970's we have witnessed a sharp decline in federal assistance for academic libraries. Enrollments and student-generated income have shrunk; endowment monies have not kept pace with rising costs of materials and salaries. Most growth in library collections has been incremental. It would be only a slight exaggeration to say retrenchment and consolidation have become the order of the day.

Against this background of profound environmental change stand academic libraries which traditionally have been very slow to change and to adopt new ideas and techniques. Some writers have hypothesized that the conserving drive of librarians with respect to their collections has carried over into the area of basic value systems of librarians and made them conservative. The point bears some study. In spite of the above national trends in colleges and universities and of the supposed conservative outlook of librarians, however, some university libraries recently have made major changes in their operations and services. Within the past few years The Ohio State University Library System, for example, has adopted a computer-based, shared cataloging system, an on-line circulation system, a sophisticated inter-library loan system; it has also developed a new collection in Black studies. Although these changes and improvements in services and collection may have been the result merely of The Ohio State University's favorable economic climate over the last few years, it was believed by this writer that there are organizational variables, beyond economic resources, that encourage or discourage such dramatic
change in complex organizations like academic libraries. This research effort was seen as an attempt at a preliminary study of some of these variables with a view to gaining a better theoretical understanding of the correlates of organizational change in academic libraries.

Speaking in a broader organizational context, however, there has been noted a paradox between the above statements about the ubiquity of change (or, at least, of the need for change) and the common belief that organizations are great resisters of change. As reported in the literature search of this study, there have been identified various organizational characteristics that inhibit change; several of these characteristics were of interest to this study. (There are also psychological and interpersonal factors which affect organizational change; these factors, however, are beyond the scope of this study.) Organizations have been shown to be conservative by nature and to resist change and innovation - even, sometimes, when change is needed.3

Changes in the programs and services of academic libraries have been related to changing theories of management that have emerged in the 1960's. These new theories of management first affected business

3V. A. Thompson (1969, Ch. III) suggests that in the typically monocratic or bureaucratic model of organizations innovation behavior is nonrational. The problem is in the organizational model: "The monocratic, comprehensive, top-down intellectual structure of latter-day Taylorism may be compatible with activities at the certainty end of our activities continuum, but it becomes more and more dysfunctional as we move toward the uncertainty end - toward innovation" (ibid., p. 60).
and industrial organizations, then spread to governmental agencies; they "...are characterized by the growing involvement of people in organizational decision-making, loosening of the traditional heirarchical structure, what might be called creative tensions, growing complexity, constant change, and open-endedness" (McAnally and Downs, 1973, pp. 107, 108). These authors went on to enumerate some of the consequences of changing patterns of management in academic libraries:

...They draw in to the solution of problems a diverse group of good minds with varied viewpoints, thereby improving the quality as well as the effectiveness of decision making. They are the answer to growing staff pressures, particularly from the academic or professional staff, for participation in planning and policy decisions, as well as administrative affairs affecting themselves. They tend to improve the morale and dedication of the staff. They marshal the entire staff in defense of the library against attacks from outside, thus relieving and supporting the director, a defense in depth, as it were. The director has to surrender some of his old authority, and becomes more of a leader. His influence may not be diminished, but it must be exerted in different ways. (ibid., p. 120)

The problem addressed by this research effort was the explanation of change in the programs and services offered by large academic libraries via several ubiquitous organizational variables. Specifically, the problem was to explain, via the organizational variables of complexity, centralization, formalization, stratification, and job satisfaction, the variance in the degrees to which a number of large academic libraries have adopted new services and programs over a specific time period. The theoretical and empirical writings cited
in Chapter II (Related Research) suggested that organizations which are characterized as highly complex in terms of person specialization and whose members have a high degree of job satisfaction are likely to adopt more new programs and services than organizations that are less complex and whose employees are less satisfied with their jobs; the cited writings suggested also that those organizations which are characterized as highly centralized in their decision making processes, highly formalized in terms of how specifically jobs and tasks are codified, and highly stratified in terms of how the rewards of salary and prestige are distributed among members are likely to adopt fewer new programs and services than organizations that are less centralized, formalized, and stratified. The study was conceived as an empirical test of these hypothesized relationships. Three contextual variables - size, auspices (private or public parent institution) and level (Baccalaureate-masters or doctorate-granting parent institution) - and their relationships with the dependent variable also were investigated.

In the next section the independent and dependent variables of the research are defined.
C. Definitions of the Variables

1. Degree of Program Change

Degree of Program Change, the dependent variable in the study, was the extent to which an academic library adopted new services and programs over a five-year period (Hage and Aiken, 1970, p. 13). Such change represented an organizational attempt to cope with new needs either presently impinging on an organization or foreseen, with new technology in the field, or with threatening competition; it was conceived as exploitation of available resources by an organization so as to enlarge the repertoire of services and programs it offers to its clientele.

Zaltman, Duncan and Holbek (1973, pp. 2, 3) claimed that such change or innovation may represent organizational attempts to close performance gaps - "discrepancies between what the organization could do by virtue of a goal-related opportunity in its environment and what it actually does in terms of exploiting that opportunity." The causes of such performance gaps were summarized by the above authors (ibid., p. 169):

1. Adjustment of criteria of satisfaction to organization's level of performance is slow...

---

\(^{\text{1}}\)Zaltman, Duncan and Holbek (1973, pp. 14, 15) indicate that innovation (what, in this study, is referred to as program change) may occur with respect to four aspects of organizations: products or services performed; production-process employed; organization-structure of the firm; people innovations. In this paper change or innovation relates specifically to the first area; particular examples of change in the other areas may be included in the study as examples of program change if they can be shown to be of more or less direct benefit to the library's users.
2. Even in a stable environment the criteria of satisfactory performance are like aspiration levels in that they tend to adjust themselves upward.

3. There may be changes in the organization's internal environment: (1) new personnel may enter the organization; (2) technological changes may occur; (3) there may be shifts in power relationships.

4. There may be changes in the organization's external environment: (1) the demand for the organization's output may have changed; (2) technological changes in the larger environment may occur... (3) there may be changes in the organization's power position relative to other organizations.

In the context of this research, "change" and "innovation" have been used interchangeably. Some writers, however, have objected to such blurring of the distinction between the two terms. Becker and Whisler (1967) emphasized the distinction by asserting that "innovation" refers to the first or early use of an idea by an organization, whereas "change" refers to the later adoption of an idea or process or product by another (noninnovating) organization. Although the distinction is a real one, for the purposes of this research it was ignored in favor of concentrating attention on a more inclusive denotation of change, i.e., the adoption of programs or services that are new to the organizations being studied. It was felt too many useful data would be lost if either of the more restrictive denotations of "change" and "innovation", as used by Becker and Whisler, had been stipulated: by ignoring the distinction both "changes" and "innovations" within organizations were included in the study. Also, Rowe and Boise (1974, p. 285), in a review of
the literature on organizational innovation, and with particular reference to the above article by Becker and Whisler, stated that "...recent definitions [of organizational innovation] which have been used in empirical studies tend not to include the generation of ideas and the first or early use of ideas as part of the criteria for identifying an innovation." These authors continued: "...most definitions of organizational innovation focus on change which is new to the implementing organization ... it is too early to determine if success and/or organizational intent criteria are likely to be included in emerging definitions of organizational innovations." (ibid.) The definition of degree of program change stipulated in the present research reflected these two statements.

A basic assumption of this research was that some academic libraries more readily introduce new programs and services than others do. In their important study of sixteen social welfare organizations, Hage and Aiken (1967) found that organizations with ostensibly similar goals displayed markedly different degrees of program change. Several organizational variables that are hypothesized to affect program change are defined next.

2. Complexity

Organizations typically have divided work to be done into jobs and then hired persons, who, because of their training and experience, and their specialized occupations, were considered specialists. Organizational complexity was seen as a measure of such person specialization within the organization; it was the general level of
professional expertise in the organization. Specific indicators of this variable were: the relative number of different occupational specialties within the organization; the extensiveness of training of professional job incumbents; and the degree of extra-organizational professional activity among the staff (Hage and Aiken, 1970, pp. 16, 17).

3. Centralization

Decisions about the allocation of resources, selection of programs and techniques, personnel practices, and so on, have always been made by organization members. Some organizations have restricted such decision making to a small elite of members, while others have encouraged a broader base of employees to participate in decision making. Centralization, as stipulated in this research, referred to the degree to which decisions affecting work and workers are made by a very limited number of people in the authority hierarchy (Hage and Aiken, 1970, pp. 18-21), as opposed to a more collegial structure in which decision-making authority is spread throughout the affected personnel.

4. Formalization

What organizations learn from past experience often has been codified in a set of rules which govern future behavior in the organization. Some organizations have been much more specific in this codifying practice than others. Formalization was specified to be the presence of such rules and customs that regulate social
positions and jobs within the organization\(^5\) (ibid., p. 23). While rules and customs have provided needed predictability so that similar situations could be handled in a routine manner and not every situation became an exception, such rules may have had the effect of inhibiting innovation. The more highly codified have been the jobs in an organization and the less the range of variation allowed, the more formalized the organization has been.

5. Stratification

For the purposes of this paper, stratification referred to the way rewards have been distributed among incumbents in an organization - specifically - to the extent of the differences in the rank of rewards: salary and prestige\(^6\) (Hage, 1974, pp. 40, 41).

Salary is a formal reward; prestige is an informal reward. A person's prestige was manifest in such things as the esteem and deference paid him by others in the organization. The greater the differences in the rewards distributed, the higher the stratification.

\(^5\)Consistent with this definition, but on a more general level, is Hall's (1972, p. 196): "...the organizational technique of prescribing how, when and by whom tasks are to be performed." The pattern which this specification takes can vary from rigid to loose.

\(^6\)For V. A. Thompson (1969, p. 17) such extrinsic rewards as money, power and status represent one aspect of an organization's control structure.
While originally thought to motivate workers to become more productive, high stratification might also have led to dysfunctional competition among workers. The respect of only those high in the stratification structure might have been competed for among workers, who, to please their superiors, may have conformed to the superiors' status quo expectations.

6. Job Satisfaction

In order to retain workers and to get them to do acceptable work, organizations have had to maintain a degree of satisfaction among workers. Some organizations have stressed good working conditions, while others have not. Job satisfaction, a measure of morale among workers, has been defined elsewhere as a composite of workers' attitudes toward many aspects associated with the job: salary, autonomy, pace of work, co-workers, regulations, and so on (Smith, Kendall and Hulin, 1969). It was seen in this research merely as the worker's general attitude toward his job (Hage and Aiken, 1970, pp. 26, 27).

Complexity, centralization, formalization, and stratification represent structural variables of an organization; job satisfaction

7Seymour Lipset has stated; "The stratification system is perceived, therefore, as a motivation system; it is society's mechanism for encouraging the most able people to perform the most demanding roles in order to have the society operate efficiently." (International Encyclopedia of the Social Sciences, Vol. 15, p. 305).
represents an aspect of the functioning or performance of an organization. These five organizational characteristics (the independent variables in this study) as well as program change (the dependent variable) can be conceptualized best in a dimensional perspective, in much the same way that Hall (1963) conceptualizes the various characteristics of bureaucracy. The six variables in this study do not exist in organizations in a merely dichotomized state, i.e., each either is or is not present, but, rather, each exists along a continuum ranging from high to low in degree. Indeed, an entire organization can be described in terms of these (and other) variables existing along continua or dimensions.

In the next section of this report propositions and hypotheses linking the above five independent variables with the dependent variable are stated. Along with each proposition-hypothesis statement a rationale explaining the hypothesized relationship is presented.
D. Hypotheses

1. Complexity

Proposition 1: The greater the complexity (C), the greater the degree of program change (PC).

Null: There is no relationship between complexity and degree of program change.

\[(C \xrightarrow{0} PC)\]

Alternative: There is a positive relationship between complexity and degree of program change.

\[(C \xrightarrow{+} PC)\]

As illustrated by V. A. Thompson (1961, pp. 49-52), the growth of personal specialization (complexity) within organizations has been a historical phenomenon in the medical profession (as well as in other fields). Analogously, as academic libraries have grown in importance relative to the goals, purposes, and functions of the modern college or university, they also have grown in complexity. The increasing realization of the importance of information and information-disseminating technology to the academic environment has been accompanied by an increase in the number of librarian-specialists who practice within this technology. More professional specialties with a growing core of librarian-experts have appeared in such areas as computerization of library operations and services, management practices, research into library performance and needs, the management of non-print collections of materials, and others.
Elsewhere, V. A. Thompson (1969, pp. 92-95) pointed out that the growing professionalism (complexity) of an organization's work force is incompatible with a monocratic, hierarchical control structure; and that such professionalism eventually promotes change and innovation in the organization:

With the great increase in the number of professional personnel in organizations one would expect to see less administration by top-down command, less unquestioning obedience, less restriction of communication, less parochialism and noncooperation of organization units. Organizations should more closely resemble societies of equals and human relations in them should, as a result, become more humane and dignified. All of these changes should make for more flexibility, variety, and acceptance of change. And all of them should, therefore, lead to greater innovativeness. (ibid., pp. 94, 95)

Suggestions for program change have come not only from the highest administrative levels of an organization but from lower level professional personnel as well. An organization with more lower level professional personnel possessing a high degree of expertise in specialized areas was thought more likely to receive from these people suggestions for program change than were organizations with few such professionals. Being a professional implies not only life-long learning and the pursuit of knowledge but also a desire to put this knowledge to use in society. The result of this implementation is often change in the organization.

Dedication to the service ideal has been defined as another characteristic of a professional. Librarians have claimed to be imbued with the service ideal. Such an orientation implies continual program
change in an effort to improve the quality of the library's services.

Another defined aspect of complexity was the extensiveness of training of organization members. The implication here was that the more highly trained the members of the organization were, the more familiar they were with innovations of potential use to their organization.

Another way in which complexity was thought to promote program change was that it may lead to conflict among diverse professionals over allocation of resources, and this conflict may in turn encourage change. V. A. Thompson (1965, p. 4) stated that "conflict generates problems and uncertainties and diffuses ideas. Conflict implies pluralism and forces coping and search for solutions... Conflict, therefore, encourages innovations. Other things being equal, the less bureaucratized (monocratic) the organization, the more conflict and uncertainty and the more innovation."

Finally, it was thought the professional's contact with other professionals at meetings, conferences, etc. exposed him to the new ideas of his colleagues; such a professional was thought likely to attempt to implement some of these ideas in his organization. The internal and external channels of information to which the professional had access would make him more aware of the need for innovations.

Since this was a correlational and cross sectional study, it was not appropriate to speak in terms of causality: it could not be hypothesized that increased complexity causes increased program
change. Indeed, the five propositions stated here logically could have been reversed and made as much sense as they do now. Indeed, it may very well have been that program change was actually anterior to, say, complexity in that adopting new programs required the hiring of new occupational specialists. In a similar manner, the other four propositions could have been reversed.

2. Centralization

Proposition 2: The higher the centralization (Ce), the lower the degree of program change (PC).

Null: There is no relationship between centralization and degree of program change.

\[ (Ce \rightarrow 0 \rightarrow PC) \]

Alternative: There is a negative relationship between centralization and program change.

\[ (Ce \rightarrow PC) \]

As V. A. Thompson (1961, pp. 39, 40) stated, centralization may have been a natural consequence of the particular stage in the development of technology in which an organization found itself. (Although Thompson here was speaking specifically of centralization of tasks, his remarks apply analogously to centralization of decision making.) The greater the degree of specialization and complexity in society, the more centralization is required. "Overcentralization" - that which is carried beyond what is technologically necessary - however, may have originated in desires for personal power and status and may have been related to personal insecurity generated by the
bureaucratic organization. Such overcentralizing was an example of what V. A. Thompson would call "bureaupathic behavior."

High centralization has led to the preservation of the status quo when those in power sought to maintain their positions by blocking ideas for change; it was essentially an undemocratic management structure. Contrastingly, low centralization has implied a decision-making apparatus more representative in nature, allowing for the introduction of diverse views and ideas from a wide spectrum of organization members, and eventually encouraging change. Another implication of a democratic, decentralized structure was that it allows for conflict, which, in turn, could lead to change.

According to V. A. Thompson (1961, p. 64) hierarchical role behavior (one of the dimensions of which is hierarchical decision making or centralization) was essentially autocratic and authoritarian, even though the ends to which such decision making are directed may be meritorious. Such hierarchical decision making was simply incompatible with democratic egalitarianism.

Shepard (1967, p. 470) pointed out that some types of organizations, in order to assure reliability of their technologies, have required strong defenses against innovation. It may have been the position of such an organization's power structure that perfection of operations had been attained and that any innovation may have led to degenerative performance. Also, change may have been seen as a challenge to vested interests in the organization, and it may have violated certain territorial rights of persons or groups. The
maintenance of a highly centralized decision making structure was one way for such an organization to protect itself against change.

One writer, who in her papers has combined organizational theory and library administration, is Mary Lee Bundy: she, too, noted the deleterious effects on organizational change wrought by the centralization of decision making within the authority hierarchy of academic libraries (Bundy, 1966, p. 256). The lack of conflict in such a rigidly controlled organization may have been an indication that conditions requiring organizational change have not been faced by the library's administrators.

V. A. Thompson on organization conflict: "The inability to legitimize [sic] conflict depresses creativity. Conflict generates problems and uncertainties and diffuses ideas. Conflict implies pluralism - a dispersion of legitimate power. Thus, it necessitates coping and searching for solutions, whereas overriding concentrated power or authority can simply ignore obstacles and objections. Conflict, therefore, encourages innovation" (Thompson, V. A., 1969, pp. 16, 17).

3. Formalization

Proposition 3: The greater the formalization (F), the lower the degree of program change (PC).

Null: There is no relationship between formalization and program change.

\[ (F \rightarrow 0)_{PC} \]
Alternative: There is a negative relationship between formalization and degree of program change.

(F ——> PC)

A certain amount of formalization always has been necessary if any complex organization was to operate successfully. In his analysis of bureaucracy, Crozier (1964, p. 183) stated: "Planned cooperative action is possible only if one can rely on a great deal of regularity of behavior on the part of all the participants. In other words, any organization must obtain from its members a variable but always substantial amount of conformity." One way to achieve such regularity of behavior and thus predictability was through formalization.

High formalization, however, has allowed little latitude in job performance and little initiative. The presence of a large number of rules controlling one's performance in a job has encouraged conformity to the letter of the rules but discouraged new ideas. There was assumed to be a predisposition among workers not to do or suggest anything new and thus contrary to the rules. The implication from higher management was that the best way to perform the job has been codified once and for all in a set of rules, and any deviation from these rules represented degenerative performance. The existence of a large number of very explicit rules implied that management believed the job had been highly rationalized and that there was very little uncertainty impinging on the job.
4. Stratification

Proposition 4: The greater the stratification \((St)\), the lower the degree of program change \((PC)\).

Null: There is no relationship between stratification and program change.

\[
(St \rightarrow 0 \rightarrow PC)
\]

Alternative: There is a negative relationship between stratification and program change.

\[
(St \rightarrow PC)
\]

In traditional bureaucratic theory stratification was seen as offering workers an incentive - promotion, as well as a clear line of advancement up the promotion ladder - to work harder. This greater effort was thought to result in an increase in production. It has been conjectured, however, that stratification may be dysfunctional for organizational change.

Large status and prestige differentials within an organization have been thought likely to encourage those who possess status and prestige in high degrees to take steps to retain their positions by vetoing any changes that might force them to share some of these organizational rewards, V. A. Thompson, (1965, p. 6) said that:

"The hierarchy of authority is a procedure whereby organizationally directed proposals from within are affirmed or vetoed. It is a procedure which gives advantage to the veto, because monocratic systems do not provide for appeals. An appeal implies conflicting rights which must be adjudicated, but the superior's veto of a subordinate's
proposal legitimately rejects the proposal. An approval must usually go higher, where it is again subject to a veto. Thus, even if the monocratic organization allows new ideas to be generated, it is very apt to veto them." The assumption here was that in highly stratified organizations program change resulted in the re-allocation of institutional rewards in favor of those low in status and prestige. Conversely, in organizations with little stratification, those at the top had little to lose by the introduction of change,

V. A, Thompson (1965, pp. 4-6) saw the organization's stratification system as a control mechanism likely to stifle innovation:

It [the bureaucratic organization] can control only through extrinsic rewards such as money, power, and status, because it demands the undifferentiated time of its members in the interests of the owner's goals.

...The necessity of relying on such extrinsic rewards forces the organization to make its hierarchical positions rewards for compliance. Such a reward system depends upon the organization's ability to find enough people who are willing to exchange their time for a chance at a small group of status positions...The extrinsic reward system, administered by the hierarchy of authority, stimulates conformity rather than innovation. Creativity is promoted by an internal commitment, by intrinsic rewards for the most part. The extrinsic [sic] rewards of esteem of colleagues, and the benevolent competition through which it is distributed, are largely foreign to the monocratic, production-oriented organization. Hierarchical competition is highly individualistic and malevolent. It does not contribute to cooperative and group problem solving.
High organizational stratification may have had effects on the internal communication system which were deleterious for the initiation of change. Specifically, high stratification may have decreased upward communication of information—especially of information about poor organizational performance—so that decision makers became unaware of conditions needing change. The reason for members' reluctance to communicate negative information upward in a highly stratified structure was their fear of censure by individuals highly placed in the system. Also, in a more general sense, communication between unequals sometimes has been uncomfortable for the subordinate who is keenly aware of the differences in terms of status and prestige between him and his superior. The greater these differences were, the less likely interpersonal communication has developed.

As Hage (1974, pp. 201-3) indicated, a high degree of stratification in organizations has been associated with less horizontal communication as well. His figures indicated that in pyramidal organizations there was less communication between workers of different departments, as well as between workers and supervisors of different departments.

Finally, in highly stratified organizations, lower level workers were less likely to criticize higher ups who, because of their high status and prestige, have a certain amount of power over their subordinates. Suggestions for program changes were perceived by the higher ups as criticism of the way things were currently operating.
5. Satisfaction

Proposition 5: The higher the job satisfaction (Sa), the greater the degree of program change (PC).

Null: There is no relationship between job satisfaction and program change.

\[(Sa \rightarrow PC)\]

Alternative: There is a positive relationship between job satisfaction and program change.

\[(Sa \longrightarrow PC)\]

The rationale is that satisfied workers were more committed to the organization and hence more receptive to new ideas for improving products and/or services. The pride they took in their work influenced workers to improve the operation of the organization.
E. Limitations of the Study

Given the cross sectional, non-longitudinal, non-experimental nature of the study, causal inferences could not be made: correlational analysis essentially was the limit to which the applicability of the findings can be stretched. Constraints of time and resources precluded a long-term study. While it was felt the results of an intensive case study would not be sufficiently generalizable, it was also deemed beyond this researcher's resources to perform an experimental study involving several libraries.

The survey method of data collection sometimes is not the most reliable alternative; however, practical constraints precluded using the personal interview method with so many organizations being studied.

One inherent limitation of the study was that it dealt with organizations of only one type - large academic libraries. As pointed out elsewhere (Carver and Sergiovanni, 1971, p. 28), such a situation sometimes has made it difficult to find sufficient variability (in terms of the dependent and independent variables) among the organizations studied, thus making statistical inference impossible. In the current research, there has been uncovered a great deal of variability among the dependent variable scores of the libraries studied. (See Table 10, p.110 and Appendix F, p. 211.) Much less variability, however, has been detected among the independent variable scores.
F. Organization of the Report

In this chapter the basic problem of the research study – an explanation of the nature of the relation, if any, between degree of program change in large academic libraries and the organizational variables of complexity, centralization, formalization, stratification, and job satisfaction – has been presented in overview and in detail. Each of these variables has been defined in terms of the literature of organizational behavior. Hypotheses relating program change to the five independent variables have been presented, along with rationales to explain and support the hypotheses. General limitations of the study have been presented.

A literature search summarizing pertinent writings is presented in Chapter II. Several general papers that serve to place the current research in a theoretical and practical milieu are reported first; following these are reports of studies that deal specifically with each of the variables and hypotheses in the current research.

Chapter III is devoted to an explanation of the mechanics of how the current research was performed. The population of academic libraries is defined first, followed by an explanation of how the sample was derived. The research design details the actual steps taken to gather and prepare the data; this section is followed by a presentation of how the data were analyzed. Concluding the chapter is a discussion of how the variables were operationalized through specific measuring instruments.
Data are reported and analyzed, and an interpretation of the analysis is reported in Chapter IV. Each of the five hypotheses presented in the first chapter is restated, along with an interpretation of the findings relevant to it. The chapter ends with a statement of overall conclusions. Chapter V is a summary of the entire research study, with a statement of general conclusions and of suggestions for additional research. Some implications of the study are discussed.
Chapter II - Related Research

A. Introduction

In the previous chapter the conceptual framework of the research study was presented: the general problem was stated, variables were defined, hypotheses and their rationales were stated. Presented in this chapter is a review of the published literature bearing on the variables and hypotheses of Chapter I. The current research is placed in theoretical and practical perspective through a summary of several generally related writings. The major part of the chapter is a discussion of papers bearing directly on the variables and hypotheses in this research.
B. General Writings

At a global level Leavitt's model of organizational change (Leavitt, 1965, p. 1145) provided a theoretical orientation for this study. (Figure 1 illustrates his model.) Leavitt conceptualized four types of components - task, people, structure and technology - which he saw as common to all complex organizations. (Although Leavitt mentioned specifically only industrial organizations, this writer felt his paradigm was applicable to professional organizations like academic libraries as well.) Task he defined as the raison d'etre of the organization: the production of goods and services, including the large number of different but operationally meaningful subtasks that may exist in an organization. Technology was the direct problem-solving inventions used by the organization; it includes processes as well as machines. Structure referred to the systems of communication, authority, and work flow in the organization and to the relationships among the various roles played by the people in the organization. Leavitt made the point that in any complex organization these four components were interdependent, so that a major change in one inevitably affected each of the others.

In relating the present research to Leavitt's model, program change (the adoption of new programs and services by an academic library) represented primarily task components and secondarily technology components; complexity and job satisfaction represented people components; and centralization, formalization, and
FIGURE 1
LEAVITT'S MODEL OF ORGANIZATIONAL CHANGE
stratification represented structural components. By implication, this researcher expected academic libraries which exhibited different levels of program change to exhibit correspondingly different levels of complexity, centralization, formalization, stratification, and job satisfaction, to the extent that a proportion of the variance of libraries' program change levels could be explained statistically by these five organizational characteristics.

Hage and Aiken (1970, p. xiii) suggested definite patterns in which the above organizational variables were found to exist together. A high degree of program change, they said, was usually positively correlated with complexity and job satisfaction, and negatively correlated with centralization, formalization, and stratification. These authors saw the organization as a dynamic social system with definite and discernible tendencies toward either a low or high degree of program change.

The patterns identified by Hage and Aiken corresponded to the two extreme forms of management systems - mechanistic and organic - identified by Burns and Stalker (Burns and Stalker, 1961, pp. 119-22). A mechanistic management system was generally unable to adjust to environmental and technological change, while the organic was able to cope with such change. These authors described a mechanistic system as one in which:

...the problems and tasks facing the concern as a whole are broken down into specialisms. Each individual pursues his task as something distinct from the real tasks of the concern as a whole, as if it were the subject of a sub-contract. 'Somebody at the top' is responsible for seeing to its relevance.
The technical methods, duties, and powers attached to each functional role are precisely defined. Interaction within management tends to be vertical, i.e., between superior and subordinate. Operations and working behaviour are governed by instructions and decisions issued by superiors. This command hierarchy is maintained by the implicit assumption that all knowledge about the situation of the firm and its tasks is, or should be, available only to the head of the firm. Management, often visualized as the complex hierarchy familiar in organization charts, operates a simple control system, with information flowing up through a succession of filters, and decisions and instructions flowing downwards through a succession of amplifiers (ibid., p. 5).

Contrastingly, an organic system was described as:

...adapted to unstable conditions, when problems and requirements for action arise which cannot be broken down and distributed among specialist roles within a clearly defined hierarchy. Individuals have to perform their special tasks in the light of their knowledge of the tasks of the firms as a whole. Jobs lose much of their formal definition in terms of methods, duties, and powers, which have to be redefined continually by interaction with others participating in a task. Interaction runs laterally as much as vertically. Communication between people of different ranks tends to resemble lateral consultation rather than vertical command. Omniscience can no longer be imputed to the head of the concern (ibid., p. 5, 6).

The variables used by Burns and Stalker to describe these two polar extremes existed in much the same ways that Hage and Aiken said they did: the mechanistic extreme was highly bureaucratic with centralized control, communication, and decision making; and with a high level of formalization; the organic extreme was characterized by collegial decision-making, a network structure of control, authority, and communication and fewer rules and regulations.
In a review of the characteristics of bureaucracy as discussed by several major writers, beginning with Weber, Hall (1963, p. 34) listed eleven dimensions, three of which — hierarchy of authority, rules governing behavior of positional incumbents, differential rewards of office — correspond, respectively, to three of the independent variables in this study: centralization, formalization, stratification. If the bureaucratic model were considered a function of only these three dimensions, and if each existed in an organization to a high degree, the organization would be called highly bureaucratic. The conclusion drawn from the previously-stated hypotheses (nos. 2, 3, and 4) is that such an organization would exhibit a low degree of program change. The present research was viewed as a contribution to the literature on how the various dimensions of bureaucracy affect change within organizations. Central to the study was the hypothesis that highly bureaucratic organizations (in the sense of high levels of centralization, formalization, and stratification) are less likely to exhibit program change than are less bureaucratic ones.

In an expository article dealing with the relationship between bureaucratic structure and innovative behavior, Victor A. Thompson (1965, pp. 10-13) discussed the general requirements for an innovative organization; these requirements paralleled, respectively, the above discussions concerning complexity, centralization, formalization, and stratification:
First are needed resources for innovation – uncommitted money, time, skills and good will. In human resources this means upgrated work and workers, optimally a person who has developed himself thoroughly in some area, about to the limits of his capacities, so that he has that richness of experience and self-confidence upon which creativity thrives – a professional. Complex technology requires the administration of "technical generalists," or professionals.

The dispersal of power is important because concentrated power often prevents imaginative solutions of problems. When power meets power, problem solving is necessarily called into play. The power of unions has undoubtedly stimulated managerial innovations. Dispersed power, paradoxically, can make resources more readily available to support innovative projects because it makes possible a larger number and variety of subcoalitions. It expands the number and kinds of possible supporters and sponsors.

The innovative organization will be characterized by structural looseness generally, with less emphasis on narrow, nonduplicating, nonoverlapping definitions of duties and responsibilities. Job descriptions will be of the professional type rather than the duties type.

The innovative organization will not be as highly stratified as existing ones. This is implied in the freedom of communication, but the decline in the importance of the extrinsic rewards of positional status and the growth of interest in professional esteem would bring this about anyway. Salary scales will be adjusted accordingly and no longer reflect chiefly awesome status differences.

In analysis of two French bureaucracies, Crozier (1964) described a bureaucratic organization as one that cannot correct its behavior by learning from its errors; he described certain bureaucratic patterns of action which "...have been so stabilized that they have become part of the organization's self-reinforcing
equilibria. Finally, when one rule prevents adequate dealing with one case, its failure will not generate pressure to abandon the rule, but, on the contrary, will engender pressure to make it more complete, more precise, and more binding."(ibid., p. 187)

The basic elements of Crozier's bureaucratic "vicious circle" were: (1) the extent of development of impersonal rules (formalization) which deprive members of initiative and which control them; (2) the centralization of decisions which tends to locate responsibility for decision making far removed from the place at which these decisions are to take effect; (3) the isolation of the different strata (stratification) and the concomitant peer group pressure on the individual, which tend to limit communication between strata; (4) the development of parallel power relationships around areas of uncertainty, with concomitant development of dependence and conflict. "Since it is impossible, whatever the effort, to eliminate all areas of uncertainty within an organization by multiplying impersonal rules and developing centralization, a few areas of uncertainty will remain... Individuals or groups who control a source of uncertainty, in a system of action where nearly everything is predictable, have at their disposal a significant amount of power over those whose situations are affected by this uncertainty."(ibid., p. 192) Crozier's point was that these four dysfunctions constitute bureaucracy's rigidly self-reinforcing response to operational problems, and, as such, resulted
in exacerbating rather than solving the problems of the organization. Given such a set of rigid structural responses, the organization's typical reaction to change was resistance.\textsuperscript{8}

Centralization of organizational decision-making authority has been recognized as one strategy through which control of an organization has been maintained by a relatively small elite. Michels, in his book, \textit{Political Parties}, argued that control in organizations must inevitably become oligarchic. Tannenbaum (1968, p. 8) succinctly paraphrased Michel's arguments on the "iron law of oligarchy":

First, the rank and file, through incompetence and apathy, cannot and do not wish to exercise control: the masses prefer to be led. Second, democracy is structurally impossible in large and complex social systems; there is no way of arranging the system so that the views of the many individual members can be heard and taken into account. The impracticality of democracy is especially apparent in organizations undergoing conflict with others. Especially during periods of crisis, organizations need firm leadership and precise adherence to orders. Finally, the tendency toward oligarchy results from the character of leaders and the role that they must play. Because of their cultural and educational superiority over the masses, leaders form a distinct elite. The status, perquisites, and privileges associated with the leadership role serve further to separate the leaders from the masses. In labor unions and socialist parties, for example, the life of the leaders becomes that of the petite bourgeoisie. Leaders therefore develop a vested interest in their position,

\textsuperscript{8}When change finally does take place in these rigid bureaucracies, it does so under crisis situations, according to Crozier,\textit{(ibid., pp. 196, 197)}\textsuperscript{8}. Such change comes from the top down (through a central-decision) and is universalistic in affecting the entire organization; it follows long delay, is wide-ranging in application, and must overcome accumulated organizational resistance.
which they must protect. Furthermore, a personal lust for power, which is characteristic of leaders, intensifies their efforts to enhance their power, and leaders resort to ulterior devices toward this end.

While in the context of the present research it was not felt that the drive toward oligarchy is as deterministic and as inevitable (nor as irreversible) as Michels envisioned it, the oligarchic model did have significance for this study. Typically, in highly bureaucratic organizations, a small elite has exercised control through centralization of decision-making authority, while large numbers of other members have had little decision-making authority. Of course, within bureaucratized professional organizations this situation may not have been due to the incompetence and apathy of the rank and file. Other writers cited in this paper have spoken of the necessity of "tightening up" an organization's structure during periods of heightened purposeful activity, such as crisis, environmental conflict, or implementation of change. During these times, decision making may have become more centralized, work assignments more formalized, and so forth. Stratification, as manifested by status differentials, perquisites, and privileges certainly may have tended to increase the control exercised by the elite over the masses, if for no other purpose than to maintain this control differential. A main hypothesis of this research was that such oligarchic control is associated with a low degree of organizational change.
Using the theoretical writings of Max Weber, Chester Barnard, and Victor Thompson, Hage (1965) presented an axiomatic theory of organizations in which twenty-one corollaries were derived from seven two-variable propositions by syllogistic reasoning. These propositions and corollaries demonstrated how the organizational variables of complexity, centralization, formalization, stratification, adaptiveness, production, efficiency, and job satisfaction were interrelated in functioning organizations. Hage then tested this body of theory against the findings of a large number of empirical studies and found that generally the propositions and corollaries in the theory were supported by empirical evidence. Hage pointed out that the theory can be used to analyse organizational change.

The above eight variables were chosen by Hage because they were believed to be general and abstract enough so as to apply to any formal organization. Also, with these variables it was possible to differentiate among organizations of similar type and to demonstrate similarities among diverse organizations.

Hage's proposition and corollaries that most directly apply to the current research study are:

VI. The higher the stratification, the lower the adaptiveness [change].

4. The lower the job satisfaction, the lower the adaptiveness [change].

12. The higher the centralization, the lower the adaptiveness [change].

15. The lower the complexity, the lower the adaptiveness [change].

21. The higher the formalization, the lower the adaptiveness [change]. (ibid., p. 300; the statements are numbered as they are in Hage's paper.)

Hage did qualify his propositions and corollaries by invoking a limits proposition: "Production imposes limits on complexity, centralization, formalization, stratification, adaptiveness, efficiency, and job satisfaction." (ibid., p. 307) The limits proposition implied that the two-variable relationships were actually curvilinear in nature: that if an extreme value were reached in any of the variables, the effect this had on its related variable was the reverse of the hypothesized effect, so that if, for example, the level of complexity in an organization rose above some extreme point, adaptiveness or change, as well as productivity, declined.

The limits theory, however, was operative in only extreme cases of
the above variables. It was felt that the variables, as they were encountered in academic libraries, did not approach such extreme values, and, therefore, the statistical implications or curvilinearity were not entertained.
C. Research on Variables

1. Complexity

Indirect evidence in support of a positive relationship between complexity and innovation was seen in the following statement by March and Simon (1958, pp. 189, 190):

Where an organization becomes aware of a problem, ...repertories of problem solutions "stored" in the memories of organization members will be the principal source of solution proposals. As awareness of the problem is communicated through the organization, solutions will be evoked from these repertories and will become attached to it. The broader the problem, the more will the solution be affected by the numbers and diversity in the people among whom it is circulated. With the increase in the number of persons who become aware of the problem (without a corresponding increase in diversity) the number of solutions will increase, but at a negatively accelerated rate.

The above remarks by March and Simon were made within the context of the authors' discussion of organizational innovation and of how innovation emerges as a result of an organization's search for problem solutions.

Commenting on the overall effects of differentiation on organizational innovation, Rowe and Boise (1974, p. 286) stated that "...an innovation may develop primarily because of the tendency of modern formal organizations toward differentiation, i.e., diverse and specialized structures tend to promote and to house innovations."

In a recent study (Baldridge and Burnham, 1973) it was concluded that size and structural complexity are positively correlated with the adoption of innovations within school districts. The
rationale for this finding was that "increased size and complexity generate specialists who search for new solutions to problems within their areas," (ibid., p. iv).

In a somewhat related study (Baldridge, et al., 1973) it was concluded that "...larger size is linked to more complex tasks, which require more highly trained experts, who demand and get more autonomy to do their specialized activities" (ibid., p. 17), and that "...more specialized units grow up as size increases; the experts in them demand and obtain more autonomy." (ibid., p. 18) The thrust of these two studies suggested that larger (professional) organizations tend to be more complex than smaller ones and that more innovation is likely in these larger organizations; also that "power elites" who centralize much of the decision making authority are more likely to appear in smaller organizations where control is more easily grasped and exercised.

One should be very careful, however, not to imply that large size is related positively to complexity in all cases. Several major research studies, as summarized by Hall (1972, pp. 109-139), indicated that not all large organizations necessarily are more complex than smaller ones. Such factors as the technology employed by the organization, the organization's environment, and its personnel
all modified the effects of size on structure and on change.  

In a study of the relationships between organizational size and the dimensions of complexity and formalization, Hall, Haas, and Johnson (1967) cited several studies in which it was found that complexity does not vary concomitantly with size. In their own research these authors found inconsistent relationships between organizational size and a multifaceted measure of complexity across a (non-random) selection of 75 organizations.

It should be realized, however, that the 75 organizations studied in the Hall-Haas-Johnson report varied widely in type - from manufacturing, penal, and retail organizations to universities, hospitals, and marketing organizations. Perhaps the inconsistent relationship between size and complexity was due to the mixing of organizational types in their study. It may very well have been that size was a more reliable predictor of organizational complexity within the context of such professional organizations as schools and libraries.

Zaltman, Duncan, and Holbek (1973, pp. 114, 115) listed several factors within and outside the boundaries of the organization which may affect innovation. One of the factors internal to the

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organization seemed to be tapping the same construct space as does "complexity" as used in this study; this factor consists of the educational and technical backgrounds and skills of organization members. Elsewhere (ibid., p. 124) these authors stated that: "...the creative process which is an important component of innovation operates best when there is a diversity among the individuals who are involved. Having a variety of individuals involved with different backgrounds is likely to bring more varied inputs into the creative process..."

Wilson (1971) speculated on the varied effects which the diversity of the organization in terms of its incentive system and of its task structure had on three phases of organizational innovation: conception, proposing, and adoption or implementation. An organization's incentive system was defined by Wilson as the manner in which the organization and other groups have allocated rewards for organization members; task structure referred to the manner in which the organization has allocated effort in terms of the sum of one-man duties. Wilson's conception of task structure appeared to be similar to what this writer has called complexity.

Wilson's hypotheses were that "...the greater the diversity of the organization...the greater the likelihood that some members will conceive major innovations, the greater the likelihood that some members will propose innovations, and the less the likelihood that the organization will adopt the [major] innovations." (ibid., p. 200) The rationale for the first two hypotheses was similar to
the one presented above in connection with the observations on complexity made in Baldridge and Burnham (1973) and in Baldridge, et. al., (1973). With respect to the third hypothesis, Wilson viewed innovation adopting essentially as a political process in which the more diverse the organization was, the more bargaining must occur before changes can be made, and, subsequently, the fewer the number of innovations implemented. In such complex organizations, the executive may not be able to wield the influence necessary to implement innovations. Furthermore, in an organization with a complex task structure, the executive may not be sufficiently knowledgeable about members' work to run the risk of innovating without obtaining their consent. Finally, a complex task structure may increase the probability that there will be disagreement among members about the merits of the change.

The thrust of Wilson's discussion of these inhibiting effects on the adoption and implementation of change that were wrought by organizational diversity seemed to run counter to the first proposition presented in this paper: The greater the complexity, the greater the degree of program change. An explanation for this apparent contradiction was Wilson's thoughts on subunit adoption of innovation: "That a subunit of a decentralized organization can adopt a proposal does not mean that diversity has facilitated adoption, for the diversity of the whole organization is irrelevant
to the politics of the subunit so long as the adoption of the proposal is irrelevant to the whole organization." (ibid., p. 204) Elsewhere (ibid., pp. 211, 212) Wilson stated: "Decentralization (giving sub-units a high degree of autonomy in the control of their own incentive and task structures) can be regarded as a method for increasing the probability of ratification of new proposals by confining (in advance) their effect to certain subunits."

No doubt, some innovations (maybe most) in complex organizations have been confined in their effects to just one subunit. It may have been just this type of innovation that was increased in degree by an increasing complexity. What Wilson called "major" innovative proposals (ibid., p. 202) in his third hypothesis perhaps referred to only those that involve crossing of subunit boundaries in order to be implemented. It may very well be that a relatively low proportion of the large number of innovations adopted by a very complex organization have been of the type that crossed subunit lines. If this were the case, the proposition being tested in this research may remain viable, while at the same time the thrust of Wilson's remarks about increasing diversity being correlated with the adoption of fewer major (cross-subunit lines) innovations may not present a contradiction. The degree of innovation in a complex organization may indeed be high, although most of these innovations may be confined to particular subunits.

It should be noted, of course, that Wilson's paper was a speculative, nonempirical statement of theory which grew out of a
Much has been written since on the relationship of complexity to innovation. In a study of 16 social welfare organizations, Hage and Aiken (1967) did find strong positive correlations between measures of organizational complexity and the actual adoption of new programs and services. These empirical findings seemed to contradict the theoretical statement by Wilson that diversity (complexity) was associated with fewer innovations being adopted.

In their study of 16 social welfare organizations, Hage and Aiken (1967, p. 509) reported a significant positive correlation between the number of occupational specialties (one of their measures of complexity) and the degree of adoption of new programs or services in these organizations. Zaltman, Duncan and Holbek (1973, pp. 134–138), however, reported seemingly contradictory findings: "high diversity leads to organizational members conceiving and proposing more innovations, but not adopting these innovations...high diversity (complexity) makes it difficult for any one source of authority to force some consensus toward agreement as to which of the many proposals should be implemented." (ibid., p. 135) Elsewhere (ibid., p. 137) these authors reported on a personal communication which may indicate a resolution of these apparently contradictory findings:

High complexity radically increases the number of innovations proposed or initiated in an organization. On the other hand, low complexity facilitates the implementation of the innovations...this implies that many innovations initiated in a complex organization are never implemented, whereas a greater proportion of
Innovations in less-complex organizations are initiated within those systems. However, the positive relationship between complexity and initiation is possibly greater than the negative complexity and implementation relationship. Thus complex organizations may actually implement a greater number of innovations simply as a result of more being initiated.

In any case, more changes and innovations would be implemented in more complex organizations than in less complex ones, although the relationship may not be a simple one.

In a questionnaire-and-interview study of ten academic research libraries, Smith (1971) investigated the effects which the employment of librarian specialists had on these libraries. He concluded (ibid., p. 50) that such specialists were agents of change within their libraries. A primary area in which these specialists effected change was in a more active and sophisticated level of service to library clientele.

2. Centralization

In their study of 16 social welfare organizations Hage and Aiken (1967) reported a correlation of .49 between the rate of program change in the organizations and the degree of participation in organizational decision making, i.e., decentralization. This high positive correlation was found between program change and participation in those decisions affecting the allocation of organizational resources. A study which investigated the effects of decentralization within an entire school district (Cillie, 1940) reported that a decentralized plan of organization resulted in the adoption of more new programs by schools than did a centralized plan.
Zaltman, Duncan, and Holbek (1973, pp. 129-134) discussed various contingency theories of organizations with respect to the initiation and implementation of innovations. Commenting on a number of small group, communication net experiments, these authors observed that such experiments "...found that highly centralized networks (one member has more channels and information than others) facilitate effective performance of routine problem solving. Networks that are low in centralization (all members share an equal number of channels and have access to the same amount of information) facilitate innovative nonroutine problem solving."

With respect to change and innovation, the above authors concluded that a highly structured form of organization (i.e., one that is high in impersonality of decision making, hierarchy of authority, formalization, division of labor, and the centralization of decision making) was more appropriate for the firm or subunit during the implementation stage of innovation, while a less highly structured form of organization was appropriate during the initiation stage. The following rationale, based upon the centrality of information to the innovation process, was offered:

When these dimensions are highly structured, channels of communication and amount of information available within the unit are restricted. This is especially important when the environment is dynamic, the environmental uncertainty perceived is high, and a resulting high need exists for obtaining and processing new information. When dealing with high environmental uncertainty and change, a very high
degree of emphasis on the hierarchy of authority can cause decision-unit members to adhere to specified channels of communication and selectively to feed back only positive information regarding their job. They would thus neglect any negative feedback that might actually help the organizational unit adapt better...Strict emphasis on rigid rules, procedures, and division of labor may prohibit the unit from seeking new sources of information when new information inputs are required to adapt to the uncertainty of the environment, which may not have been foreseen when the rules and procedures were initially developed.

When the decision unit's environment is more certain, however, the information demands on the decision unit are minimal, and it can respond more quickly to its environment by relying on pre-established rules and procedures, a well-specified division of labor, and so on. This more rigidly structured pyramidal decision-making structure is actually preferred over a loosely structured one (1) when time is of the essence, (2) in routine decision-making instances, (3) when environmental demands are clear and their implications are obvious, (4) when organizational circumstances approximate those of closed systems with minimal change requirements from the environment ... (ibid., pp. 132, 133).

The above authors stated that an organization or subunit going through the change/innovation process either alternated its structure during the two stages according to the above rationale or it differentiated by assigning responsibility for initiating change to one subunit and responsibility for implementing change to another.

The second approach is a fairly recent (and uncommon) phenomenon in academic libraries. Haro (1972) advocated the formation of quasi-independent research groups within academic libraries which would be devoted to "...uncovering potential areas for change and innovation"
(ibid., p. 99): this function constituted a major part of the initiation stage of innovation.

V. A. Thompson (1965, p. 16), too, seemed to be advocating differential organizational structures during the successive stages of innovation:

If formal structures could be sufficiently loosened, it might be possible for organizations and units to restructure themselves continually in the light of the problem at hand. Thus, for generating ideas, for planning and problem solving, the organization or unit would "unstructure" itself into a freely communicating body of equals. When it came time for implementation, requiring a higher degree of coordination of action (as opposed to stimulation of novel or correct ideas), the organization could then restructure itself into the more usual hierarchical form, tightening up its lines somewhat.

In their summary of a large number of research studies dealing with organizational innovation, Rowe and Boise (1974, p. 289) concluded that:

(2) during the formulation stage, a loosely structured, diverse, professionalized, mildly competitive, psychologically secure climate operating under the presumption of available resources and some freedom from external pressures may be appropriate;

(3) during the decisional stage, the climate must be sufficiently rational to assure the quality of proposals, their orderly transmission to decision makers, and the adequacy of communications between proposers and decision maker;

(4) during the implementation stage, a generally rational and efficiency-inducing climate seems required.
The idea of accommodating successive stages of innovation by alternating an organization's structure requires a digression from the theory thus far presented. An important point to be considered is that a large academic library is not monolithic in the programs and services it offers. At any one time it may be in the initiation, implementation, or routinization stage of many different programs and services. Some changes and innovations may be more important than others, but no change ever involves the full time of all employees, in the same sense that a major production change in a manufacturing organization may. Given this state of flux with respect to the stages of development of programs and services in academic libraries, it is inappropriate to speak of such an organization alternating its structure to accommodate successive stages of innovation. Indeed, this would be a virtual impossibility because some innovations might be in the initiation stage, while, simultaneously, others may be in the implementation or routinization stages.

The first step in extricating ourselves from this situation is afforded by J. D. Thompson's (1967) concept of opportunistic surveillance within complex organizations. Thompson defined the concept functionally as "...monitoring behavior which scans the environment for opportunities - which does not wait to be activated by a problem and which does not therefore stop when a problem solution has been found." (ibid., p. 151) Opportunistic surveillance is essentially what Zaltman, Duncan and Holbek (1973) referred to as the initiation stage of innovation; the conclusion one comes to is that the initiation
stage may not alternate with other stages but rather that it is a continuing and enduring stage of the multifaceted, nonmonolithic innovating organization. The change of structure during the implementation stage can be seen as change-specific, i.e., the organization or subunit becomes more highly structured with respect to the particular change or innovation that is about to be implemented. The organization or subunit, however, remains open, loose, and flexible with respect to future potential changes; opportunistic surveillance continues; and the organization remains open with respect to its environment and to suggestions for future changes from its members. Again, the structure, with respect to the particular change being implemented, becomes tightened: a specific hierarchy of authority is established to maintain control during implementation; decisions are made impersonally; there is less participation in decision making because the organization now is seeking closure of the change; formalization is increased so as to assure operation according to plan; division of labor is increased so that specific duties can be assigned to individuals. But, with respect to future potential changes the organization remains collegial and participative in its structure.

Furthermore, the change to a more highly structured form of organization during the implementation of a change or innovation can be seen as subunit-specific, i.e., such changes are usually implemented within a particular subunit, rather than across all subunits in the library. The implementing subunit may undergo a tightening of structure with respect to the particular change, but it, along with
the rest of the organization, remains loosely structured so that it may continue opportunistic surveillance with respect to subsequent changes: participative decision making continues, the hierarchy of authority remains loose, formalization and task specialization are kept to a minimum - all so that the organization may remain receptive to future possible change and innovation.

This digression from the contingency theory outlined in Zaltman, Duncan, and Holbek (1973) allowed the present study to avoid the conceptual dilemma of not knowing or of having to specify whether each library studied was in the initiation or the implementation stage of innovation at the time of data collection. The research proceeded on the hypothesis that if a particular library were to exhibit a high degree of change, it would score high in complexity and in job satisfaction, and, correspondingly, low in centralization, formalization, and stratification, regardless of what stage the library might have been in with respect to a particular change or innovation. Those organizational characteristics that are correlated with a high degree of change were thought to remain relatively constant overall throughout the organization, regardless of the implementation of particular changes and the subsequent tightening of structure to accommodate those changes.

3. Formalization

When discussing the relationship between program change or innovation and formalization it is useful to indicate what stage of the innovation process one is relating to formalization. In an
expository article, one writer (Shephard, 1967, p. 474) suggested that low formalization was most appropriate at the initiation stage of innovation, whereas a higher degree of formalization was required at the implementation stage where more coordination of individual efforts was needed. At the initiation stage, "...the organization needs a quality of openness so that diverse and heterogeneous persons can contribute, and so that many alternatives can be explored. For implementation, a quite different quality was needed: singleness of purpose, functional division of labor, responsibility and authority, discipline, the drawing of internal communication boundaries..." (ibid.)

Hage and Aiken (1967, p. 511) seemed to be relating formalization to innovation at the initiation stage in their finding of a negative relationship between the two variables. The implication was that during the initiation stage the organization should be as flexible and as open as possible to new sources of information and alternative courses of action.

Hage and Aiken (1970, pp. 92-106) characterized the stages of the innovation or change process as evaluation, initiation, implementation, and routinization. The evaluation stage is a period of study and assessment of the need for the change: a recognition of a "performance gap" (Zaltman, Duncan, Holbek, 1973, pp. 2, 3). In the initiation stage suggestions for change are made, evaluated, discussed, and disputed, all culminating in a decision to add a particular program or activity to the organization; also in this stage is a search
for financial support for the new program and a search for personnel to operate the program. During the implementation stage the new program becomes a reality and it is here that the organization is likely to experience internal conflict due to the fact that any plan for a change or innovation is "...unlikely to consider all the sources of discontinuity between the new program and the existing organizational structure" (ibid., p. 100) The existing power structure may be altered; some members of the organization may not cooperate (actively or passively) in implementing the change; not every technical contingency in the program may have been foreseen. The routinization phase is characterized by a stabilizing of the effects of the new program: the new program is standardized and it is integrated into the organization's structure.

Hall (1974, p. 119) indicated that the level of formalization in professional organizations is probably lower than that in non-professional organizations. The reason for this situation was that such professional organizations have other means - professionalization, in the form of internalized norms and standards - whereby control of behavior and operations may be achieved. Professionalization, of course, is not a dichotomous variable; rather, organizations can be placed on a scale of professionalization. This writer assumed that

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Professionalization is a concept allied to complexity as used in this study; the two are assumed in this study to be highly correlated. Furthermore, formalization appears to be an organizational phenomenon antithetical to professionalization and complexity. One may predict that in complex organizations that are also highly formalized, conflict may appear.
academic libraries tended toward being highly professionalized, although probably not as much as a research laboratory, for instance. In any case, since this study was restricted to just one type of organization - academic libraries - it was impossible to test the above statement by Hall.

Zaltman, Duncan, and Holbek (1973, p. 135) recognized the centrality of information to the operation of complex organizations and observed that "...strict emphasis on rigid rules and procedures may prohibit organizational decision makers from seeking new sources of information. Thus there is simply less opportunity for them to become more aware of potential innovations or to identify performance gaps in terms of how the organization is doing."

Closely allied to the idea of formalization was that of roles - differential sets of expectations of organizational members. Havelock, et al. (1970, pp. 6-22) stressed that roles may have an inhibiting effect on change in an organization: "...most role expectations are designed to stabilize and routinize human performance. They encourage conformity, literally the shaping of behavior to fit into a well-defined mold. The more sharply defined and the more limited the role, the less room there will be for receiving and sending messages which are 'new' and hence different from what is expected."

Another way in which formalization may inhibit change and innovation was seen in an organization whose "...emphasis on specific pre-planning may result in rules or procedures that may hamper dealing with nonuniform, uncertain situations when they occur," (Zaltman,
Duncan, and Holbek, 1973, p. 126) and from dealing with them in innovative ways. A similar organizational phenomenon was referred to as "trained incapacity" by Bobbitt, et al. (1974).

4. Stratification

As pointed out over a decade ago (Seeman, Evans, Rogers, 1960, p. 90) most of the literature on social stratification deals with a description of status levels in the local community or in society at large, rather than within complex organizations. The stratification system usually studied is that which exists among the various occupations or social groups found in society. (Most of the stratification scales in Glenn, Alston, Weiner [1970, pp. 18-28] measure differential status and prestige among occupations.) The present study attempted to measure intra-organizational stratification among members of one occupation - librarianship - and to relate such stratification to organizational change.

High organizational stratification in the form of sharp status differentials was identified in a major British case study (Burns and Stalker, 1961, pp. 148-53, 185-92) as a factor contributing to resistance to innovation and change. The rationale was that by accepting or approving change one perhaps lowered his own status in the organization or he was forced to share some of the visible signs of status with those who were perceived as subordinates. Another study (Shephard and Brown, 1956) used questionnaire data to analyze the system of stratification within a naval research and development laboratory; this
study found stratification had an adverse effect on interaction with people within and outside the organization.

In summarizing the implications of several research studies dealing with the significance of social interaction within organizations, Blau and Scott (1962, ch. 5) proposed that, in situations involving a search for the best solution to a problem, groups were superior to individuals. The authors suggested three factors to account for this proposition. First, the sifting of suggestions among members in a social interaction milieu served as an error-correction mechanism; second, the social support furnished in interaction facilitated thinking, in the sense that group approval mitigated anxieties over making errors and freed members to continue a train of thought; third, the competition among group members for respect mobilized their energies for contributing to the task (provided that such competition did not interfere with the coordination necessary to focus group work on the problem at hand).

Intraorganizational stratification (what Blau and Scott refer to as hierarchical differentiation), however, has decidedly dysfunctional effects on these three group processes involved in social interaction, according to these authors. Social interaction tended to follow status lines and to be inhibited by status boundaries where the social environment was characterized by explicit status distinctions. Feelings of friendliness across hierarchical boundaries tended to lessen if upper-status persons were insecure and if lower-status persons had no chance of upward mobility. Also, explicit status
distinctions undermined the process of competition for respect because members no longer sought to be respected by all, but only by those of high status. The communication process suffered because characteristically status-seeking communication was directed to high-prestige persons. Finally, status distinctions distorted the error-correcting effects of social interaction because members alternately tended not to oppose the judgment of a high-prestige person and tended to oppose that of a low-prestige person. In these ways introrganizational stratification minimized those very characteristics of social interaction that made it superior to individual problem solving. The point made by Blau and Scott is that the communication-inhibiting effect of explicit hierarchical differentiation is dysfunctional for organizational performance.  

The speculative and risky nature of innovation is especially threatening to organizational members whose personal goals include power, status, and prestige. As indicated by V. A. Thompson (1969, p. 27) highly stratified organizations which are structured around these goals are not likely to be innovative because the highly placed individuals in them view change and innovations as occasions for them to share some of their power, status, or prestige.

A sense of the dysfunctional effects of stratification was seen in the control which a person or group highly placed in an explicitly stratified organization has. Eisenstadt (1971, p. 78) claimed

\[12\]

Blau and Scott (1962, pp. 124–8) recognized that sometimes status differences improve communication flow through better coordination of the group's work.
such persons or groups possess a degree of control over basic eco-
nomic, political, and cultural resources; they are also able to con-
trol access to their roles and positions to such an extent that they
can transmit these roles and positions to others whom they designate.

Tumin (1967, pp. 107, 108) discussed other dysfunctional-
ties of social stratification, especially when such stratification
is linked to a motivation-reward structure. Organization members
have tended to give to the company just as much as, but no more
than, they were being paid for, and they have compared their induce-
ments-contribution ration with that of others. The least efficient
and least conscientious worker sometimes has become the norm of such
a group. Tumin continues:

The most obvious fact about any system of strati-
fication is that it produces greatest benefit and
gain for those who rank high and receive the highest
rewards. Furthermore those who benefit most from the
system will usually do whatever they can to preserve
their privileges, whatever effort they may make from
time to time to spread the benefits of the system
more widely. It is also predictable that in a
society stressing maximum acquisition, most men will
try to obtain increasingly more of whatever is avail-
able. When the main emphasis of a society urges
everyone to maximize his material well-being and to
achieve maximum invidious distinction over others,
how could one expect any other motivational scene
to be easily learned and followed?

Is stratification useful then? Yes, certainly, in
direct proportion to one's height on the ladders of
rank and reward. However much high rewards may moti-
vate the elite members of a work force to extra
effort, the lower rewards received by the majority
are just as likely to demotivate them and induce them
to lower levels of effort. If, as is often observed,
men work hard and give their best in spite of low
rank and reward, this is primarily because of other cultural themes to which they are educated, because they do not perceive alternatives, or because they fear the alternatives. It can hardly be due to inspiration from their relatively lower ranks and rewards. (ibid., p. 108)

Neither situation described by Eisenstadt and Tumin is likely to produce change and innovation in the organization. Those people highly placed in the hierarchy of stratification tend to use their power and prestige to maintain the status quo and thereby solidify their high positions relative to others; those lower placed may invoke their own sanctions against a peer who tries to rise above his position by making suggestions for change. Also, if those lower in the stratification system perceive little likelihood of their upward mobility, they may actually be "demotivated" by the system so that they simply may not bother to suggest changes that might improve the organization because they see no possibility of reward for their efforts.

5. Satisfaction

A basic tenet of the human relations school of management was that satisfied workers are productive workers. One famous experiment (Coch and French, 1948) emphasized the importance of workers' morale as a factor in their degree of acceptance of change. A seemingly contradictory finding was reported in another study (Mann and Williams, 1960) in which it was found that change creates social strain in the organization. Hage and Aiken (1967, pp. 512, 513), however, reported a high positive correlation between job
satisfaction and degree of program change. The latter two authors offer an explanation for the apparently contradictory findings:

"...job satisfaction may be a necessary precondition for the introduction of changes, but after this change has been introduced it may have disruptive and negative effects on social relationships among members in an organization." (ibid., p. 513) This explanation seems to coincide with and indirectly support the reasoning advanced above for a less formalized structure in the initiation stage of innovation, followed by a more highly formalized structure during the implementation phase. Persons who express a high degree of job satisfaction at the initiation stage when a more democratic, participative, and loosely knit structure is most efficacious for bringing about change, may show a drop in morale and job satisfaction at the implementation stage when such things as control, order, efficiency, and authority are stressed.
D. Summary

A review of the pertinent literature has suggested a definite pattern in which the variables under study in this research are found to co-exist in organizations. The dependent variable (program change - the adoption of new programs and services in academic libraries) appeared to be positively correlated with organizational complexity and with job satisfaction; a negative correlation between program change and centralization, formalization, and stratification was suggested by the literature. None of the reported studies dealt with these variables within academic libraries.

In the next chapter the research methodology used by this writer to examine the relationships among the above variables within academic libraries is presented.
A. Introduction

With the presentation in Chapter II of a review of the relevant literature, this research study's conceptual framework has been expanded to depict some of the major empirical and theoretical writings that bear on the variables and hypotheses of this study. The present chapter comprises a step-by-step description of how the current study was conducted. First, the population of interest is described in specifically quantitative terms; next, the procedure used for determining the sample is presented. The research design - the procedures that were followed to gather and summarize the data - is presented next, followed by an explanation of the statistical techniques used to analyze the data. Finally, the measures that were used to operationalize the variables are presented.
B. The Population and the Sample

Libraries in degree-granting colleges and universities in the 48 contiguous states serving student bodies of at least 3,000 and employing a professional staff of at least 16 full-time persons represented the population in this study. All the institutions to which these libraries were attached (1) offered at least the baccalaureate degree; (2) were accredited by a nationally recognized accrediting agency or have achieved a preaccredited status. Specifically excluded from the study were libraries in separately administered medical and law schools. Also excluded were libraries in United States military service schools and in schools which were purely professional or technical institutions. The latest available editions of two standard college and university

\[13\] Community, junior, and technical colleges were not included in the study. Many of these schools, especially the community colleges, were relatively new institutions which were expected to have implemented many of the services and programs enumerated in this paper merely because they were new schools. Forces other than those hypothesized may have accounted for many of the new programs and services initiated. Also, quite a few of these schools had enrollments lower than the cut-off size for this study.
directories\textsuperscript{14} constituted the sampling frame from which the libraries in the study were selected.

Three size dimensions on which the libraries in the population were stratified\textsuperscript{15} were size of enrollment served, number of volumes in the collection, and number of full-time, professional staff employed by the library.\textsuperscript{16} Also, the schools to which the libraries were attached were categorized on the dichotomous dimensions of auspices (private or public) and level (baccalaureate-masters granting only or doctorate granting). Data pertaining


Although the data in these two sources were two to three years old, there was no problem in using them to select and categorize the libraries for the study. It was assumed these quantitative data have not changed dramatically over such a short period of time, and, more importantly, that the individual libraries in the study maintained their relative positions with respect to their placement on three specific dimensions of size.

\textsuperscript{15}"Stratified" as used in this section on research and sample design is not to be confused with "stratification", used elsewhere as one of the five independent variables.

\textsuperscript{16}Baumol and Marcus (1973, pp. 12-14) identified these three factors as important in determining budget expenditures for academic libraries.
to enrollment, volumes, staff, auspices, and level were gathered from the two directories cited above.

A single campus library system consisting of a main library, with or without one or more departmental libraries, was considered one unit in the population. Any campus libraries (such as law or medicine, most commonly) that were administered separately from the main library and its departmental libraries were not considered a population unit. In the case of a multi-campus institution, the libraries in the branch campuses were considered units in the population if: (1) the campus enrollment was at least 3,000, and the library employed at least 16 professionals; (2) the branch campus library was administered separately from all other libraries in the system. This latter condition was assumed to hold if a branch campus had its own president or chancellor (rather than director or some other lower titled administrator).

A stratified random sample of libraries from the population was selected for inclusion in the study. Actual formation of the strata of libraries in the population was based upon a point scheme involving the three size dimensions of enrollment, number of volumes in the collection, and number of professional staff members. Table 1 depicts enrollment categories, number of libraries serving schools in each category, and point allocations for libraries in each category. Table 2 depicts categories for number of volumes held, number of libraries in each category, and point allocations.
TABLE 1

SIZE CATEGORIES: ENROLLMENT

<table>
<thead>
<tr>
<th>Size Categories</th>
<th>No. of Libraries in Each Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000-5,500 Students</td>
<td>15</td>
<td>.5</td>
</tr>
<tr>
<td>5,501-8,000</td>
<td>42</td>
<td>1.0</td>
</tr>
<tr>
<td>8,001-10,500</td>
<td>49</td>
<td>1.5</td>
</tr>
<tr>
<td>10,501-13,000</td>
<td>30</td>
<td>2.0</td>
</tr>
<tr>
<td>13,001-15,500</td>
<td>31</td>
<td>2.5</td>
</tr>
<tr>
<td>15,501-18,000</td>
<td>12</td>
<td>3.0</td>
</tr>
<tr>
<td>18,001-20,500</td>
<td>21</td>
<td>3.5</td>
</tr>
<tr>
<td>20,501-23,000</td>
<td>15</td>
<td>4.0</td>
</tr>
<tr>
<td>23,001-25,500</td>
<td>10</td>
<td>4.5</td>
</tr>
<tr>
<td>25,001-</td>
<td>27</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 2
**SIZE CATEGORIES: VOLUMES**

<table>
<thead>
<tr>
<th>Size Categories</th>
<th>No. of Libraries in Each Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>-200,000 Volumes</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>200,001-400,000</td>
<td>&quot;</td>
<td>84</td>
</tr>
<tr>
<td>400,001-600,000</td>
<td>&quot;</td>
<td>38</td>
</tr>
<tr>
<td>600,001-800,000</td>
<td>&quot;</td>
<td>31</td>
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<tr>
<td>800,001-</td>
<td>&quot;</td>
<td>72</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 3
**SIZE CATEGORIES: PROFESSIONALS**

<table>
<thead>
<tr>
<th>Size Categories</th>
<th>No. of Libraries in Each Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-30 Professionals</td>
<td>130</td>
<td>1</td>
</tr>
<tr>
<td>31-45</td>
<td>&quot;</td>
<td>52</td>
</tr>
<tr>
<td>46-60</td>
<td>&quot;</td>
<td>28</td>
</tr>
<tr>
<td>61-75</td>
<td>&quot;</td>
<td>15</td>
</tr>
<tr>
<td>76-</td>
<td>&quot;</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>
In Table 3 are the categories for number of professionals employed, number of libraries in each category, and point allocations.

The lowest possible score a library could receive was 2.5, which represented a library serving from 3,000 to 5,500 students, possessing 200,000 or fewer volumes, and employing from 16 to 30 professionals; the highest possible score of 15 represented a library serving an enrollment of 25,501 or more, possessing 800,001 or more volumes, and employing 76 or more professionals. Table 4 depicts the categories for the composite size scores and the number of libraries in each category. In this manner the libraries constituting the population were stratified according to the three size dimensions; the points for each library were then summed into one composite score for each library.

After formation of the strata the total number of libraries to be sampled was computed from the following formulas:

\[ n = \frac{PQ}{\pi^2} \times \Phi \]  
(Cochran, 1963, p. 72);

substituting figures the equation becomes:

\[ .05 = 2 \times \sqrt{\frac{.50}{n} \times (.50)} \]

n = 400 libraries,

in which:  
.05 represents the desired sampling precision  
2 represents the z-score corresponding (approximately) to the 95% confidence level,  
.50 represents the most conservative percent of occurrence of a variable in the population, leading to a conservative estimate of n.
<table>
<thead>
<tr>
<th>Score Categories</th>
<th>No. of Libraries in Each Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 2.5-4.5</td>
<td>65</td>
</tr>
<tr>
<td>(2) 5.0-7.0</td>
<td>65</td>
</tr>
<tr>
<td>(3) 7.5-9.5</td>
<td>54</td>
</tr>
<tr>
<td>(4) 10.0-12.0</td>
<td>34</td>
</tr>
<tr>
<td>(5) 12.5-15.0</td>
<td>34</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>252</strong></td>
</tr>
</tbody>
</table>
Since the research dealt with a finite population, the finite population correction (fpc) was used to determine the actual sample size:

\[ n = \frac{n_0}{1 + (n_0 - 1)/N} \]  

(ibi., p. 75); 

in which:  
\( n_0 \) is the previously calculated \( n \),  
\( N \) is the population size (252). 

Substituting in the formula we obtain:

\[ n = \frac{400}{1 + (400 - 1)/252} \]

\[ n = 155 \] libraries sampled

Employing proportionate sampling to determine the number of libraries to select in each of the five strata resulted in the following sample:

<table>
<thead>
<tr>
<th>Category No.</th>
<th>No. of Libraries to be Sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>40</td>
</tr>
<tr>
<td>(2)</td>
<td>40</td>
</tr>
<tr>
<td>(3)</td>
<td>33</td>
</tr>
<tr>
<td>(4)</td>
<td>21</td>
</tr>
<tr>
<td>(5)</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>155</strong></td>
</tr>
</tbody>
</table>
The institutions in the study were further categorized according to auspices (private or public) and level (baccalaureate-master's granting or doctorate granting.) Table 5 shows these data for the population.

<table>
<thead>
<tr>
<th>Auspices</th>
<th>No. of Libraries in Each Category</th>
<th>Levels</th>
<th>No. of Libraries in Each Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>63</td>
<td>Baccalaureate-Master's 70</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>189</td>
<td>Doctorate 182</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td>Total 252</td>
<td></td>
</tr>
</tbody>
</table>

17 Originally this levels distinction was to be made between libraries of undergraduate and graduate schools; however, almost all the institutions so defined (in terms of enrollment and professional staff) for inclusion in the study were master's or doctorate granting schools. A distinction between undergraduate and graduate schools would have been meaningless.
C. Method

The directors of all 155 libraries in the sample were identified by name; each was mailed a two-part data collection instrument and queried on the following points:

1. Would he/she be willing to cooperate in this study by furnishing certain information about his/her library? What was needed was a complete list of all full-time professional (master's degree-holding) personnel\(^\text{18}\) employed by the library, whether on a 9-10 or 11-12 month contract; the number of non-professional, full-time personnel in the library; the number of unique and distinguishable professional positions (Part A). From the library director's information on personnel was to be derived the score for that

\(^{18}\)Names of major administrators, including library directors, were found in the previously cited Education Directory. Also, the past three years of College & University Libraries News, which has a section listing new professional appointments, were scanned for recent changes in directorships which were not reflected in the Education Directory. Finally, the issues of American Libraries for the past three years were checked for similar personnel changes.

\(^{19}\)It was not specified that these individuals have the master's degree in library science since it is the practice in some libraries to hire, and consider as professionals, individuals with a subject master's degree and sometimes a subject doctorate. Also, some libraries have hired and considered as professionals individuals with master's degrees in educational communications and technology, or some related field, and who work in such non-traditional library jobs as research, systems analysis, instructional technology, etc. If such persons were on the staffs of the libraries to be studied, they were considered potential data sources in the study.
library on one of the three dimensions of organizational complexity (this measure, however, was subsequently dropped - see below).

2. If the library director was agreeable to cooperating in the study, he/she was asked to complete a three-page checklist (Part B) of services and programs - which checklist was included with the letter to directors. From the checklist was derived a measure of each library's degree of program change - the dependent variable -(see discussion of the measure for program change, page 87 , below). A stamped and addressed envelope for return of these data was included. Forty-three follow-up letters were sent after four weeks; after another four week period 25 of the non-responding directors were contacted by telephone. (In Appendix B, p.173 are found copies of all letters and data-gathering instruments used in the study.)

After receipt of the first 20 or 25 responses from library directors it became apparent that item 3 ("The number of unique and distinguishable professional positions in the library") of "Pt. A: Library Personnel Data" was a cause of much confusion among the library directors, as evidenced by the inconsistent ways in which it was interpreted and answered. It was decided, therefore, to drop this unreliable measure which was to represent the number of occupational specialties among the professional staff in the library (one facet of complexity). The other two facets of complexity, the level of professional training of the staff and the degree
of extra-organizational professional activity of the staff, were retained.

Eventually 117 usable returns were received from the 155 libraries in the sample. (Five returns were deemed unusable; two directors stated their staff rosters were confidential; three returns were received too late for inclusion in the study.)

Determination of who was to receive the 30-item questionnaires measuring the independent variables was based upon the staff rosters supplied previously by the library directors. In Table 3 are the categories for the number of professionals employed in each library, the number of libraries in each category, and point allocations. For all libraries in category 1 (16-30 professionals) or category 2 (31–45 professionals), half of the professional staff members (except directors) received questionnaires measuring the independent variables. For libraries in category 3 (46–60 professionals) or category 4 (61–75 professionals), one-third received the questionnaire; and for libraries in category 5 (76 or more professionals) one-fourth received the questionnaire. In no case did the director receive this questionnaire. Simple random selection procedures were used to identify recipients of the questionnaires.

A total of 1,982 first-contact letters and 30-item questionnaires was sent to professional staff members in the 117 libraries whose directors completed the three-page checklist of services and
programs and supplied staff rosters; after a four-week period 706 follow-up letters and questionnaires were sent.

A return rate of 70% (rounded up) among professional staff members of a library was considered adequate to include that library in the study: 13 of the 117 libraries whose directors agreed to participate in the study were dropped from the study because less than 70% returns were received. (An alphabetical list of the 104 libraries finally included in the study appears in Appendix D, p.201). Considering only the 104 libraries ultimately included in the study, 1407 usable questionnaires were received from the 1733 staff members who were sent the questionnaire, for a return rate of 81% for these 104 libraries. Of the total 1982 staff members contacted (representing 117 libraries), 1530 usable returns were received.

Unusable questionnaires were in two categories: (1) those returned anonymously and whose institution could not be identified through a check of the zip code on the return envelope (some did not have zip codes; some had zip codes which could apply to more than one institution); (2) those returned with an explanation that the respondent chose not to participate in the study. Returns from the 104 libraries are summarized in Appendix E, p.206.

Previously the population of libraries was described in terms of frequencies in three size dimensions: composite size score (reflecting enrollment, number of volumes, number of professionals),
auspices (private or public) and level (baccalaureate—masters or doctorate). Also, the sample of 155 libraries was described in terms of composite size scores. In Tables 6 to 9 frequencies of the 104 libraries ultimately included in the study are presented for these three categories; frequencies for the population and the sample are included.

TABLE 6
COMPOSITE SIZE CATEGORIES OF LIBRARIES IN THE STUDY, IN THE SAMPLE, IN THE POPULATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Libraries in Study</th>
<th>Libraries in Sample</th>
<th>Libraries in Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (2.5-4.5)</td>
<td>25</td>
<td>40</td>
<td>65</td>
</tr>
<tr>
<td>2 (5.0-7.0)</td>
<td>32</td>
<td>40</td>
<td>65</td>
</tr>
<tr>
<td>3 (7.5-9.5)</td>
<td>25</td>
<td>33</td>
<td>54</td>
</tr>
<tr>
<td>4 (10.0-12.0)</td>
<td>11</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td>5 (12.5-15.0)</td>
<td>11</td>
<td>21</td>
<td>34</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104</strong></td>
<td><strong>155</strong></td>
<td><strong>252</strong></td>
</tr>
</tbody>
</table>
TABLE 7
LEVELS OF LIBRARIES IN THE STUDY, IN THE SAMPLE, IN THE POPULATION

<table>
<thead>
<tr>
<th>Level</th>
<th>Libraries in Study</th>
<th>Libraries in Sample</th>
<th>Libraries in Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baccalaureate-Masters</td>
<td>28</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Doctorate</td>
<td>76</td>
<td>113</td>
<td>182</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>155</td>
<td>252</td>
</tr>
</tbody>
</table>

TABLE 8
AUSPICES OF LIBRARIES IN THE STUDY, IN THE SAMPLE, IN THE POPULATION

<table>
<thead>
<tr>
<th>Auspices</th>
<th>Libraries in Study</th>
<th>Libraries in Sample</th>
<th>Libraries in Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>17</td>
<td>45</td>
<td>63</td>
</tr>
<tr>
<td>Public</td>
<td>87</td>
<td>110</td>
<td>189</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>155</td>
<td>252</td>
</tr>
<tr>
<td>Level</td>
<td>Composite</td>
<td>Baccalaureate-Masters</td>
<td>Doctorate</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>-----------------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Public</td>
</tr>
<tr>
<td>1 (2.5-4.5)</td>
<td>3</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>2 (5.0-7.0)</td>
<td>0</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>3 (7.5-9.5)</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>4 (10.0-12.0)</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 (12.5-15.0)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>76</td>
<td></td>
</tr>
</tbody>
</table>
D. Statistical Analysis

The final product of checklist and questionnaire administrations consisted of eight measures of the variables under study - one dependent variable and seven independent variable measures. More specifically, the actual measures calculated and the sources from which they were derived were:

One dependent variable - degree of program change - via checklist to library directors.

Seven independent variables

1. Complexity
   a. Level of professional training - via 30-item questionnaire to professional staff members.
   b. Degree of extra-organizational professional activity - via 30-item questionnaire to professional staff members.

2. Centralization (professional staff participation in decision making) - via 30-item questionnaire to professional staff members.

3. Formalization (job codification) - via 30-item questionnaire to professional staff members.

4. Stratification
   a. Salary stratification ratio - via 30-item questionnaire to professional staff members.
   b. Overall stratification - via 30-item questionnaire to professional staff members.
5. Job Satisfaction - via 30-item questionnaire to professional staff members.

The primary purpose of the statistical analysis was to test data relating to five statements of the type "The greater the A, the higher (or lower) the B." A simple bivariate correlation statistic (Pearson's r) was applied to the data to determine if the independent variables do display the types of relationships with the dependent variable that were hypothesized in Chapter I of this report.

Since it did not seem intuitively reasonable that each of the independent variables played a discrete and independent part in affecting how a library scored on the dependent variable measure, this researcher endeavored to use another statistical technique that would quantify or at least rank the mix of independent variables according to how much each affected the dependent variable, after the effects of the other independent variables were eliminated. The step-wise multiple regression technique was chosen for its ability to handle several variables simultaneously in a determination of the amount of variance of the dependent variable scores explained by each of the independent variables.

The chi square statistic was used to test for independence between the dependent variable and the three contextual variables of composite size, auspices, and level. Here, and throughout this paper, "contextual" is used in the sense specified by Hage and
Aiken (1967, p. 514): to denote an organization's general environmental situation.
Measures

1. Degree of Program Change (the dependent variable)

Previous researchers (Ross, 1958; Forman, 1968) have employed checklists of innovative practices to measure an organization's overall level of innovativeness. In this study such a checklist was constructed to measure the degree of program change, in terms of new services and programs initiated, among the cooperating libraries. Two sources of information used in compiling the list of library innovations or changes were:

1. the author's own knowledge of the field gained through regular reading in the literature;
2. bibliographic research in several standard library sources.20

The 154 items generated from these two sources constituted the preliminary list of services and programs.

It seemed intuitively reasonable, however, that the items in this list were not all equal in the impact they might have on a library's clientele. It was decided, therefore, to distribute this 154-item list among several prominent librarians and to ask them to rate the items on a scale of 1 to 10, using as a

20 The following publications were searched for references to new or innovative programs and services.
basis for judgment the importance to or impact upon library users which each item in the list was perceived to have. The least important items received a score of 1; the most important 10. 'In this manner each library's degree of program change was more precisely quantified.

Actually, two panels of librarians were selected to rate the items: one representing baccalaureate and masters-granting institutions and one representing doctorate-granting institutions. It was, of course, a practical impossibility to custom design a set of weights and of services and programs for every possible institutional setting: the above dichotomy was specified to provide sufficient discrimination between the two types of institutions so that two sets of systematically different weightings of the final checklist would obtain. Criteria used in selecting panel members were: (1) possession of a doctorate degree, or (2) presently (or recently) holding a major administrative position in a college or university library, or presently teaching in a graduate library school, or (3) several recent (1970- ) publications in the professional library literature. Library Science Dissertations, 1925-1972: an Annotated Bibliography (Schlachter and Thomison, Libraries Unlimited, Inc., 1974), a list of doctoral studies in all areas of library science, was scanned to produce a list of 44 individuals who had written dissertations on some aspect of college or university libraries. Each of these
names (plus several others that were not listed in the above source) was checked through the last 5 years of Library Literature (H. W. Wilson Co., 1958-) to determine which ones had been contributing to the professional literature. Finally, each name was checked in the A.L.A. Membership Directory (American Library Association, 1974) to determine who had important administrative positions in academic libraries or were teaching in graduate library schools.

Eight librarians representing baccalaureate-masters institutions and 13 representing doctoral institutions participated in the rating of the 154 items. In Appendix A, (pp.170-172), are the names and positions of the responding librarians. No additional items were supplied by the librarians but one item was dropped from the preliminary list because two of the responding librarians did not supply a rating for it, thus indicating an apparent problem in the wording of the item.

Upon receipt of the completed lists, each program or service was assigned weights equal to the average rating given it by each of the two panels of librarians.

In Appendix B (pp.173-193) is a copy of the final checklist of library programs and services that was sent to library directors; in Appendix C (pp.194-200) are the numbers of the 153 items in the final checklist together with the average rating given each item by each of the two panels of librarians.
The final, weighted checklist was sent by mail to the directors of all the libraries constituting the sample in the study. At the top of the checklist was the following question: "How many of the following programs and services has your library initiated in the past five years?" The ratio of the (weighted) number of programs and services initiated to the total (weighted) number possible, times 1000, was each library's measure of degree of program change.

2. Complexity (the first independent variable)

The measures of this variable were the number of occupational specialties among the professional staff in the library (this measure was subsequently dropped from the study; see p. for explanation), the level of professional training of the staff, and the degree of extra-organizational professional activity of the staff. (The indexes used are adapted slightly from Hage and Aiken, 1967, pp. 508-09).

The level of professional training of the staff was determined by the responses to the following item:

"Please check the one level of professional training that most closely describes your own educational attainments":

1. Master's degree without any additional graduate credits.

2. Master's degree with additional graduate
3. Second master's degree without additional graduate credits.

4. Second master's degree (or equivalent) plus additional graduate credits.

5. Doctoral degree.

Five points were assigned for the first response, 10 for the second, and so on. The mean score across all responding individuals in a library represented that library's measure of staff professional training. The higher this score, the higher the library-wide level of professional training.

The degree of extra-organizational professional activity of the staff was determined by responses to the following items:

1. Do you belong to at least one professional association?

   Yes _____ No _____

2. Have you attended at least two-thirds of the previous six meetings of any professional association to which you belong?

   Yes _____ No _____

3. During the past three years have you presented a paper or held an office in any professional association to which you belong?

   Yes _____ No _____
Five points were assigned for each "Yes" answer to these three questions and a total was obtained for each person. The mean score across all responding individuals in a library represented that library's measure of extra-organizational professional activity. The higher this score, the higher the library-wide level of extra-organizational professional activity.

3. Centralization (the second independent variable)

The index of professional staff participation in decision making (centralization) was based on respondents' answers to the following questions (Hage and Aiken, 1967, p. 510):

1. How frequently do you usually participate in the decision to hire new staff?
2. How frequently do you usually participate in the decisions on the promotion of any of the professional staff?
3. How frequently do you participate in decisions on the adoption of new policies?
4. How frequently do you participate in the decisions on the adoption of new programs or services?

Responses were assigned numerical scores from 1 to 5, depending on whether the respondents checked (A) "always or almost always," (B) "often," (C) "sometimes," (D) "seldom," or (E) "never or almost never," respectively, to these questions. A total score was computed for each respondent; the mean of all the individuals' scores in each library represented that library's measure of participation.
in decision making. The higher this score, the higher the level of centralization.

4. Formalization (the third independent variable)

The degree of formalization, i.e., job codification, was measured on the basis of answers to the following items (Hage, 1974, p. 247):

1. Whatever situation arises, we have procedures to follow in dealing with it.
2. Everyone has a specific job to do.
3. Going through the proper channels is constantly stressed.
4. The organization keeps a written record of everyone's job performance.
5. Whenever we have a problem, we are supposed to go to the same person for an answer.

Responses were assigned numerical scores from 1 to 5, depending on whether the respondents checked: (A) "definitely untrue," (B) "somewhat untrue," (C) "unsure," (D) "somewhat true," (E) "definitely true," respectively, to these statements. As above, a total score was computed for each respondent and the mean of all these scores for each library represented that library's level of formalization. The higher this score, the greater the degree of formalization.
5. Stratification (the fourth independent variable)

The major formal reward in an organization is salary. To derive an index for this dimension of stratification respondents were asked to select from the following list the interval in which their present annual salary falls:

- 7,001 - 9,000
- 9,001 - 11,000
- 11,001 - 13,000
- 13,001 - 15,000
- 15,001 - 17,000
- 17,001 - 19,000
- 19,001 - 21,000
- 21,001 - 23,000
- 23,001 - 25,000
- 25,001 -

A salary stratification ratio was computed for each library by dividing the mean of the midpoints of the highest specified

21 Hage (1974, p. 201) commented: "An income ratio measure is the ideal for measuring the extent of stratification in an organization." Hage extended the connotation of salary stratification, however, to include implications for prestige stratification: "Thus we are assuming that organizations with a large number of individuals at the bottom of the income stratification structure will have greater differences of rewards at each level of the status hierarchy. In any case, even if this assumption is unwarranted, where few people are at the top of the status pyramid, the position of a department or division head has more prestige." (ibid.)
intervals by the mean of the midpoints of the lowest specified
intervals, \(^{22}\) and multiplying this figure by 1000. The number of
highest and lowest specified intervals used in computing the ratio
was determined by the number of usable responses received from
each library, according to the following convention:

<table>
<thead>
<tr>
<th>No. of usable responses</th>
<th>No. of highest/lowest intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 9</td>
<td>1</td>
</tr>
<tr>
<td>10 - 14</td>
<td>2</td>
</tr>
<tr>
<td>15 - 19</td>
<td>3</td>
</tr>
<tr>
<td>20 - 24</td>
<td>4</td>
</tr>
<tr>
<td>25 - 29</td>
<td>5</td>
</tr>
<tr>
<td>30 - 34</td>
<td>6</td>
</tr>
</tbody>
</table>

The higher this ratio, the greater the degree of salary stratifi-
cation within the library.

An overall index of stratification used in this study
was one developed by Hemphill (1956, p. 53) and the Bureau of

\(^{22}\) This measure was derived conceptually from V. A. Thompson
(1969): "It seems reasonable to suppose that the monocratic re-
lations of bureaucratic organizations had their origin in an
earlier and simpler era, when technology was so rudimentary that
one man could master it, and when great inequalities in the
conditions of life produced great inequalities in contributions
and corresponding rewards within organizations" (ibid., p. 92);
elsewhere Thompson noted: "A useful index of industrialization
can be derived by dividing the highest civil service salary by
the lowest. The resulting factor will be around 50 in very under-
developed countries and around 5 in highly industrialized ones." (ibid., p. 133)
This index was one of 13 sub-indexes comprising the Group Dimensions Description questionnaire. The index follows:

1. The opinions of all professional staff members are considered as equal.

2. The department heads hold a higher status in the group than other members.

3. The older members of the professional staff are given special privileges.

4. The professional staff is controlled by the actions of a few members.

5. Every member of the professional staff enjoys the same group privileges.


Two of the original twelve items in the scale were eliminated: the eleventh item ("Certain members of the group hold definite office in the group") was dropped because it does not discriminate on any useful dimension in an academic library; the twelfth item ("The original members of the group are given special privileges.") was dropped because it probably is not applicable in most of the libraries being studied. Also, the sense of this item is covered by item three.

The wording of statements was changed slightly to reflect the occupational nature of the groups responding. For instance, the word "group" was changed to "professional staff"; "group's officers" was changed to "department heads,"

6. Experienced staff members are in charge of the library's operations.

7. Certain problems are discussed only among the department heads.

8. Certain members have more influence on the staff than others.

9. Each member of the professional staff has as much power as any other member.

10. An individual's standing on the staff is determined only by how much he gets done.

The respondents answered (A) "definitely true," (B) "mostly true," (C) "equally true and false, or undecided," (D) "mostly false," or (E) "definitely false," The scoring key for the response categories follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
The highest possible score (50) represents the highest possible degree of stratification, as perceived by an individual; the lowest possible score (10) represents the lowest degree of perceived stratification. To derive an overall organizational score on this dimension, all individual scores were averaged.

6. Job Satisfaction (the fifth independent variable)

The six items chosen to measure this variable were (Hage and Aiken, 1967, p. 512):

1. How satisfied are you that you have been given enough authority by your superior to do your job well?

2. How satisfied are you with your present job when you compare it to similar positions in other libraries?

3. How satisfied are you with the progress you are making toward the goals which you set for yourself in your present position?

4. On the whole, how satisfied are you that your superior accepts you as a professional, to the degree to which you are entitled by reason of position, training, and experience?

5. On the whole, how satisfied are you with your present job when you consider the expectations you had when you took the job?

6. How satisfied are you with your present job in light of career expectations?
Response categories were (A) "definitely unsatisfied," (B) "somewhat unsatisfied," (C) "undecided or ambivalent," (D) "somewhat satisfied," (E) "definitely satisfied." Responses were assigned 1 point for "definitely unsatisfied," 2 for "somewhat unsatisfied," etc. A total score was computed for each respondent; the mean of all the individuals' scores in each library represented that library's measure of staff satisfaction. The higher this score, the higher the level of staff satisfaction.
F. Bias in the Study

More than most other research paradigms, the ex post facto methodology with the use of questionnaires to gather data is most susceptible to bias. Nothing approaching the degree of control exercised by the true experimentalist is attainable in the type of post hoc study described in this report.

Notwithstanding this, and undaunted, the researcher did take steps to keep such bias as low as possible. One inherent aspect of the study that was relied upon to avoid the non-response bias that plagues many survey studies was the fact that the researcher was a librarian communicating with other librarians about professional matters of common interest. In all correspondence the researcher's title and institutional affiliation were made clearly apparent through the use of institutional letterhead for all letters; also, similar information was printed at the head of all instruments distributed (see Appendix B - "Letters and Data-Gathering Instruments" - pp. 173-193). An attempt was made to arouse the potential respondent's interest in the study by indicating theoretical and practical benefits of the study to library management and administration were foreseen.

All cover letters, instruments, and outgoing envelopes and return envelopes were printed by offset so that a neat and professional-looking product reached potential respondents. (The only exception was the 15¼-item preliminary checklist of services and
programs to the two panels of librarians: this instrument was typed and then copied by Xerography; outgoing and return envelopes were typed and stamped individually.

Return postage was affixed to all return envelopes that went to members of the two rating panels and to directors of libraries; pre-printed business reply envelopes were sent with the 30-item questionnaire that went to professional staff members. One set of follow-up letters was sent to individuals who did not respond to an instrument after three or four weeks. In addition, several of the library directors who did not respond within an additional three or four weeks to the 153-item checklist and to the request for personnel information were contacted personally by telephone, Librarians who rated the preliminary checklist of services and programs, and the library directors who checked services and programs on the final list were asked to indicate if they would like a summary of the results of the study. In addition to several of these people, a number of the professional staff members asked for summaries: there were 46 such requests in all.

There was, of course, a certain amount of non-response connected with each of the three data-gathering instruments. On the basis of a few of the preliminary checklists of services and programs (which were rated by the two panels of librarians) that were returned without ratings and on the basis of correspondence received from some of the people who were asked to rate the items,
one reason for non-response to this instrument was the great deal of time involved in reading through the list, comparing item by item, and coming to some conclusion as to relative importance of each item. Some respondents mentioned the fact that any such ratings would perforce apply to just their own particular institutional setting and might not be applicable to other settings.

The reason most frequently cited by library directors for not responding to the final 153-item checklist of services and programs, again, was time: some could not afford the time involved in searching through past records and reports to determine whether particular services and programs had been implemented within the past five years. Two or three directors said they could not comply with the request for a staff roster because such information was confidential. One stated that his professional staff generally is opposed to filling out such questionnaires. A few were unwilling to participate because of the five year restriction placed on those services and programs that could be checked on the 153-item list. Finally, one of the directors had died just before the study began, and two had just moved to new positions; in both cases identities of new or acting directors were not determined in time to include these libraries in the study.

This researcher suspected the cause of the largest number of non-responses among the professional staff members who were sent the 30-item questionnaire (to measure the independent variables)
was the belief on the part of these people that the anonymity of their responses would not be honored. Indeed, about 30 of these questionnaires were returned unsigned but filled out, and with a statement that they did not feel their names should be attached to such a document. (The institutions of origin of about half of these unsigned responses were determined by checking zip codes.) Several people objected to the apparent obtrusiveness of the questions asked; some simply felt the questions were silly, stupid, inane, obtuse, or some such. Interestingly, of the people who did fill out this questionnaire, very few failed to specify the interval in which their current salary falls. (Two or three of the respondents from one religiously affiliated institution did state their employer required them not to divulge their salaries.) Several persons declined to participate because, as they explained, they had been employed at the institution only a few months and therefore could not answer many of the questions adequately. Several others explained that as a general policy they did not reply to such questionnaires. Five or six persons were identified as having died recently, or as being on leave or sabbatical, or as having left their positions recently. Of some interest to the researcher is the fact that about two-thirds of the professional staff members contacted in the library of one well-known, highly prestigious private university did not respond to the 30-item questionnaire. Ironically, the director of this library was one of
the first to return the completed checklist of services and programs and a copy of his staff roster. (This library eventually was not included in the study.)

The one case of suspected spurious response to the preliminary checklist of services and programs involved one librarian who gave a rating of 1 to almost all the 154 items in the list. Responses from this individual were ignored in the calculation of average item ratings.

The researcher can only speculate about spurious responses by library directors who completed the final checklist of services and programs. A possibility exists that directors may have checked some services and programs that did not fit exactly the descriptions given in the checklist; some items checked may have been implemented longer than five years ago. Alternatively, some directors may have forgotten that a particular service or program was implemented within the past five years and therefore may have failed to check it; or, some directors may have been new to their position or institution and therefore not aware that some items should have been checked. Several directors, however, did indicate that other staff members were consulted about which items should be checked.

In the 30-item questionnaire that went to library professional staff members, some of the respondents evidently misinterpreted a few of the item statements and their accompanying sets of responses. Item number 15 is used here as an example. The item is: "The
opinions of all professional staff members are considered as equal;" responses are: (A) Definitely true; (B) Mostly true; (C) Equally true and false or undecided; (D) Mostly false; (E) Definitely false. The intended way to interpret the item was to take the statement at face value, and then to choose among responses A to E the degree to which the statement applies in the respondent's own library. If all staff members' opinions were indeed considered as equal, response A should have been circled, and so on. Some of the respondents, however, took exception to the original statement, claiming that in almost any staff the opinions of all members are never treated equally. While this claim is probably true, the respondent should have proceeded in the intended manner and merely circled, perhaps, D (Mostly false) or E (Definitely false) if either of these responses accurately reflected the degree to which the statement, as it stood, applied to his own situation.

From the original sample of 155 libraries, 104 ultimately were included in the study. In terms of composite size and of level, the 104 libraries were roughly proportional to the stratified random sample of 155. (See Tables 6 and 7, pp. 81, 82) In the case of auspices, however, such representativeness was not attained: while 29% of the 155 libraries in the original sample were in private institutions, of the 104 libraries that participated in the study only 16% were in private institutions.
G. Summary

An ex post facto, survey research design has been presented in Chapter III. After delineation of the population and of the sample, a data collection design using three sets of mailings was presented: chronologically, the first mailing was to two panels of librarians who were asked to rate the 154-item preliminary list of academic library programs and services; the next mailing, to the 155 directors of the libraries that comprised the sample, asked these persons to cooperate in the study by checking relevant items in the checklist of services and programs and by supplying a roster of professional personnel; the final mailing, to randomly selected professionals on the library staffs, asked these persons to complete the 30-item questionnaire. The dependent variable (degree of program change) was measured via directors' responses to the 153-item checklist; the independent variables (complexity, centralization, formalization, stratification, job satisfaction) were measured via the 30-item questionnaire to professional personnel in the libraries. The data were analyzed using correlational, regression and chi square techniques. The chapter concluded with the measures used to operationalize the variables and with a discussion of bias in the study.

Chapters IV and V report the results of the data collection and of the analyses of the data; discussions of the data relative to the original 5 hypotheses are presented; the research study is
summarized; implications of the study and suggestions for future studies are stated.
Chapter IV  Data Analysis and Discussion

A. Introduction

In this chapter the results of the research effort are presented. Several tables are used to depict the results of the analysis of the data by correlation, regression, and chi square techniques. Incorporated into this section on analysis is the researcher's discussion of the statistical findings in light of the original five hypotheses presented in Chapter I. Also included in this chapter are an analysis and discussion of other, secondary findings of the research.
B. Analysis and Discussion of the Data

1. Correlation Analysis (N = 104 Libraries)

In Appendix F (p. 211) is a table listing scores for each of the 104 libraries on the three contextual variables, the dependent variable, and the seven independent variable measures. The means and standard deviations of these scores are presented in Table 10.

Correlation analysis was employed to test the five hypotheses (Chapter I) relating the dependent variable (degree of program change) and the independent variables (complexity, centralization, formalization, stratification, and job satisfaction). In each of the hypothesis statements (restated below) the null hypothesis was that there is no relationship between independent and dependent variables; the alternative hypothesis was that there is either a positive or negative relationship between the independent and dependent variables.

The complete 8 x 8 intercorrelation matrix (for N = 104 libraries) is presented in Table 11. Those coefficients that pertain to the five hypotheses being tested are presented in Table 12. In the next section each of the five hypotheses is tested in light of these correlation statistics.

a. Proposition #1: The greater the complexity (C), the higher the degree of program change (PC).

Null: There is no relationship between complexity and
TABLE 10
MEANS AND STANDARD DEVIATIONS OF DERIVED SCORES

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Composite size</td>
<td>7.45</td>
<td>3.21</td>
</tr>
<tr>
<td>2</td>
<td>Auspices</td>
<td>0.84</td>
<td>0.37</td>
</tr>
<tr>
<td>3</td>
<td>Level</td>
<td>0.73</td>
<td>0.45</td>
</tr>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td>153.30</td>
<td>81.84</td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>21.10</td>
<td>4.71</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>16.70</td>
<td>4.03</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>12.15</td>
<td>2.04</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>18.13</td>
<td>1.67</td>
</tr>
<tr>
<td>9</td>
<td>Salary stratification</td>
<td>17.40</td>
<td>2.94</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>33.13</td>
<td>2.47</td>
</tr>
<tr>
<td>11</td>
<td>Job satisfaction</td>
<td>22.82</td>
<td>2.37</td>
</tr>
<tr>
<td>Variable</td>
<td>(Dependent Variable)</td>
<td>Program Change</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Stratification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra-organizational Professional Activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralization of Decision Making</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Professional Training</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 1**

8 x 8 INTERCORRELATION MATRIX (N = 104 LIBRARIES)
<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>0.09</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>0.20</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>-0.17</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>0.13</td>
<td>NS</td>
</tr>
<tr>
<td>9</td>
<td>Salary stratification</td>
<td>-0.15</td>
<td>0.061</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>-0.11</td>
<td>NS</td>
</tr>
<tr>
<td>11</td>
<td>Job satisfaction</td>
<td>0.09</td>
<td>NS</td>
</tr>
</tbody>
</table>

* (standard error of $\hat{r}$) = 0.098
program change.

\( (C \rightarrow 0) \rightarrow PC \)

Alternative: There is a positive relationship between complexity and program change.

\( (C \rightarrow \rightarrow PC) \)

The object of the analysis here was to determine whether the obtained correlation coefficients departed significantly from a population correlation coefficient \( (\bar{r}) \) of zero. According to Guilford and Fruchter (1973, pp. 144, 145), with an obtained \( r \) not greater than .50, the hypothesis that the population correlation is zero may be tested by using the following standard formula:

\[
\sigma_{\bar{r}} = \frac{1}{\sqrt{N}},
\]

which represents the approximate standard error of \( \bar{r} \) of the population \( (\sigma_{\bar{r}}) \) for testing the hypothesis that the population \( \bar{r} = 0 \). In this case,

\[
\bar{r} = \frac{1}{\sqrt{104}} = \frac{1}{10.1980} = 0.098
\]

The obtained \( r \) is then converted to a z score (in standard deviation units) according to the following formula:

\[
z = \frac{r}{\sigma_{\bar{r}}}
\]

Level of professional training (the first facet of complexity) had an obtained \( r \) of .09 with the dependent variable.
Converting this value to a z score resulted in the following calculation:

\[ z = \frac{0.09}{0.098} = 0.92 \]

The obtained \( r \) of .09, with \( N = 104 \) and a standard error of the population \( \frac{s_r}{\sqrt{N}} \) of .098, represented a deviation of only .92 of a standard unit from a population \( \bar{r} \) of zero. With \( N = 104 \), there were 18 chances in 100 that an \( r \) could deviate as much as .09 in either direction from a population correlation of zero.

Clearly this \( r \) is not significant; the null hypothesis of no correlation between this facet of complexity and degree of program change may not be rejected.

Extra-organizational professional activity (the second facet of complexity) had an obtained \( r \) of 0.20 with the dependent variable. Converting this value to a z score resulted in the following calculation:

\[ z = \frac{0.20}{0.098} = 2.04 \]

The obtained \( r \) of .20, with \( N = 104 \) and \( \frac{s_r}{\sqrt{N}} = 0.098 \), represented a deviation of 2.04 standard units from a population \( \bar{r} \) of zero. With \( N = 104 \), there were fewer than 5 chances in 100 that an \( r \) could deviate as much as .20 in either direction from a population correlation of zero. The null hypothesis of no correlation between this facet of complexity and degree of program change may be rejected at the .05 level of confidence.
Based upon the results of the above correlation analysis, the first proposition was partially supported. One had confidence beyond the .05 level of significance that the correlation between extra-organizational professional activity and degree of program change was significantly different from a population correlation of zero, and that it was positive. One could not say as much, however, for the relationship between level of professional training and degree of program change. In this case the obtained correlation was negligible.

(Of the three measures for complexity that were presented in Chapter III, one [the relative number of occupational specialties] was dropped, one [level of professional training] did not have a significant correlation with the dependent variable, and only one [extra-organizational professional activity] had a significant correlation with the dependent variable. At this point it appears doubtful that the concept of complexity has been explained fully via this single significant correlation. Indeed, one could consider extra-organizational professional activity more properly a facet of professionalism, than of complexity.)

b. Proposition #2: The greater the centralization (Ce), the lower the degree of program change (PC).

Null: There is no relationship between centralization and degree of program change.

\[(C \quad \rightarrow \quad 0 \quad \rightarrow \quad PC)\]
Alternative: There is a negative relationship between centralization and degree of program change.

(\text{Ce} \rightarrow \text{PC})

The obtained $r$ between centralization of decision making and degree of program change was $-0.17$. Converting this value to a $z$ score resulted in the following calculation:

$$z = \frac{-17}{0.098} = 1.73$$

With $N = 104$ and $\sigma = 0.098$, the obtained $r$ of $-0.17$ represented a deviation of 1.73 standard units from a population $r$ of zero. With $N = 104$, there were fewer than 5 chances in 100 that an $r$ could deviate as much as $0.17$ in either direction from a population correlation of zero. We may therefore reject the null of no correlation between centralization of decision making and degree of program change. We may have confidence at the .05 level of significance that the correlation between centralization of decision making and degree of program change is different from zero and negative.

c. Proposition #3: The greater the formalization ($F$), the lower the degree of program change.

Null: There is no relationship between formalization and degree of program change.

($F \rightarrow \text{PC}$)

Alternative: There is a negative relationship between formalization and degree of program change.

($F \rightarrow \text{PC}$)
The obtained correlation between formalization and degree of program change was 0.13. Converting this value to a z score resulted in the following correlation:

\[ z = \frac{13}{0.098} = 1.33 \]

With \( N = 104 \) and \( \sigma_r = 0.098 \), the obtained \( r \) of 0.13 represented a deviation of 1.33 standard units from a population \( r \) of zero. With \( N = 104 \), there were, however, as many as 10 chances in 100 that an \( r \) could deviate as much as 0.13 in either direction from a population \( r \) of zero. This \( r \) is not significant at the .05 level; we cannot reject the null of no correlation between formalization and degree of program change.

d. Proposition #4: The greater the stratification (\( St \)), the lower the degree of program change.

Null: There is no relationship between stratification and degree of program change.

\[ (St \rightarrow PC) \]

Alternative: There is a negative relationship between stratification and degree of program change.

\[ (St \rightarrow PC) \]

The two facets of stratification used in the research were salary stratification and overall stratification. The obtained \( r \) between salary stratification and degree of program change was -.15. Converting this value to a z score resulted in the following calculation:
With $N = 10^4$ and $\sigma_r = .098$, the obtained $r$ of -.15 represented a deviation of 1.53 standard units from a population $\bar{r}$ of zero. There were 6 chances in 100, with $N = 10^4$, that an $r$ could deviate as much as .15 in either direction from a population $\bar{r}$ of zero. The significance level of the obtained $r$ just barely does not attain the .05 level. Because the $r$ was so close to achieving this commonly accepted level of significance, and because the weight of the evidence presented in Chapter II (Related Research) pointed to a similarly negative correlation between stratification and degree of program change, this researcher was willing to reject the null of no correlation and to accept the alternative. One may have confidence at the .06 level of significance that the correlation between salary stratification and degree of program change is different from a population correlation of zero, and that it is negative.

The obtained $r$ between overall stratification and degree of program change was -.11. Converting this value to a $z$ score resulted in the following calculation:

$$z = \frac{-.15}{.098} = 1.53$$

With $N = 10^4$ and $\sigma_r = .098$, the obtained $r$ of -.15 represented a deviation of 1.53 standard units from a population $\bar{r}$ of zero. There were 6 chances in 100, with $N = 10^4$, that an $r$ could deviate as much as .15 in either direction from a population $\bar{r}$ of zero. The significance level of the obtained $r$ just barely does not attain the .05 level. Because the $r$ was so close to achieving this commonly accepted level of significance, and because the weight of the evidence presented in Chapter II (Related Research) pointed to a similarly negative correlation between stratification and degree of program change, this researcher was willing to reject the null of no correlation and to accept the alternative. One may have confidence at the .06 level of significance that the correlation between salary stratification and degree of program change is different from a population correlation of zero, and that it is negative.

The obtained $r$ of -.12, with $N = 10^4$ and $\sigma_r = .098$, represented a deviation of 1.22 standard units for a population $\bar{r}$ of zero. With $N = 10^4$, there were 11 chances in 100 that an $r$ could deviate as much as .12 in either direction from a population $\bar{r}$ of zero. This
obtained r did not achieve the commonly accepted .05 level of significance. The null hypothesis of no correlation between overall stratification and degree of program change cannot be rejected.

As in the above case of two facets of complexity, one of the two facets of stratification had an acceptably significant r with the dependent variable while the other did not. The overall proposition of a negative correlation between stratification and degree of program change was partially accepted.

e. Proposition #5: The greater the job satisfaction (Sa), the higher the degree of program change (PC).

Null: There is no correlation between job satisfaction and degree of program change.

\[(Sa \rightarrow 0 \rightarrow PC)\]

Alternative: There is a positive correlation between job satisfaction and degree of program change.

\[(Sa \rightarrow + \rightarrow PC)\]

The obtained r between job satisfaction and degree of program change was 0.09, which was converted to a z score of .92.

With \[N = 104\] and \[\sigma / r = .098\], this obtained r represented a deviation of only .92 of a standard unit from a population \(\tilde{r}\) of zero. With \[N = 104\], there are 18 chances in 100 that an r could deviate as much as .09 in either direction from a population correlation of zero. Clearly, this r was not significant; one could not reject the null hypothesis that there is no correlation between job satisfaction and
.degree of program change.

2. Correlation Analysis ($N \geq 104$ libraries)

Data from various subsets of the total $10^4$ libraries were analyzed using the Pearson correlation statistic. The reasoning here was that the hypothesized relationships might be more apparent within these more homogeneous subsets of libraries.

a. Medium-size Libraries Only ($N = 68$)

A library's composite size score was comprised of three values: size of enrollment served, number of volumes in the collection, and number of full-time professional library staff members. As described in Chapter III, (p. 70), each library was assigned points depending on the size of these three values; the points were then summed to derive a composite size score for each library. The lowest possible score a library might receive was 2.5; the highest 15.0. The population was divided into 5 composite size categories (See Table 4, p. 74).

The rationale behind calculating a set of correlation coefficients based upon a removal of the data from those libraries in the lowest and highest categories of the composite size score was to rule out the very small and the very large libraries, thus leaving only the middle size range of libraries, which, then, might form a core of institutions more homogeneous in the relationships being studied. All libraries in the first (2.5-4.5) and fifth (12.5-15.0) composite size categories were eliminated from correlation calculations; this
removal left an N of 68 libraries (25 fewer from the first category and 11 fewer from the fifth category). The resulting correlation coefficients are reported in Table 13.

With N = 68, the approximate standard error of the population r is 0.12. Using this value and proceeding (as above with N = 104) to calculate z scores for each of the obtained correlation coefficients in Table 13, and to determine significance levels in the same manner as before, there was only one correlation that achieved the .05 level of significance - that between salary stratification and the dependent variable. With N = 68 and $\frac{\sigma}{\sqrt{N}} = .12$, there were fewer than 5 chances in 100 that an r could deviate as much as .21 in either direction from a population correlation of zero. In this case, one was able to reject the null and accept the alternative hypothesis that there is a negative correlation between salary stratification and degree of program change.

No new relationships were discovered by omitting data from those libraries in the lowest and highest categories of composite size. The null hypotheses of no relationship between complexity, centralization, formalization, overall stratification, and job satisfaction (the remaining independent variables) and degree of program change could not be rejected for these medium size libraries.

b. Public Institutions Only (N = 87)

The 104 libraries in the study were categorized according to auspices - private or public. There were 87 public
<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>$r$</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>-0.02</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>0.15</td>
<td>NS</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>-0.09</td>
<td>NS</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>0.04</td>
<td>NS</td>
</tr>
<tr>
<td>9</td>
<td>Salary stratification</td>
<td>-0.21</td>
<td>$P &lt; .05$</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>-0.06</td>
<td>NS</td>
</tr>
<tr>
<td>11</td>
<td>Job satisfaction</td>
<td>0.01</td>
<td>NS</td>
</tr>
</tbody>
</table>

*$\hat{\sigma}_r$ (standard error of $\hat{r}$) = 0.12
institutions and 17 private ones. Another set of correlation coefficients, using only the data from the 87 public institutions, was calculated. The resulting correlation coefficients are reported in Table 14.

With N = 87, the approximate standard error of the population \( r \) is 0.107. As in the original set of correlation calculations (with \( N = 104 \)), z scores for the obtained \( r \)'s were calculated and significance levels were determined. Table 14 reveals that none of the obtained \( r \)'s achieved the .05 level of significance. When correlation calculations include those data from public institutions only, with \( N = 87 \), the null hypotheses of no correlation between the independent and dependent variables could not be rejected. Again, no new relationships were discovered by using data from public institutions only and the correlations that were significant when data from all 104 libraries were used to calculate \( r \)'s were no longer significant at the .05 level.

c. Doctorate Institutions Only (\( N = 76 \))

All 104 libraries in the study were categorized by level: baccalaureate-masters and doctorate. There were 76 libraries in doctorate-granting schools and 28 in baccalaureate-masters schools. Another set of correlation coefficients based upon data from only the 76 doctorate institutions was calculated. Results of this calculation are reported in Table 15.
TABLE 14
CORRELATES OF PROGRAM CHANGE USING DATA FROM PUBLIC INSTITUTIONS ONLY (N = 87 LIBRARIES)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>0.08</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>0.13</td>
<td>NS</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>-0.07</td>
<td>NS</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>0.09</td>
<td>NS</td>
</tr>
<tr>
<td>9</td>
<td>Salary stratification</td>
<td>-0.09</td>
<td>NS</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>-0.03</td>
<td>NS</td>
</tr>
<tr>
<td>11</td>
<td>Job satisfaction</td>
<td>-0.07</td>
<td>NS</td>
</tr>
</tbody>
</table>

*(standard error of $\bar{r}$) = .107)
TABLE 15

CORRELATES OF PROGRAM CHANGE, USING DATA FROM DOCTORATE INSTITUTIONS ONLY (N = 76 LIBRARIES)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>0.08</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>0.11</td>
<td>NS</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>-0.03</td>
<td>NS</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>-0.06</td>
<td>NS</td>
</tr>
<tr>
<td>9</td>
<td>Salary Stratification</td>
<td>-0.07</td>
<td>NS</td>
</tr>
<tr>
<td>10</td>
<td>Overall Stratification</td>
<td>0.08</td>
<td>NS</td>
</tr>
<tr>
<td>11</td>
<td>Job Satisfaction</td>
<td>0.001</td>
<td>NS</td>
</tr>
</tbody>
</table>

* \( \sqrt{r} \) (standard error of \( r \)) = 0.114
With $N = 76$, the approximate standard error of the population $\bar{r}$ is $0.114$. As above, $z$ scores were calculated for the obtained $r$'s and significance levels were determined. Table 15 reveals that none of the obtained $r$'s achieved the .05 level of significance. It was concluded that when correlation calculations include those data from doctorate granting institutions only, with $N = 76$, the null hypothesis of no correlation between the independent and dependent variables could not be rejected. No new relationships were uncovered by using data from doctorate institutions only and the correlations that were significant when data from all 104 libraries were used to calculate $r$'s were no longer significant at the .05 level.

**d. Only Libraries with Medium Program Change Scores ($N = 86$)**

Program change, the dependent variable, exhibited a range from 23.7 to 424.4 and a mean of 153.3 and a median of 153.1. This next set of correlation calculations was based upon an $N$ of 86 which resulted when data from libraries represented by very low or very high program change scores were eliminated. The rationale for this procedure was that response bias may have affected these very low or very high scores and thus any calculations based upon these scores might have been misleading.

In deciding on the lower and upper cut off points on this variable, the researcher looked for natural breaks in the distribution of scores: one was found between the seventh and eighth scores; thus data from the libraries with the bottom seven scores on
the dependent variable were eliminated. Likewise, a natural break was found between the ninety-third and the ninety-fourth scores; thus data from the libraries with the top eleven scores were eliminated. The results of the calculation are reported in Table 16.

With \( N = 86 \), the approximate standard error of the population \( r \) was 0.108. When the obtained \( r \)'s were converted to \( z \) scores and significance levels for the \( r \)'s were determined, it was evident none of the correlations had achieved the .05 level of significance. It was concluded that when correlation calculations were performed after omitting the data from those libraries with very low or very high program change scores, with \( N = 86 \), the null hypotheses of no correlation between the independent and dependent variables cannot be rejected. No new relationships were discovered and the correlations that were significant when data from all 104 libraries were used to calculate \( r \)'s are no longer significant at the .05 level.

e. Summary of Correlation Analyses

A summary of only the statistically significant correlations from the above five sets of calculations is presented in Table 17. Upon inspection of this table it is evident that no new relationships have been uncovered via manipulation of the data so as to calculate coefficients based upon only (1) libraries in the middle range of the composite size scores, (2) those libraries in public institutions, (3) those libraries that serve doctorate institutions, and (4) those libraries in the middle range of the program change
TABLE 16

CORRELATES OF PROGRAM CHANGE, AFTER OMITTING DATA FROM LIBRARIES WITH HIGHEST AND LOWEST PROGRAM CHANGE SCORES (N = 86 LIBRARIES)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Level of professional training</td>
<td>0.07</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>0.14</td>
<td>NS</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of decision making</td>
<td>-0.14</td>
<td>NS</td>
</tr>
<tr>
<td>8</td>
<td>Formalization</td>
<td>0.05</td>
<td>NS</td>
</tr>
<tr>
<td>9</td>
<td>Salary stratification</td>
<td>-0.15</td>
<td>NS</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>-0.002</td>
<td>NS</td>
</tr>
<tr>
<td>11</td>
<td>Job satisfaction</td>
<td>0.06</td>
<td>NS</td>
</tr>
</tbody>
</table>

*σ_r (standard error of r) = 0.108
TABLE 17
SUMMARY OF STATISTICALLY SIGNIFICANT CORRELATION COEFFICIENTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>r, original (N = 104)</th>
<th>r, medium size libraries only (N = 68)</th>
<th>r, public institutions only (N = 87)</th>
<th>r, doctorate institutions only (N = 76)</th>
<th>r, libraries in medium range of program scores (N = 86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Change (Dependent Variable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of professional Training</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra-organizational Professional Activity</td>
<td>6</td>
<td>0.20*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralization of Decision Making</td>
<td>7</td>
<td>-0.17*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formalization</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary Stratification</td>
<td>9</td>
<td>-0.15**</td>
<td>-0.21*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Stratification</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* P < 0.05
** P < 0.05
scores. In each case two or more of the originally significant correlations disappeared, and in three cases all three originally significant relations disappeared. None of the above four manipulations resulted in any more explicit manifestations of the original five hypothesized relationships between the independent and dependent variables. The only hypothesized relationship that was confirmed in one of the subsequent calculations was the negative correlation between salary stratification and degree of program change.

Perhaps, additional significant correlations might have been obtained if data from those libraries within the intersection of two or more subsets of the total sample had been analyzed. In this way an even more homogeneous subset of libraries could have been formed. For example, coefficients might have been calculated using data from only those libraries that served doctorate institutions and which were in the upper ranges of the composite size score. Other such combinations could have been devised. With a total (final) sample size of only 10^4, however, it was not deemed worthwhile to calculate correlations coefficients based upon a sample size twice reduced from 10^4.

When data from all 10^4 libraries were used to calculate correlations, three significant r's were obtained. The positive r between extra-organizational professional activity and the dependent variable was significant at the .05 level; the negative r between centralization of decision making and the dependent variable
was significant at the .05 level; while the negative correlation between salary stratification and the dependent variable was significant at the .06 level.

3. Regression Analysis

The purpose of the multiple regression analysis was to determine the proportion of variance among the program change scores (the dependent variable) which was explained by the independent variables. Table 18 presents the results of the step-wise multiple regression analysis: in part a statistics for the first four steps in the analysis are presented; in part b a summary of these four steps is presented. The last three steps of the analysis were not reported because none of the overall F ratios at these steps was significant at the .05 level, thus indicating that the variables entering the equation at these steps did not contribute a statistically significant amount to the proportion of variance already explained by the first four variables to enter the equation. (None of the variables was subsequently removed from the equation, even after the seventh step.)

The "F to Remove" values in Table 18a indicate the significance level associated with the removal of the variable from the regression equation (Kerlinger, 1973, p. 291); they are tests of the loss caused to the multiple correlation coefficient (R) by removing a given variable. If this value is smaller than the value preset by the computer program, the variable associated with it is removed. From
# TABLE 18a

**CORRELATES OF PROGRAM CHANGE:**

**A MULTIPLE (LINEAR) REGRESSION ANALYSIS**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Variable Number</th>
<th>Variable Name</th>
<th>Coefficient</th>
<th>F to Remove</th>
<th>df</th>
<th>Overall F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Constant</td>
<td>8.4395</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable Entered 6 Extra-organizational professional activity</td>
<td>4.126</td>
<td>4.384</td>
<td>1/102</td>
<td>4.383*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiple R</td>
<td>0.203</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Step Number 2 Constant</td>
<td>160.273</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable Entered 9 Extra-organizational professional activity</td>
<td>4.771</td>
<td>4.772</td>
<td>2/101</td>
<td>3.642*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiple R</td>
<td>0.259</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Step Number 3 Constant</td>
<td>262.588</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable Entered 7 Extra-organizational professional activity</td>
<td>3.054</td>
<td>2.022</td>
<td>3/100</td>
<td>3.049*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiple R</td>
<td>0.290</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Step Number 4 Constant</td>
<td>185.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable Entered 8 Extra-organizational professional activity</td>
<td>2.710</td>
<td>1.549</td>
<td>4/99</td>
<td>2.519*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiple R</td>
<td>0.304</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Step Number 5 Constant</td>
<td>4.627</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable Entered 9 Extra-organizational professional activity</td>
<td>4.627</td>
<td>0.937</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
Table 18a it was evident the best single predictor of degree of program change in the 104 libraries studied was extra-organizational professional activity (variable #6). This was the variable that had the highest partial correlation with degree of program change and which therefore entered the equation first. By the end of step 4 in the analysis it appeared the best two predictors of program change were extra-organizational professional activity and salary stratification (variable #9). In step 2 the entrance of salary stratification into the equation did not reduce the "F to Remove" value for extra-organizational professional activity. (This appears reasonable since, as seen in Table 11, p.111, these two variables were almost completely uncorrelated, with an r of 0.04.) Variables 6 and 9 do not overlap in construct space. In step number 3, however, with the entrance of centralization (variable #7), the "F to Remove" associated with extra-organizational professional activity was halved, thus indicating some similarity in the variance explained by variables 6 and 7, and, therefore, some redundancy connected with the addition of variable #7 to the equation. The addition of formalization (variable #8) in step 4 did not alter significantly the "F to Remove" associated with any of the other three variables in the equation, and its own "F to Remove" was quite small. We can say the addition of formalization to the equation added very little in explanatory ability. Again, extra-organizational professional activity (variable #6) and salary stratification (variable #9) appeared to be the best two explainers of the variance in the program
change scores.

A broader view of what has taken place can be gained by referring to Table 18b, a summary of the first four steps in the multiple regression analysis. The multiple R associated with all four independent variables was 0.304; more significantly for the purposes of this research the multiple $R^2$ associated with all four variables was 0.092, indicating that only about nine or ten percent of the variance in the dependent variable was explained by this set of four independent variables. (Entering the other three independent variables increased $R^2$ by less than one percent.) Notwithstanding the statistically significant contributions (note the significant $[p \leq .05]$ F ratios at each of the four steps in the analysis) made by the combination of the four independent variables to dependent variable variance.

### TABLE 18b

**SUMMARY OF MULTIPLE (LINEAR) REGRESSION ANALYSIS**

<table>
<thead>
<tr>
<th>Step Number</th>
<th>Variable Entered</th>
<th>Name</th>
<th>Multiple R</th>
<th>$R^2$</th>
<th>Increase in $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>Extra-organizational</td>
<td>0.203</td>
<td>0.041</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td></td>
<td>professional activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>Salary stratification</td>
<td>0.259</td>
<td>0.067</td>
<td>0.026</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>Centralization of</td>
<td>0.290</td>
<td>0.084</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>decision making</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>Formalization</td>
<td>0.304</td>
<td>0.092</td>
<td>0.009</td>
</tr>
</tbody>
</table>
explanation, the total amount of variance explained was so small that sweeping substantive conclusions could not be made. Tangentially, these results did indicate the need for additional independent variables with which to explain degree of program change in academic libraries. The variables used were not adequate explainers of the dependent variable, although, of the four variables in the equation, extra-organizational professional activity and salary stratification did explain more of the variance than did any of the others.

4. Chi Square Analysis

The chi square statistic was used to test for independence between the degree of program change (the dependent variable) and the three contextual variables of composite size, auspices, and level. A series of r by c contingency tables, in which the range of program change scores was compressed into three categories (low, medium, high) and in which the range of composite size scores also was compressed into three categories (small, medium, large), was constructed. The occurrence of natural breaks in the sequences of program change scores and composite size scores dictated cut-off points for the categories. Categories for the program change scores were: low (lowest through 90.0), medium (90.1 through 183.9), high (184.0 through highest); for composite size scores the categories were: small (2.5 through 6.5), medium (7.0 through 9.5), large (10.0 through 15.0).
In Table 19 the researcher tested for independence between degree of program change (the dependent variable) and composite size (the first contextual variable); in part a of this table data from all 104 libraries in the study were used; in part b data from only public institutions were used (N = 87); in part c data from only doctoral institutions were used (N = 76). The rationale for restricting the calculation to specific subsets of libraries in parts b and c was similar to the one above in the case of correlation calculations, i.e., to so manipulate the data as to reveal relationships that might have been obscured when data from the entire 104 libraries were used, or to confirm, within a more highly defined context, a previously discovered relationship. (The same procedure was followed and the same rationale was used in the following two series of chi square calculations.) Expected frequencies are in parentheses; computed chi square values, degrees of freedom, and significance levels are listed below each part of the table.

In Table 19a, b, and c, there are very small discrepancies between expected values and obtained values in the cells. None of the chi square statistics attained the .05 level of significance. This analysis clearly indicated there was no relation between a library's degree of program change and its size in terms of a composite measure of its enrollment served, number of volumes, and number of professional staff members. Even when data from specific
TABLE 19a

CONTINGENCY TABLE: COMPOSITE SIZE
BY PROGRAM CHANGE (N = 104 LIBRARIES)

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>14</td>
<td>18</td>
<td>22</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>(15.57)</td>
<td>(19.73)</td>
<td>(18.70)</td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>9</td>
<td>13</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>Medium</td>
<td>(8.07)</td>
<td>(10.23)</td>
<td>(9.70)</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Large</td>
<td>(6.36)</td>
<td>(8.04)</td>
<td>(7.60)</td>
<td></td>
</tr>
</tbody>
</table>

30 38 36 104

Chi square = 3.379  df = 4  Level of significance: NS

TABLE 19b

CONTINGENCY TABLE: COMPOSITE SIZE BY PROGRAM
CHANGE WITH PUBLIC INSTITUTIONS ONLY (N = 87 LIBRARIES)

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>15</td>
<td>19</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>(11.12)</td>
<td>(16.18)</td>
<td>(16.70)</td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Medium</td>
<td>(5.81)</td>
<td>(8.45)</td>
<td>(8.74)</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Large</td>
<td>(5.07)</td>
<td>(7.37)</td>
<td>(7.56)</td>
<td></td>
</tr>
</tbody>
</table>

22 32 33 87

Chi square = 2.588  df = 4  Level of significance: NS
TABLE 19c

CONTINGENCY TABLE: COMPOSITE SIZE BY PROGRAM CHANGE WITH DOCTORATE INSTITUTIONS ONLY (N = 76 LIBRARIES)

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>11 (10.30)</td>
<td>9 (10.30)</td>
<td>9 (8.40)</td>
</tr>
<tr>
<td>Composite Size Medium</td>
<td>9 (9.23)</td>
<td>11 (9.23)</td>
<td>6 (7.54)</td>
</tr>
<tr>
<td>Large</td>
<td>7 (7.47)</td>
<td>7 (7.47)</td>
<td>7 (6.06)</td>
</tr>
</tbody>
</table>

27  27  22  76

Chi square = 1.104  \( df = 4 \)  Level of significance: NS
subsets (all public institutions, all doctorate institutions) of the 104 libraries were used, there was still found to be no clear relation between degree of program change and composite size. The two variables, as measured in this study, are independent.

The results of a chi square calculation between program change and auspices are reported in Table 20. In the first part of this table data from all 104 libraries were used, while in the second part data from only doctorate institutions (N = 76) were used.

Neither of the computed chi square statistics in Table 20 attained the .05 level of significance, and the discrepancies between expected and obtained values were small. This analysis indicated that for this sample of 104 libraries and for the subset of 76 libraries (in doctorate institutions only) there was no relation between the auspices (private or public) of the libraries' parent institutions and their degrees of program change.

The results of a chi square calculation between program change and level are reported in Table 21. In part a of this table, data from all 104 libraries were used; in part b data from only public institutions were used (N = 87). The computed chi square statistics in parts a and b of Table 21 were both significant at the .05 level. These results indicated there were 5 or fewer chances in 100 that with a sample size of 104 a chi square value of 7.066 would be expected by chance; also that there were 5 or fewer chances in 100 that with a sample size of 87 (public institutions only) a
### TABLE 20a

CONTINGENCY TABLE: AUSPICES BY PROGRAM CHANGE (N = 104 LIBRARIES)

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low (4.90)</th>
<th>Medium (6.21)</th>
<th>High (5.89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Public</td>
<td>22</td>
<td>32</td>
<td>33</td>
</tr>
</tbody>
</table>

Chi square = 4.036  df = 2  Level of significance: NS

### TABLE 20b

CONTINGENCY TABLE: AUSPICES BY PROGRAM CHANGE, WITH DOCTORATE INSTITUTIONS ONLY (N = 76 LIBRARIES)

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low (4.97)</th>
<th>Medium (4.97)</th>
<th>High (17.06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Public</td>
<td>20</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

Chi square = 2.287  df = 2  Level of significance: NS
### TABLE 21a

**CONTINGENCY TABLE: LEVEL BY PROGRAM CHANGE (N=104 LIBRARIES)**

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacc.-M.A.</td>
<td>3 (8.07)</td>
<td>11 (10.23)</td>
<td>14 (9.70)</td>
<td>28</td>
</tr>
<tr>
<td>Level</td>
<td>27 (21.93)</td>
<td>27 (27.77)</td>
<td>22 (26.30)</td>
<td>76</td>
</tr>
<tr>
<td>Doctorate</td>
<td>30</td>
<td>38</td>
<td>36</td>
<td>104</td>
</tr>
</tbody>
</table>

Chi square = 7.066    df = 2 Level of significance: P < .05

### TABLE 21b

**CONTINGENCY TABLE: LEVEL BY PROGRAM CHANGE, WITH PUBLIC INSTITUTIONS ONLY (N=87 LIBRARIES)**

<table>
<thead>
<tr>
<th>Program Change</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacc.-M.A.</td>
<td>2 (6.32)</td>
<td>10 (9.19)</td>
<td>13 (9.49)</td>
<td>25</td>
</tr>
<tr>
<td>Level</td>
<td>20 (15.68)</td>
<td>22 (22.81)</td>
<td>20 (23.51)</td>
<td>62</td>
</tr>
<tr>
<td>Doctorate</td>
<td>22</td>
<td>32</td>
<td>33</td>
<td>87</td>
</tr>
</tbody>
</table>

Chi square = 6.075    df = 2 Level of significance: P < .05
A chi square value of 6.075 would be expected by chance. A clear and consistent relation between level (baccalaureate-master or doctorate) of institution served by the libraries and those libraries' degrees of program change has been revealed.

The general pattern of expected and observed frequencies among the cells of both parts of Table 21 is similar. In neither level (baccalaureate-masters nor doctorate) of either table was there much difference between expected and observed cell frequencies in the middle range of program change scores, so these cells did not contribute much to the value of chi square in the two parts of Table 21. The major differences lay in the cells at the extremes of program change where the discrepancies between expected and observed frequencies were too great reasonably to be attributed to chance. It was evident that libraries in baccalaureate-masters institutions scored consistently higher in degree of program change than chance would lead one to expect; also, that libraries in doctorate institutions scored consistently lower in degree of program change than one would expect by chance. This pattern held almost equally well when data from only public institutions were used as when data from all 104 libraries were used.

5. Summary of Chi Square Analyses

The results of the chi square analyses indicated:

a. Program change was independent of composite size and therefore no systematic relationship could be said to exist between these two variables.
b. Program change was independent of auspices and therefore no systematic relationship could be said to exist between these two variables.

c. Program change was significantly related to level, with baccalaureate-masters institutions exhibiting higher than expected program change scores and doctorate institutions exhibiting lower than expected program change scores.

The results noted in a (above) seemed to run counter to others cited in Chapter II ('Related Research') of this report. The main conclusion drawn from two related studies (Baldridge, 1973; Baldridge, et.al., 1973) was that larger professional organizations tended to be more complex (in terms of professional expertise) than smaller ones and that more innovation was likely in these larger organizations. If this relationship had been found to exist in the present study, one would have expected libraries that were larger in terms of composite size to exhibit degrees of program change higher than would be expected by chance and smaller libraries to exhibit lower degrees of program change. No such relationship, however, could be posited on the basis of the results of the current research. Perhaps there were other factors operating within the libraries studied that interfered with the expected conceptual sequence of larger size - more expertise - more change; perhaps (pessimistically) the libraries studied really do not fit the model of professional organizations within which this conceptual sequence is
expected to hold.

In the literature search part (Chapter II) of this report there were cited no definitive studies that would contradict the results reported in b (above), although Baumol and Marcus (1973, pp. 78, 79) did indicate that private institutions appeared better able than public ones to adapt to environmental changes and, by implication, might be thought to exhibit more program change.

While it was noted in c above, that libraries in baccalaureate-masters institutions exhibited degrees of program change higher than expected while libraries in doctorate institutions exhibited degrees of program change lower than expected, the substantive interpretation of these findings leads one into some ambiguity. A case could be made, prima facie, for claiming that libraries associated with baccalaureate-masters institutions generally implemented more new programs and services than did libraries associated with doctorate institutions. And this relationship can be said to hold even though most of the baccalaureate-masters institutions are smaller than most of the doctorate institutions. (While in Table 9, p. 83, we see that 26 of the 28 baccalaureate-masters institutions in the study are in the two smallest composite size categories, in Table 21 we see that such institutions consistently exhibit higher degrees of program change than would be expected by chance.)

Contrastingly, the thrust of several writings (Baldridge, 1973; Baldridge, et.al., 1973; Hage and Aiken, 1967; Zaltman, Duncan,
and Holbek, 1973) presented in Chapter II suggested that larger institutions and doctorate-level institutions were expected to implement more new programs and services than were smaller and AB-MA schools.

Although the data did not point to any definite resolution to the apparent conflict, some speculations can be advanced. It could have been the case (arguing with the apparent implications of the data in this paper) that new programs and services simply find more acceptance in libraries associated with AB-MA institutions than in those associated with doctorate institutions, which may have tended to concentrate more on such traditional library services as building the book and periodical collections. Another interpretation, however, was that libraries in AB-MA schools were merely catching up on the programs and services which the libraries in doctorate schools had implemented a long time ago (recall that the directions on the instrument to library directors – which instrument was used to measure the libraries' degrees of program change – asked the directors to check only those programs and services which had been implemented within the last 5 years). It may have been a measure of the inadequacy of the instrument used to measure program change that it did not enumerate a sufficiently large number of items from which directors of libraries in larger composite size institutions could have checked the many services and programs which their libraries had implemented during the past 5 years. Again, the data do not suggest any definite resolution, although several library directors did
indicate that some of the items listed in the checklist of programs and services were implemented longer than 5 years ago (they did not, however, indicate that other - unlisted - programs and services indeed were implemented within the last 5 years). It appears we are left with a significant relationship (between program change and level) whose interpretation is somewhat ambiguous. In a manner analogous to the case of interpretation of the multiple regression findings, it appears many more contextual variables are needed in a larger set of chi square calculations before any definite pattern of relationships becomes apparent.

C. Other Findings

In Table 11 (p. 111) there were reported several statistically significant intercorrelations that support the general theoretical perspective of the current research, although they are tangential to the primary interests of the study. In Table 22 three of these intercorrelations that involve variable #11, job satisfaction, are presented again.

The standard error of the population \( \bar{r} \), again, was .098. Converting the obtained \( r \) between extra-organizational professional activity and job satisfaction to a \( z \) score (by dividing it by the standard error of \( \bar{r} \)), gave a standard score of 2.06. With an \( N \) of 104 and a standard error of \( \bar{r} \) of .098, the obtained \( r \) of .20 represented a deviation of 2.06 standard units from a population \( \bar{r} \) of zero. There were fewer than 5 chances in 100 that an \( r \) could deviate as much as .20 in either direction from a population correlation of
TABLE 22
INTERCORRELATIONS: JOB SATISFACTION WITH EXTRA-ORGANIZATIONAL PROFESSIONAL ACTIVITY, CENTRALIZATION OF DECISION-MAKING, OVERALL STRATIFICATION (N = 104)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Variable Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Job Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational Professional Activity</td>
<td>0.20</td>
<td>P &lt; .05</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of Decision Making</td>
<td>-0.52</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>10</td>
<td>Overall stratification</td>
<td>-0.39</td>
<td>P &lt; .001</td>
</tr>
</tbody>
</table>

* (standard error of r) = 0.098

zero, with an N of 104.

Similar calculations showed the obtained r's for centralization of decision making (-.52) and overall stratification (-.39) represented respective deviation of 5.25 and 4.02 standard units from population r's of zero. In each case there was fewer than one chance in one thousand that an r could deviate this much in either direction from a population r of zero.

The above analysis indicated a positive correlation between extra-organizational professional activity and job satisfaction, a negative correlation between overall stratification and job satisfaction, a negative correlation between centralization of decision making and
job satisfaction.

All three of these correlations were consistent with the general concept of professionalism of work groups in that one would expect (1) library staffs that are active professionally to take a greater interest in their jobs and to be highly satisfied; (2) staffs that work under a highly centralized decision-making structure to resent their lack of autonomy and to be dissatisfied with their jobs; (3) highly stratified staffs, likewise, to chafe under the lack of egalitarianism and to be dissatisfied with their jobs.

The next three intercorrelation of interest involved variable #5, level of professional training. In Table 23 the correlations between this variable and extra-organizational activity, centralization of decision making and salary stratification are reported.

The usual z score and significance level calculations indicated the obtained r between extra-organizational professional activity and professional training (.23), that between centralization of decision making and professional training (-.37), and that between salary stratification and professional training (.19) represented respective deviations of 2.33, 3.81, and 1.94 standard units from population F's of zero. The significance levels, respectively, were .05, .001, and .05.

The above analysis indicated a positive correlation between professional activity and professional training, a negative correlation between centralization of decision making and professional training, and a positive correlation between salary stratification
TABLE 23
INTERCORRELATIONS: LEVEL OF PROFESSIONAL TRAINING WITH
EXTRA-ORGANIZATIONAL PROFESSIONAL ACTIVITY, CENTRALIZATION
OF DECISION-MAKING, AND SALARY STRATIFICATION (N=104)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Variable Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Level of Professional Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational Professional Activity</td>
<td>0.23</td>
<td>P &lt; .05</td>
</tr>
<tr>
<td>7</td>
<td>Centralization of Decision Making</td>
<td>-0.37</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>9</td>
<td>Salary Stratification</td>
<td>0.19</td>
<td>P &lt; .05</td>
</tr>
</tbody>
</table>

*σ² = (standard error of r) = 0.098

and professional training.

The first two correlations were consistent with the general concepts of professionalism, i.e., one would expect highly professional groups of workers to have high levels of training along with high levels of extra-organizational professional activity, whereas the practice of centralized organizational decision making seems antithetical to a community of highly professional workers. The positive correlation between professional training and salary stratification was interpreted to indicate that highly trained staff members are paid in accordance with their levels of training, although there still are many lower paid members with less training.
on these staffs,

The last two intercorrelations of interest involved variable #7, centralization of decision making. In Table 24 the correlations between this variable and level of professional training and overall stratification are reported.

The usual z score and significance level calculations indicated the obtained r between overall stratification and centralization (.39) and that between professional activity and centralization (-.42) represented respective deviations of 3.99 and 4.30 standard units from population r's of zero. In each case there was fewer than one chance in one thousand that an r could deviate this much in either direction from a population r of zero.

TABLE 24
INTERCORRELATIONS: CENTRALIZATION OF DECISION-MAKING WITH EXTRA-ORGANIZATIONAL PROFESSIONAL ACTIVITY AND OVERALL STRATIFICATION (N = 104)*

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Variable Name</th>
<th>r</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Centralization of Decision Making</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Extra-organizational professional activity</td>
<td>-0.42</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>10</td>
<td>Overall Stratification</td>
<td>0.39</td>
<td>P &lt; .001</td>
</tr>
</tbody>
</table>

*C_r (standard error of r) = 0.098
This analysis indicated a negative correlation between professional activity and centralization of decision making, and a positive correlation between overall stratification and centralization of decision making. Again, both correlations were consistent with the concept of professionalism in that one would expect (1) library staffs that are active professionally to be highly professional in character and thus not to operate under conditions of highly centralized decision making; (2) library staffs that are highly stratified to exhibit high levels of centralization of decision making.

The relationships depicted by the above eight intercorrelations are summarized in Table 25. Each relationship is categorized as being characteristic of either low professionalism or high professionalism. For conceptual simplicity in the last two intercorrelations, centralization of decision making was changed to its opposite, decentralization of decision making, so that the directions of the two correlations involving this variable were reversed.
### Table 25

**Summary of Intercorrelation Relationships**

<table>
<thead>
<tr>
<th>Low Professionalism</th>
<th>High Professionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>G - G Centralization of Decision Making</td>
<td>Job Satisfaction ⇒ + Extra-organizational Professional Activity</td>
</tr>
<tr>
<td>G - G Overall Stratification</td>
<td>Level of Professional Training ⇒ + Extra-organizational Professional Activity</td>
</tr>
<tr>
<td>G - G Centralization of Decision Making</td>
<td>Level of Professional Training ⇒ + Salary Stratification</td>
</tr>
<tr>
<td>G - G Overall Stratification</td>
<td>Decentralization ⇒ + Extra-organizational of Decision Making Professional Activity</td>
</tr>
</tbody>
</table>
D. Summary of the Research Results

Using data from all 104 libraries included in the study, significant correlations were found among three of the seven pairs of independent-dependent variable relationships: a positive correlation (.20) between extra-organizational professional activity and degree of program change (p < .05); a negative correlation (-.17) between centralization of decision making and degree change (p < .05); and a negative correlation (-.15) between salary stratification and degree of program change (p < .06).

Subsequent correlation calculations using data from specific subsets of the 104 libraries (medium size libraries, public institutions, doctorate granting institutions, libraries in the medium range of program change scores) did not reveal any new relationships, and only one previously significant correlation - the negative correlation between salary stratification and program change - was confirmed (r = .21, p < .05). Three sets of significant intercorrelations among the independent variables were reported.

The multiple regression analysis showed the best two explainers of degree of program change to be extra-organizational professional activity and salary stratification, while the combination of these two variables together with centralization of decision making and formalization was shown to account for only about 10% of the variance of the program change scores.
Chi square tests for independence between degree of program change and the contextual variables (composite size, auspices, level) indicated only one statistically significant ($p < .05$) relation - that between degree of program change and level (baccalaureate-masters or doctorate) of the libraries' parent institutions. This analysis indicated libraries in baccalaureate-masters institutions exhibited higher than expected program scores, while libraries in doctorate institutions exhibited lower than expected program change scores.
Chapter V: Summary of the Study

A. Summary and Conclusions

The problem addressed by this study was to determine the relationship, if any, between program change (the degree of adoption of new programs and services) in large academic libraries and the five organizational variables of complexity, centralization of decision making, formalization, stratification, and job satisfaction. More specifically, the problem was to test the hypothesized positive correlation between program change and complexity and job satisfaction, and the hypothesized negative correlation between program change and centralization, formalization, and stratification. The researcher attempted also to determine the proportion of variance in the program change scores of a sample of libraries that was explained by the above five independent variables (represented by seven different measures). Finally, the researcher attempted to test for independence between program change and the three contextual variables of composite size, auspices, and level.

Usable mail-questionnaire data were supplied by professional staff members representing 104 academic libraries: data used to measure the dependent variable (degree of program change) were supplied by library directors; data used to measure the five
independent variables were supplied by 1407 professional staff members in the 104 libraries.

The Pearson correlation statistic was used to test the hypothesized relationships between the independent and dependent variables; step-wise multiple regression analysis was used to determine the proportion of variance in the dependent variable that was explained by the five independent variables; chi square analysis was used to test for independence between the dependent variable and composite size, auspices, and level.

Of the seven dependent-independent variable pairs (there were two measures each of complexity and stratification), correlations that were statistically significant and in the directions hypothesized were found in three instances. A positive correlation was found between program change and extra-organizational activity, a negative correlation was found between program change and centralization of decision making, and a negative correlation was found between program change and salary stratification. None of the other four correlations was statistically significant, although all but one were in the directions hypothesized.

On the basis of the above findings, three of the five propositions from Chapter I can be supported, at least partially:

1. Proposition #1 (The greater the complexity, the greater the degree of program change) is supported partially, based upon the positive correlation between degree of program change and
extra-organizational professional activity. (More realistically, this relationship should be seen as a correlation between program change and one facet of professionalism. See p.115 for explanation.)

2. Proposition #2 (The higher the centralization of decision making, the lower the degree of program change) is supported, based upon the negative correlation between these two variables.

3. Proposition #4 (The greater the stratification, the lower the degree of program change) is supported partially, based upon the negative correlation between salary stratification and degree of program change.

The three independent variables (extra-organizational professional activity, centralization of decision making, and salary stratification) that had significant correlations with degree of program change accounted for almost 10% of the variance of the program change scores.

Notwithstanding the statistical significance associated with the above correlation and regression calculations, the actual size of the correlation statistics and of the proportion of variance explained by the three independent variables have important implications for the substantive significance of these findings. Because the obtained r's and the proportion of variance explained are so small, sweeping generalizations about the relationships observed must be avoided, at least until subsequent studies have confirmed
these relationships. It does appear prudent to conclude that:

(1) Those academic libraries in which there is a high level of extra-organizational professional activity on the part of the professional staff tend to implement more new programs and services than do libraries whose professional staffs are not as active in extra-organizational professional pursuits. It may be conjectured that conferences and meetings of professional or scholarly associations present an opportunity for library staff members to exchange information about new programs and services which they then attempt to implement in their own libraries. It may also be assumed that librarians who are more active in these conferences and meetings are likely to seek implementation of new programs and services in their libraries.

(2) Those academic libraries whose decision making procedures are highly centralized tend to implement fewer new programs and services than do libraries whose decision making procedures are less centralized. Centralizing professional decision making inhibits the proportionately large numbers of librarians who do not exercise this prerogative from making suggestions for new programs and services. Such suggestions, if made, could easily be vetoed by the hierarchical decision-making structure.

(3) Those academic libraries with a high level of salary stratification tend to implement fewer new programs and services than do libraries with lower levels of salary stratification. A
high level of salary stratification is indicative of large status and prestige differentials, a condition likely to encourage preservation of the status quo so that a more equitable distribution of status and prestige among professionals in the library is not achieved. Those organizational members with higher levels of status and prestige would be forced to share these organizational rewards more liberally if they did not veto suggestions for new programs and services.

The several statistically significant intercorrelations among the independent variables reflect the kinds of relationships that distinguish a highly professional work environment from a less professional one. Obtained correlations characteristic of a highly professional work environment are: a positive correlation between job satisfaction and the extra-organizational professional activity of librarians; a positive correlation between librarians' level of professional training and their degree of extra-organizational professional activity; a positive correlation between professional training and salary stratification among librarians; a positive correlation between decentralization of decision making and the extra-organizational professional activity of librarians. Those relationships characteristic of a less professional environment are: a negative correlation between librarians' job satisfaction and their perceived degree of centralization of decision making; a negative correlation between job satisfaction and the overall level of stratification in the organization; a negative correlation between level of
professional training of librarians and centralization of decision making; and a negative correlation between decentralization of decision making and overall stratification.

From the results of the chi square tests for independence between program change and composite size, auspices, and level, it is concluded that a significant relationship exists between program change and level: libraries in baccalaureate-masters institutions tend to implement more new programs and services than do libraries in doctorate institutions. Using the available data it could not be determined whether this relationship exists merely because baccalaureate-masters institutions are now "catching up" on the programs and services already offered by the doctorate institutions, or because, in absolute and non-temporal terms, baccalaureate-masters institutions actually are more innovative in their programs and services than are doctorate institutions.
B. Suggestions for Future Research

Of the five propositions stated in Chapter I, three were supported (at least partially) in the present study. This researcher was unable to support Proposition #3 (The greater the formalization, the lower the degree of program change) and Proposition #5 (The higher the job satisfaction, the greater the degree of program change). Subsequent research efforts are needed to test the relationships expressed in these latter two propositions.

The small (though significant) correlation statistics obtained among the three dependent-independent variable pairs, and the relatively small proportion of variance of program change scores explained by this set of three independent variables apparently reflect the reality that such an organizational phenomenon as program change is too complex to be explained adequately by these few variables; that program change within academic libraries is the result of the confluence of many organizational factors, only a few of which were considered in this research. The types of organizational factors that Leavitt (1965, p. 1145) describes - task, structure, people, technology - probably all affect the degree to which new programs and services are adopted, as do the environments and funding levels of libraries.

In a somewhat similar study by Corwin (1975), some 32 independent variables, some of which are quite similar to the variables used in this study, were used to account for variance of program
change scores among a number of public school systems. In his analysis Corwin obtained several non-significant and low-order correlation statistics and, in most cases, individual variables did not explain very much of the dependent variables' variance, although 6 of them did explain 29% of the variance.

The implication from the Corwin study is that in future research concerning program change in academic libraries it is necessary to use a much larger number of variables in order to explain a substantial proportion of variance of program change scores. Subsequent research might incorporate such variables as size of the materials budget, number of periodical subscriptions, sizes of masters and doctorate enrollments, number of undergraduate curricula, number of programs leading to masters and doctorate degrees, number of joint (interorganizational) programs, conservatism vs. liberalism of the professional staff, professional and attitudinal characteristics of the library director, student characteristics, financial support for library services, and so on.

Complexity, centralization, formalization, stratification, and job satisfaction - the five independent variables used in this research - were selected for study because they are more subject to direct or indirect manipulation by library administrators than are most of the other possible variables mentioned in the preceding paragraph. Therefore, although subsequent research that incorporates some of these other variables may be able to explain more of the
variance among program change scores than did those variables used in this study, the results of such efforts may not be necessarily of more practical value to library administrators if those variables that do explain more variance are beyond the ability of the library administrator to influence.

Such variables as the number and level of occupational specialties among professionals in the library, the number of hierarchical levels, the patterns of communication flow, the types of decision making structures, the kinds of authority relationships, and others, to one degree or another, are amenable to manipulation by library administrators and may very well affect, or at least correlate with, program change within academic libraries. Subsequent research into the correlates (or determinates) of program change should incorporate some of these variables. Attempting to measure many such behavioral and organizational variables, however, almost certainly would necessitate a change in data collection methodology from survey-questionnaire involving many libraries to some type of interview method within a case study or small group study.

An anomalous situation observed relative to the dependent variable measurement is the case of some library directors who reported

25The attempt to measure this variable via the questionnaire to professional staff members was unsuccessful. Future attempts using a structured interview may produce better results.
some of the services and programs on the 153-item list had been implemented longer than five years ago by their libraries. The reason for attempting to make the list as exhaustive as possible in the first instance was to accommodate the instrument to just such cases by listing enough items so that even such historically active libraries would be able to reflect their continuing high activity in a correspondingly high score on this variable. Perhaps more items need to be added to the list to increase the validity of this instrument.

One problem manifested by the research, and one which has methodological implications, is that of organizational scale inherent in the very broad size range of the 104 libraries studied. The smallest libraries employ fewer than 20 professionals, hold fewer than 200,000 volumes, and serve a student body of around 3,000, while the largest employ over 100 professionals, have more than 1 million volumes, and serve more than 30,000 students. Perforce, structural relations in the latter type are not only more numerous but more complex than those in the former type. Professional interactions that are loose and casual in small libraries become highly formalized and institutionalized in larger libraries. For example, if may be fairly easy to incorporate collegial decision making in the hiring and promotion of professional staff in a small library; in a large library, however, formal committees, associations and even unions may interact in such decisions. All of which is to say that
large libraries simply cannot operate like small ones, and that, possibly, an instrument used to measure, say, centralization of decision making in a small library may be inadequate to measure the same construct in a large library. Methodologically, the above may imply that the libraries included in any future study should be categorized according to some size criterion, and that different instruments should be used to measure the variables as they exist in the libraries of the various categories. (Of course, a new problem may be created: the lack of comparability of the measurements across categories of libraries.)

Constraints of time and resources and the obvious difficulty in securing an amenable group of libraries precluded the use of a rigorous experimental research design or of a longitudinal field effort for this study. Some future research efforts, however, should incorporate more sophisticated designs so that conclusions can go beyond the description of correlational relationships and approach the discovery of cause-effect relationships.
C. Implications of the Research

Programs and services of academic libraries must increase in number and in complexity as a reflection of the growing complexity and sophistication of the academic disciplines which they serve. The role of library administrators in the implementation of new programs and services, is crucial: paraphrasing James Thompson (Thompson, J., 1967, p. 147) and Leavitt (1965, p. 1145), administration consists in the perpetuation of the complex organization by the co-alignment of the four organizational components of task, structure, people, and technology, in time and space with those elements of the environment which affect or can affect the organization's goal setting or goal attainment. The variables under study in this paper have to do with structural relationships and with people within one type of complex organization and, in an extension of James Thompson's remarks, it is the responsibility of library administrators to "manipulate" or "co-align" these and other organizational components so as to ensure the implementation of requisite programs and services in service to the library's clientele.

The results of the research are suggestive rather than conclusive: as they stand alone, they are theoretically tentative and await more rigorous research efforts to confirm and extend them within academic libraries. In a pragmatic sense, though, it should be observed that three of the original five propositions from Chapter I were confirmed (at least partially) and that these results are generally consistent
with those of previously cited studies in Chapter II. It does appear prudent, therefore, to draw from the research certain implications for the library practitioner.

1. Library administrators should encourage their professional staffs to engage in pursuits of a scholarly or professional nature outside the library, as one strategy whereby the implementation of new programs and services may be facilitated. Even in these times of budget strictures it would behoove library administrators to make available funds for attendance at conferences of professional or scholarly associations, and to encourage the overall professional and scholarly growth of staff members.

A few academic libraries recently have won for professional staff members such traditional faculty perquisites as sabbatical leaves for study and research, personnel exchange programs with other libraries, released time for study and research, and other benefits. It seems reasonable to infer that increasing the opportunities for such professional growth of librarians ultimately may improve the effectiveness of academic libraries by facilitating innovations in programs and services.

2. Library administrators should abandon traditional control strategies that rely on a centralized decision making structure. As librarianship matures as a profession and as individual librarians become more professional in their work, a strict hierarchical decision-making structure will become less tenable. Librarians other
than the director and department heads will want to participate in
decisions that affect them and their work. Allowing a larger group
of professionals to contribute their knowledge and expertise to the
solution of library problems should improve the chances of adopting
new programs and services.

3. Library administrators should attempt to moderate the
very broad gulfs in salaries (and, by inference, in other indicators
of status and prestige) that may exist on their professional staffs.
Such a reallocation of institutional rewards may foster a sense of
professional community and of common endeavor among librarians, thus
avoiding dysfunctional competition among them and allowing for free
and open discussion of new programs and services which the library
may implement.

On a more theoretical level, the research has shown that pro-
gram change within academic libraries probably has many correlates
and determinants, and not one of them is sufficient to affect
program change to any great extent, statistically or practically.
On the basis of the results of the research one can imply that a more
holistic view of the organization must be taken by the researcher
who wishes to achieve a broader understanding of the antecedents of
program change. The concept of organizational climate - the quality
and style of interpersonal relations which tend to dispose organiza-
tional members either to accept or reject change in the organization -
is broad enough to include the independent variables studied in this
paper as well as many others that could affect program change. This study makes a theoretical contribution to the understanding of the organizational climate of academic libraries and of how a few aspects of this climate relate to program change.
Appendix A

Librarians Who Rated Checklist Items

In appendix A are the names and affiliations of the librarians who participated in the rating of the 15 checklist items. The 8 librarians representing baccalaureate- and masters-granting institutions are listed first, followed by the 13 representing doctorate-granting institutions.

Baccalaureate- Masters Institutions

Beck, William L.
Chairman, Library Department
California State College of Pennsylvania (Penna.)

Christ, John M.
Library Director
University of Nebraska at Omaha (Neb.)

Lane, David O.
Chief Librarian
Hunter College, City University of New York (N. Y.)

McGowan, Owen T. P.
Chief Librarian
Bridgewater State College (Mass.)

MacVean, Donald S.
Director of Libraries
Western Illinois University (Ill.)

Madden, Henry M.
University Librarian
California State University at Fresno (Calif.)

Strohecker, Edwin C.
Director of Libraries
Murray State University (Ky.)
Wassom, Earl E.
Director of Libraries
Western Kentucky University (Ky.)

Doctorate Institutions

Abell, Millicent D.
Associate Director, University Libraries
State University of New York at Buffalo (N. Y.)

Ellsworth, Ralph E. (Retired)
Director of Libraries
University of Colorado (Colo.)

Forman, Sidney
Library Director
Teachers College, Columbia University (N. Y.)

Govan, James
University Librarian
University of North Carolina at Chapel Hill (N. C.)

Haro, Robert P.
Associate University Librarian
University of Southern California (Calif.)

Holley, Edward G.
Dean, School of Library Science
University of North Carolina at Chapel Hill (N. C.)

Kaser, David E.
Professor of Library Science
Indiana University (Ind.)

Lubans, John R.
Assistant Library Director for Public Services
University of Colorado (Colo.)

McGowan, John P.
University Librarian
Northwestern University (Ill.)

Marchant, Maurice P.
Associate Professor, Library Science
Brigham Young University (Utah)

Munn, Robert F.
Director of Libraries
West Virginia University (W. V.)
Sachtleben, Carl H.
  Director of Libraries
  Western Michigan University (Mich.)

Talbot, Richard J.
  Director of Libraries
  University of Massachusetts, Amherst (Mass.)
Appendix B

Letters and Data-Gathering Instruments

In this Appendix are samples of letters and instruments used to gather the data in the study.

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<td>175</td>
<td>Letter to librarians asking them to rate (on a scale of 1 to 10) the 154 items in the original checklist.</td>
</tr>
<tr>
<td>176</td>
<td>Follow-up letter for above</td>
</tr>
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<td>177</td>
<td>Letter to library directors asking them to supply personnel information about their libraries and to check services and programs implemented by their libraries.</td>
</tr>
<tr>
<td>179</td>
<td>&quot;Pt. B: Library Services and Programs&quot;, sent with above letter.</td>
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<tr>
<td>186</td>
<td>Follow-up letter for above.</td>
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</table>
Appendix B, cont.

<table>
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<tbody>
<tr>
<td>187</td>
<td>Letter to library staff members asking them to complete and return the 30-item questionnaire.</td>
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<td>188</td>
<td>&quot;Characteristics of Library Professional Personnel&quot;, sent with above letter.</td>
</tr>
<tr>
<td>193</td>
<td>Follow-up letter for above.</td>
</tr>
</tbody>
</table>
Dear

I am gathering nation-wide data for a doctoral study on several organizational phenomena that are associated with large academic libraries. My work is being done at the Ohio State University under the direction of Dr. I. Keith Tyler, Professor of Curriculum and Foundations.

Because of your position as an experienced librarian and as one who has contributed significantly to the professional literature, you have been identified as a data source for this study. With your valued cooperation I believe this research will make an important contribution to the practical and theoretical literature on library management and administration. In the interest of furthering the knowledge base in our profession, I urge you to take a few minutes of your time to supply the requested information.

Presently I am constructing a checklist of new services and programs which an academic library may implement. On the accompanying pages is the preliminary list. Would you read through the items and rate each on a scale of 1 to 10, according to their importance to or impact upon library users. Those services and programs which you perceive as having the least potential impact on library users should receive a score of 1; those having the most impact should receive a score of 10, and so on.

Also, would you add to the list any other user-oriented services and programs which an academic library may implement but which are not included on the accompanying pages; please rate these additional items in the same manner as above.

You may use the enclosed envelope for return of the completed checklist. If you would like a summary of the results of the research, please let me know.

Thank you very much for your help in this important project. I sincerely believe the results of the study will be of great value to academic librarians.

Sincerely,

Albert F. Maag
University Librarian

enc.
On December 19, 1974, I sent you a list of academic library services and programs and asked if you would rate each item. The information you provide will be used in my doctoral dissertation research being done at the Ohio State University. Since I have not received the completed checklist, I assume it may have been lost in the Christmas mail. Another list, together with a stamped return envelope, is enclosed.

Your response is vital to the success of this research project and therefore I urge you to take a few minutes to fill out the form on the accompanying pages and return it to me.

Would you read through the items in the form and rate each on a scale of 1 to 10, according to their potential importance to or impact upon users of your library. Those services and programs which you perceive as having the least potential impact on your library's users should receive a score of 1; those having the most impact should receive a score of 10, and so on.

Also, would you add to the list any other user-oriented services and programs which your library might implement but which are not included on the accompanying pages; please rate these additional items in the same manner as above.

You may use the enclosed envelope for return of the completed checklist. If you would like a summary of the results of the research, please let me know.

Thank you very much for your help in this important project. I sincerely believe the results of the study will be of great value to academic librarians.

Sincerely,

Albert F. Maag
University Librarian
Dear

I am gathering nation-wide data for a doctoral study on several organizational phenomena that are associated with large academic libraries. My work is being done at the Ohio State University under the direction of Dr. I. Keith Tyler, Professor of Curriculum and Foundations. I believe this research will make a significant contribution to solving some of the practical problems of library management and administration.

You have been selected as an important information source for the study. Your cooperation in taking about 30 minutes of your time to supply data about your library is essential to the success of this project.

In Part A of the accompanying form personnel information about your library is requested; in Part B you are asked to check those services and programs which have been implemented by your library within the last 5 years. All information supplied by you will be kept confidential.

You may return the information in the enclosed envelope. If you would like a summary of the results of the research, please let me know.

Thank you very much for your help in this important project. I sincerely believe the results of the study will be of great practical value to academic librarians.

Sincerely,

Albert F. Maag
University Librarian

enc.
Pt. A: Library Personnel Data

Directions: In numbers (1) through (4) please include only those personnel in the main library and any departmental libraries; do not count personnel in any branch campus libraries. Also, do not count personnel in any libraries that are not administered by the main library (usually law or medical libraries).

1. The number of full-time professional (master's degree-holding) personnel employed by the library, whether on 9-10 or 11-12 month contracts.

2. The number of non-professional (anything less than a master's degree) full-time personnel employed by the library.

3. The number of unique and distinguishable professional positions in the library. (Such a position is one that is at least specifically, although not necessarily generically different from any other. For example, two positions whose incumbents catalog general trade books are actually just one position so defined; however, two positions, the incumbent of one of which catalogs East Asian books while the other catalogs books in European languages, are actually two different professional positions and should be reported as such. Similarly, two reference positions, the incumbent of one of which specializes in the social sciences while the other specializes in the physical sciences, are to be considered two distinct positions. What the position incumbent actually does in his daily work, rather than what may be specified in his job description, is to be considered in making these judgments.)

4. Please supply a roster of all full-time professional personnel employed by the library. A selected set of these persons will receive a short questionnaire (requiring about 10 minutes to fill out) measuring their perceptions of various organizational phenomena.
Pt. D: Library Services and Programs

Directions:
(a) Place a check mark within the brackets to the left of those services and programs which have been implemented by your library within the last 5 years. (Any service or program that was implemented longer than 5 years ago should not be checked.)

(b) Any service or program checked need not necessarily have been a successful one on a long-term basis, just so long as it actually was implemented within the last 5 years.

Acquisitions and Related Areas

☐ 1. Initiation of an organized program for acquisition of materials in a format new to the collection (e.g., magnetic tapes, V. Cassettes, etc.)

☐ 2. En bloc acquisition of one or more collections of materials in a specific subject area or format (except the personal papers of an individual).

☐ 3. Acquisition of the personal papers of one or more noted individuals, and the availability of such a collection to faculty and students.

☐ 4. An organized effort to acquire out-of-print books.

☐ 5. Initiation of a college or university archives program.

☐ 6. A major program involving the acquisition of large numbers of inexpensive paperback reprints of classics.

☐ 7. Initiation of an acquisitions program calling for exhaustive collection of materials in one or more fields.

☐ 8. Adoption of an approval or blanket-order acquisitions program covering at least three subject areas in the collection.

☐ 9. An organized program for collecting technical report literature from the U. S. Government or private companies.

☐ 10. Being declared a partial or full state depository library.


☐ 12. An organized program for acquisition of most of the books published in any foreign country.

Circulation and Related Services

☐ 13. A divided card catalog.


☐ 15. Batch-mode processing of circulation records.

☐ 16. On-line access to catalog records for students and faculty.

☐ 17. On-line, self-service circulation of materials.


☐ 19. Intracampus routing of charged material to faculty or students.
20. Substantial (at least 25%) increase in normal loan period.

21. A mechanized system for retrieval of materials from storage.

22. Provision of a computer-generated listing of the reserve collection.

23. A major change toward reducing or eliminating fines for overdue materials.

24. Circulation of periodicals - bound or loose - to students or faculty.

25. Regular routing of new periodicals to specific faculty members.

26. Regular circulation of reference materials to faculty or students.

27. Regular user access to the shelf list.


29. A major change in the shelf arrangement of materials involving a shift of at least 50% of the total collection.

30. A change from closed-stacks to open stacks for the major part of the library's collection.

31. Regular circulation of microforms to faculty or students.

32. Regular faculty or student circulation of audiovisual materials.

33. A major expansion of library hours of opening (at least 10% over previous hours).

**Departmental Collections**

34. Establishment of an undergraduate library to relieve stress on the main university library.

35. Establishment of one or more departmental libraries.

36. Provision of "satellite" collections of materials in dormitories, lounges, or other student areas.

37. Regular establishment of "office" collections for faculty members.

38. Consolidation of two or more small departmental libraries or collections into one larger library.

**New Professional Positions/Library Instruction**

39. Creation of one or more professional positions, the major function of which is to serve as a bibliographer in building up the entire collection.

40. Creation of one or more professional positions, the major functions of which are to provide reference services in a particular subject (e.g., chemistry) or area (e.g., humanities), and to build up that part of the collection.

41. Creation of one or more professional positions, the major functions of which are to provide services in a particular format of material (e.g., map librarian, government documents librarian), and to build up that part of the collection.

42. Creation of one or more professional positions, the major function of which is to provide systems analysis support for library operations.

43. Creation of one or more positions, the major function of which
is to provide computer programming support for automation functions.

[ ] 44. Creation of one or more professional positions, the major function of which lies in the area of development of instructional materials and programs for teaching the use of the library.

[ ] 45. Creation of one or more professional positions, the major function of which is to provide consultation in the design and use of audiovisual materials to faculty or students working on research projects or instructional efforts.

[ ] 46. One or more staff members regularly serving as resource persons to academic departments wishing to improve the collection in specific subject fields.

[ ] 47. One or more staff members regularly spending at least one-fourth of their time consulting with faculty members on such student-related matters as course reading lists, integrating library instruction with term paper assignments, etc.

[ ] 48. Hiring of one or more library technicians to supplement reference services (as long as these technicians do not replace reference librarians).

[ ] 49. One or more professional staff members teaching a for-credit course in bibliography, research methods, or some related area.

[ ] 50. One or more staff members regularly teaching course units on research paper writing.

[ ] 51. An organized program for teaching library skills to graduate students.

[ ] 52. Offering of a seminar or workshop aimed at teaching advanced library skills and tools to faculty.

[ ] 53. Regular offering of "special problems" or "honors" courses in which a student, under the direction of one or more librarians, studies a particular area of the library's operation.

[ ] 54. One or more librarians sharing an equal or nearly equal amount of teaching duties with regular faculty members in a "team taught" course.

[ ] 55. Initiation of a program in which a definite length of time (or number of class meetings) regularly is set aside in the courses of a particular department for library instruction taught by a librarian.

[ ] 56. Semester-long assignment of a professional staff member for individual work with students having difficulties in library skills (such assignment at the request of the student, his academic adviser and/or instructors).

[ ] 57. Development of one or more multi-media instructional packages (film, slide-cassette kit, etc.) to teach library skills to students.

[ ] 58. Any program of library instruction or library competence determination prior to students' arrival on campus as beginning freshmen.
A program of developing and making available for students "library pathfinders".

Initiation of a non-computer-based current awareness service for faculty or students.

Audiovisual Services and Facilities

1. Provision of facilities for individual listening to recorded music or other programs.

2. Provision of facilities for group listening to recorded music or other programs.

3. Availability within the main library or branches of one or more materials production laboratories in which students or faculty may make graphic materials, slides, transparencies, etc.

4. Provision of audio tape or cassette duplication services for faculty or students.

5. Provision of television programming duplication services for faculty or students.

6. Provision of television studio production services for students or faculty.

7. Operation of a radio broadcast station.

8. Operation of a television broadcast station.

9. Production of individual television programs for broadcast on UHF or VHF channels or through cable T. V.

10. Full or partial centralization within the library of audiovisual services that heretofore were offered by academic departments or other agencies in the school.

11. Intracampus dissemination of information via a closed circuit television system.

12. Provision of a remote access, electronic distribution system for audiovisual materials (e.g., records, slides, cassettes, etc.).

13. Regular previewing services whereby faculty or students may make recommendations for purchase or rental of audiovisual materials.


15. Audiovisual materials cataloged fully and completely (to the same degree that books are cataloged).


17. Regular faculty or student circulation of hardware necessary for viewing or listening to audiovisual materials.

18. Interlibrary loan of audiovisual materials.

Special Facilities

19. Operation of an information desk (in addition to regular reference services).

20. Use of a teletype to improve interlibrary loan services.

21. Provision within the library of an "after-hours study room" available to students after the main part of the library has closed.

22. Initiation of an organized program of library displays or exhibits.
81. Provision of an automatic telephone answering service which records reference questions to which a reference librarian can respond later.

84. Individual carrels for at least half of the seating capacity in the library.

85. Provision of private, locked carrels for faculty or students.

86. Provision of a faculty reading room or study within the library.

87. Provision of one or more conference rooms within the library.

88. Provision within the main library or departmental libraries of one or more calculating laboratories, containing calculators, key punchers, sorters, etc.

89. Operation of a museum or art gallery.

90. Operation of a bindery for journals or other library materials.

91. Reproduction of serial holdings records on microfilm and availability of copies to faculty or students.

92. Microfilming services (i.e., production of microforms) available to faculty and/or students.

93. Reproduction of the card catalog onto microform and distribution of copies throughout the campus.

94. Provision of automated retrieval services for microforms.

95. Initiation of a microfilming preservation project for certain materials in the collection.

96. Microform reproduction of reserve reading material and distribution of copies to students.

97. Interlibrary loan of microforms.

98. Provision within the campus of CAI hardware and software designed to teach library skills to students.

99. Initiation of a computer-based selective dissemination of information (SDI) service for faculty and/or students.

100. On-demand, computer-generated production of bibliographies for faculty or students.


102. Transference of the bibliographic records of any specialized collection (e.g., music recordings, filmstrips, etc.) into a machine-readable form and provision of computer-based searches of this file to faculty or students.

103. Transference of the bibliographic records of the major part of the collection into machine-readable form.

104. Use of data processing equipment (on-line or batch mode) to supplement reference services.

105. Publication (in-house or by a publisher) of extensive subject bibliographies (over 50 pages), in 100 copies or more.

106. Publication and distribution of a new or updated guide to the library for students or faculty.
107. Regular publication and distribution of lists of new acquisitions.

108. Publication of a library newsletter for faculty or students.

109. Publicaion of a scholarly journal or serial by the library.

110. Publication by library staff members of a book of essays.

111. Major participation by the library in an oral history program.

112. Major participation by the library in a local history program.

113. Sponsorship of a conference or workshop on library-related matters.

114. Sponsorship of a library lecture series.

115. Sponsorship of one or more meetings of a learned society or professional association.

116. Participation in a personnel exchange program involving librarians from other colleges or universities.

117. Regular translation by library staff members of foreign language material for faculty or students.

118. Participation of library personnel in an automatic indexing project.

119. Indexing and/or abstracting of specific subject or format areas of the collection, performed by library personnel (non-automatic indexing).

120. Continuing compilation of a specialized index to seminar papers, manufacturer's catalogs or other material heretofore inadequately organized.

121. Preparation of specialized indexes for individual faculty members.

122. Extensive (more than 50 references in the final list) literature searches regularly performed for faculty or students.

123. An organized program whereby faculty help evaluate parts of the collection.

124. An organized program whereby faculty select materials for weeding.

125. Formation (via usual academic governance practices) of a separate student library committee.

Extension of Services

126. Library services extended to local industrial or commercial companies on a pay-as-you-go basis.

127. Library services extended free of charge to residents of the local community.

128. Library services available (free or at a fee) to visiting scholars.

129. Initiation of an organized program of service to the physically handicapped.

130. An organized program of library service to one or more minority groups.

131. Major and organized participation by the library in a pre-college program for the disadvantaged.

132. Initiation of any special services to part-time, working, or commuting students - which services are aimed at improving these students' access to library services and materials.
133. Major participation in any program or service specifically designed to serve the needs of the academically less qualified students in the school.

134. Major participation in any program or service specifically designed to serve the needs of the academically gifted students in the school.

135. Initiation of an organized independent study program for students.

Research

136. Initiation of an organized research program aimed at discovering the information needs of users and/or how well the library is satisfying these needs.

137. Initiation of an organized research program designed to discover how students and faculty use the library (e.g., catalog use, traffic flow patterns, hours of use, etc.).

138. Use of computer-generated data to predict need for multiple copies of books.

139. A program of research into how well instruction in the use of the library is accomplishing its goals.

140. Formation of a research group (composed of librarians, faculty members and students) whose function is to study, recommend and seek implementation of improved library services and programs.

141. Initiation of one or more funded demonstration projects for assessing the feasibility of an innovative program or service.

Consortia

142. Participation in an academic libraries consortium in which the students of any one school may circulate material from the libraries of any of the other schools.

143. Participation in a consortium of academic libraries for film rental.

144. Participation in a consortium of academic libraries for cooperative acquisition of expensive or little-used materials.

145. Participation in a consortium with one or more public or special libraries.

146. Participation in a cooperative program in which each of several libraries agrees to build exhaustive collections in particular subject or format areas, and to circulate such resources to group members.

147. Participation in a joint storage library system.

148. Participation in any organized cooperative reference service with other college or university libraries.

149. Participation in an organized and continuing materials exchange program with one or more libraries in the United States.

150. Participation in any international consortium of libraries.

151. Participation in an organized and continuing materials exchange program with one or more foreign libraries.

152. Participation in an academic libraries consortium for the purpose of joint production of television or radio programming.

153. Participation in an academic libraries consortium for the purpose of production of any other audiovisual materials.
Dear

On January I sent you a letter asking if you would cooperate in an important study concerning academic library management and administration. You were asked to supply information about your library. Since I have not received the completed forms, I assume they may have been lost in the mail or that you have not had sufficient time to complete them. Copies of the forms, together with a stamped return envelope, are enclosed.

Your response is vital to the success of this research project and therefore I urge you to take a few minutes to fill out the forms and return them to me. (If you do not have the time to devote to completing the forms, I would appreciate it if you would designate a senior staff member to supply the information.)

In Part A of the accompanying form personnel information about your library is requested; in Part B you are asked to check those services and programs which have been implemented by your library within the last 5 years. All information supplied by you will be kept confidential. If you would like a summary of the results of the research, please let me know.

Thank you very much for your help in this important project. I sincerely believe the results of the study will be of great practical value to academic librarians.

Sincerely,

Albert F. Maag
University Librarian

enc.
Dear

I am gathering nation-wide data for a doctoral study on several organizational phenomena that are associated with large academic libraries. My work is being done at the Ohio State University under the direction of Dr. I. Keith Tyler, Professor of Curriculum and Foundations. I believe this research will make a significant contribution to solving some of the practical problems in library management and administration.

You have been selected as an important information source for the study. Your cooperation in taking about 10 minutes of your time to supply data requested on the accompanying form is essential to the success of this project.

All information provided by you will be kept confidential. Please use the enclosed envelope for return of the form.

Thank you very much for your cooperation. I sincerely believe the results of the study will be of great practical value to academic librarians.

Sincerely,

Albert F. Maag
University Librarian

enc.
Characteristics of Library Professional Personnel

A. Demographic Data

In item (1) please check the one level of professional training that most closely describes your own educational attainments.

(1) Educational background

a. Master's degree without any additional graduate credits.

b. Master's degree with additional graduate credits.

c. Second master's degree without additional graduate credits.

d. Second master's degree (or equivalent) plus additional graduate credits.

e. Doctoral degree.

In items (2) to (4) please check "Yes" or "No"

(2) Do you belong to at least one professional association?

______ Yes ______ No

(3) Have you attended at least two-thirds of the previous six meetings of any professional association to which you belong?

______ Yes ______ No

(4) During the past three years have you presented a paper or held an office in any professional association to which you belong?

______ Yes ______ No

In item (5) place a check mark within the brackets next to that interval in which your present annual salary falls.

(5) Salary

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Check</th>
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</thead>
<tbody>
<tr>
<td>$ 7,001 - 9,000</td>
<td>[ ]</td>
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<tr>
<td>9,001 - 11,000</td>
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<td>11,001 - 13,000</td>
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<td>13,001 - 15,000</td>
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<td>15,001 - 17,000</td>
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<td>23,001 - 25,000</td>
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<tr>
<td>25,001 -</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
B. Professional Relationships

In items (6) to (9) indicate the degree to which you participate in library decision making by circling the one most appropriate letter response at the right of each item.

(6) How frequently do you usually participate in the decision to hire new staff members?
- Always or almost always: A
- Often: B
- Sometimes: C
- Seldom: D
- Never or almost never: E

(7) How frequently do you usually participate in the decisions on the promotion of any of the professional staff?
- Always or almost always: A
- Often: B
- Sometimes: C
- Seldom: D
- Never or almost never: E

(8) How frequently do you participate in decisions on the adoption of new policies?
- Always or almost always: A
- Often: B
- Sometimes: C
- Seldom: D
- Never or almost never: E

(9) How frequently do you participate in the decisions on the adoption of new programs or services?
- Always or almost always: A
- Often: B
- Sometimes: C
- Seldom: D
- Never or almost never: E

In items (10) to (13) indicate the extent to which your job is codified by circling the one most appropriate letter response at the right of each item.

(10) Whatever situation arises, we have procedures to follow in dealing with it.
- Definitely untrue: A
- Somewhat untrue: B
- Unsure or equally true and false: C
- Somewhat true: D
- Definitely true: E

(11) Everyone has a specific job to do.
- Definitely untrue: A
- Somewhat untrue: B
- Unsure or equally true and false: C
- Somewhat true: D
- Definitely true: E

(12) Going through the proper channels is constantly stressed.
- Definitely untrue: A
- Somewhat untrue: B
- Unsure or equally true and false: C
- Somewhat true: D
- Definitely true: E
<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>The opinions of all professional staff members are considered as equal.</td>
<td>Definitely true: A, Mostly true: B, Equally true and false: C, Mostly false: D, Definitely false: E</td>
</tr>
<tr>
<td>16</td>
<td>The department heads hold a higher status in the library than other members.</td>
<td>Definitely true: A, Mostly true: B, Equally true and false: C, Mostly false: D, Definitely false: E</td>
</tr>
<tr>
<td>17</td>
<td>The older members of the professional staff are granted special privileges.</td>
<td>Definitely true: A, Mostly true: B, Equally true and false: C, Mostly false: D, Definitely false: E</td>
</tr>
<tr>
<td>18</td>
<td>The professional staff is controlled by the actions of a few members.</td>
<td>Definitely true: A, Mostly true: B, Equally true and false: C, Mostly false: D, Definitely false: E</td>
</tr>
<tr>
<td>19</td>
<td>Every member of the professional staff enjoys the same group privileges.</td>
<td>Definitely true: A, Mostly true: B, Equally true and false: C, Mostly false: D, Definitely false: E</td>
</tr>
</tbody>
</table>

In items (15) to (19) indicate your perception of the distribution of status and prestige in your library by circling the most appropriate letter response at the right of each item.
(20) Experienced staff members are in charge of the library's operations.
   Definitely true: A
   Mostly true: B
   Equally true and false: C
   or undecided
   Mostly false: D
   Definitely false: E

(21) Certain problems are discussed only among the department heads.
   Definitely true: A
   Mostly true: B
   Equally true and false: C
   or undecided
   Mostly false: D
   Definitely false: E

(22) Certain members have more influence on the staff than others.
   Definitely true: A
   Mostly true: B
   Equally true and false: C
   or undecided
   Mostly false: D
   Definitely false: E

(23) Each member of the professional staff has as much power as any other member.
   Definitely true: A
   Mostly true: B
   Equally true and false: C
   or undecided
   Mostly false: D
   Definitely false: E

(24) An individual's standing on the staff is determined only by how much he gets done.
   Definitely true: A
   Mostly true: B
   Equally true and false: C
   or undecided
   Mostly false: D
   Definitely false: E

In items (25) to (30) indicate your degree of job satisfaction by circling the one most appropriate letter response at the right of each item.

(25) How satisfied are you that you have been given enough authority by your superior to do your job well.
   Definitely unsatisfied: A
   Somewhat unsatisfied: B
   Undecided or ambivalent: C
   Somewhat satisfied: D
   Definitely satisfied: E

(26) How satisfied are you with your present job when you compare it to similar positions in other libraries?
   Definitely unsatisfied: A
   Somewhat unsatisfied: B
   Undecided or ambivalent: C
   Somewhat satisfied: D
   Definitely satisfied: E
(27) How satisfied are you with the progress you are making toward the goals which you set for yourself in your present position?  

Definitely unsatisfied: A  
Somewhat unsatisfied: B  
Undecided or ambivalent: C  
Somewhat satisfied: D  
Definitely satisfied: E

(28) On the whole, how satisfied are you that your superior accepts you as a professional, to the degree to which you are entitled by reason of position, training, and experience?  

Definitely unsatisfied: A  
Somewhat unsatisfied: B  
Undecided or ambivalent: C  
Somewhat satisfied: D  
Definitely satisfied: E

(29) On the whole, how satisfied are you with your present job when you consider the expectations you had when you took the job?  

Definitely unsatisfied: A  
Somewhat unsatisfied: B  
Undecided or ambivalent: C  
Somewhat satisfied: D  
Definitely satisfied: E

(30) How satisfied are you with your present job in light of career expectations?  

Definitely unsatisfied: A  
Somewhat unsatisfied: B  
Undecided or ambivalent: C  
Somewhat satisfied: D  
Definitely satisfied: E
Dear

A few weeks ago I sent you a letter asking if you would cooperate in an important study concerning academic library management and administration. You were asked to complete a short questionnaire and return it to me. Since I have not received the completed questionnaire I assume it may have been lost in the mail or that you have not had sufficient time to complete it. A copy of the questionnaire and a return envelope are enclosed.

Your response is vital to the success of this project and therefore I urge you to take a few minutes to answer the items and return the form to me. All information provided by you will be kept confidential.

Thank you very much for your cooperation. I sincerely believe the results of the study will be of great practical value to academic librarians.

Sincerely,

Albert F. Haag
University Librarian

enc.
Appendix C

Numbered List of 153 Items in Checklist: Ratings

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Appendix D

Names of Participating Institutions

The occurrence of institutions in this list corresponds in no way to that in Appendix E, in which the institutions are randomly arranged.

Appalachian State University (N. C.)
Auburn University (Ala.)
Ball State University (Ind.)
Boston University (Mass.)
Bowling Green State University (Ohio)
Brigham Young University (Utah)
Bucknell University (Penna.)
California Polytechnic State University (Calif.)
California State University at Long Beach (Calif.)
Central Missouri State University (Mo.)
Central Washington State College (Wash.)
Claremont Colleges (Calif.)
Colorado State University (Colo.)
East Carolina University (N. C.)
Eastern Illinois University (Ill.)
Eastern Kentucky University (Ky.)
Emory University (Ga.)
Federal City College (Washington, D. C.)
Florida A&M University (Fla.)
Florida Atlantic University (Fla.)
Florida State University (Fla.)
Illinois State University (Ill.)
Indiana State University (Ind.)
Kansas State University (Kansas)
Louisiana State University (La.)
Mankato State College (Minn.)
Memphis State University (Tenn.)
Miami University (Ohio)
Middle Tennessee State University (Tenn.)
Millersville State College (Penna.)
Mississippi State University (Miss.)
Montana State University (Mont.)
New Mexico State University (N. M.)
North Carolina Central University (N. C.)
North Carolina State University (N. C.)
North Texas State University (Texas)
Northern Illinois University (Ill.)
Ohio State University (Ohio)
Oklahoma State University (Okla.)
Old Dominion University (Va.)
Oregon State University (Oreg.)
Pennsylvania State University (Penna.)
Portland State University (Oreg.)
Queens College of the City University of New York (N. Y.)
Rice University (Texas)
Rochester Institute of Technology (N. Y.)
Rutgers, the State University (N. J.)
Saint Cloud State College (Minn.)
Saint John's University (N. Y.)
San Francisco State University (Calif.)
Seton Hall University (N. J.)
Slippery Rock State College (Penna.)
Southern Illinois University at Carbondale (Ill.)
Southern Methodist University (Texas)
Southern University A&M College (La.)
State University College at Brockport (N. Y.)
State University College at Buffalo (N. Y.)
Stephen F. Austin State University (Texas)
Teachers College of Columbia University (N. Y.)
Texas Christian University (Texas)
Texas Tech University (Texas)
Towson State College (Md.)
Tufts University (Mass.)
University of Akron (Ohio)
University of Alabama (Ala.)
University of Arizona (Ariz.)
University of California at Davis (Calif.)
University of California at Irvine (Calif.)
University of California at Riverside (Calif.)
University of Dayton (Ohio)
University of Delaware (Del.)
University of Florida (Fla.)
University of Georgia (Ga.)
University of Idaho (Idaho)
University of Illinois at Chicago Circle (Ill.)
University of Kentucky (Ky.)
University of Louisville (Ky.)
University of Minnesota (Minn.)
University of Mississippi (Miss.)
University of Missouri at Columbia (Mo.)
University of New Mexico (N. M.)
University of North Carolina at Greensboro (N. C.)
University of Northern Colorado (Colo.)
University of Notre Dame (Ind.)
University of Oklahoma (Okla.)
University of Pittsburgh (Penna.)
University of Rhode Island (R. I.)
University of San Francisco (Calif.)
University of South Florida (Fla.)
University of Southern Mississippi (Miss.)
University of Southwestern Louisiana (La.)
University of Texas at Arlington (Texas)
University of Toledo (Ohio)
University of Utah (Utah)
University of Vermont (Vt.)
University of Washington (Wash.)
University of Wisconsin at Stevens Point (Wis.)
University of Wisconsin at Whitewater (Wis.)
Virginia Commonwealth University (Va.)
Virginia Polytechnic Institute and State University (Va.)
Washington University (Mo.)
Wayne State University (Mich.)
Weber State College (Utah)
Wright State University (Ohio)
Appendix E

Responses to the 30-item Questionnaire:

Totals

In this Appendix are the totals of the number of librarians who were sent and who returned the 30-item questionnaire, arranged by randomly assigned library numbers.

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