1-1-1985

Academic library services: The literature of innovation

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Characterized as the "Professor of Gloom" by Newsweek, Richard Lamm, governor of Colorado, suggests "It isn't that we're faced with problems. It's that our problem-solving machinery has gone away."

In a "Hard Choices" course that he is teaching, Lamm focuses on social and cultural issues. In librarianship, while the issues are less dramatic, the choices are relatively hard. Demands increase and supplies decrease.

In librarianship, the door to the future is ajar. We hear the words "postindustrial society," "knowledge work," and "third wave." When we visualize the future, it is often with a sense of wonderment. And yet, as in a dream, our grand thoughts are not followed by corresponding action. We seem to limp forward. Maybe we are experiencing a typical pattern of behavior when faced with such complexity and novelty.

Almost weekly I read about some new and exciting development in the online industry. A whole range of potential library applications shines forth. Likewise, the possibility of reaching beyond the walls of the library to serve in situ (i.e., in their own place) seems to become more and more feasible. As a systems increase in complexity, the value and absolute need for strong library instruction programs also increase. However, when I view (1) how we allocate resources, (2) what services and programs users will support, or put in principle but with dollars, and (3) what fiscal agencies will fund, I also see high hurdles. The wonder on the horizon fades and I am faced with a bewildering array of barriers.

Usually, because of our responsibilities or inclinations, we strive to achieve a balance, often a balance of interests. Some call this fence-straddling. I don't like fence-straddling as a profession it must focus on the value that our materials have for the reader. Today we should do it together. Somehow our challenge is to construct or offer a view of the future that also holds out a promise for others. This is how we can rebuild our problem-solving machinery and set the agenda.

Last week I fell off the fence. From where I landed, academic librarianship has a bright future if we start with a shared vision of a preferred future. If we continue to limp forward, we may find that the erosion rate is faster. Or we can stride forth.
Academic Library Services: The Literature of Innovation

Judy Reynolds and Jo Bell Whitlatch

Innovation has the potential for increasing the effectiveness of information services. As a result of this interest in innovation, organizational theorists have begun to explore the effect of organizational design upon flexibility, creativity, and productivity of organizations. A review of existing literature, however, provides no comprehensive theory of organizational innovation. Research on organizational design and innovation in libraries could contribute to the systematic study of the impact of organizational structure. Studies by Howard and Lazear indicate that traditional library organizations may inhibit change as well as the communication of values and service. Further study is needed to determine how libraries can most effectively manage innovation in the rapidly changing environment ahead.

Concern over the future role of libraries is a constant theme in the library literature. The loss of a stable environment, such as declining budget support and rapidly changing information technology, has raised substantial interest in the planning and evaluation of library services. Libraries have borrowed from business theory and practice in designing, planning, and evaluating programs, but an area in business theory that has received relatively little attention is innovation in organizational design and its influence upon organizational adaptation and survival. Innovation has come into fashion within the last decade. As with all fashionable trends, it is difficult to sort out "innovation" from "innovation necessary." It is innovation good?" While it is foolish to argue that innovation is beneficial, or that continual change for its own sake is desirable, concepts in the business literature provide evidence that innovation is often essential for survival. Librarians must read and use the literature of innovation as well as that of planning and evaluation if libraries are to survive in increasingly turbulent times. The literature on innovation and organizational design has the potential for assisting libraries in providing effective information services in the rapidly changing environment ahead.

Theories of Innovation

Several interesting studies on organizational innovation have been completed in the past two decades. Although few findings have improved our understanding of innovation, there is not yet a comprehensive theory. Innovation has been difficult to define. Gerald Zaltman's definition is commonly used in studies: "any idea, product, or material artifact perceived to be new to the relevant unit of analysis." Other commonly accepted definitions are "the adoption of means or ends that are new to the adopting unit" and "breaking away from established patterns." Lawrence Mohr uses Zaltman's definition but specifies that it must be limited to a successful introduction of an idea or practice that has been accepted and implemented by the organization. "Thus for distinguishing between invention (bringing something new into being) and innovation (bringing something new into use)." Raymond Saulo suggests that innovation involves major realignments of human, financial, and physical resources of the organization. This is similar to Heinz Hage's definition of "radical" innovations, which involve high risk and major alterations for the organization and are discontinuous relative to the existing technology. Such radical innovations occur infrequently. Consequently the focus of this paper will be on low-risk innovation, which is more common in libraries and hence of more concern.

Hage has observed that words such as change, innovation, and creativity are easy to use but not so easy to define or actually observe and measure. The three principal interrelated working definitions found in the literature are (1) first use, (2) adoption or nonadoption, and (3) extent of implementation. Each indicates that studies of the adoption of innovation in organizations have differed in inadequate definition and from failure to distinguish among types of innovations. Little research has been designed to study differential adoption patterns for various types of organizations. The inconsistent findings that research has produced may be attributed to a failure to take into account the type of innovation and to differences in defining and measuring centralization. Consequently the focus of this paper will be on the effects of organizational structure upon innovations in both the technical operations and the administrative areas of the organization.

Hage and Michael Aiken indicate that the structure of an organization may be more crucial for the successful implementation of change than the particular blend of personality types in the workplace.

An organization can be defined as an adaptive system that must continually improve its performance to stay alive in modern society. Even the cumulative effects of motor change can be important in ensuring organizational survival. More relevant to the study of innovation in libraries is Mohr's definition of innovation—the successful introduction into an applied situation of means or ends that are new to that situation.

Theories of Innovation

The theories of innovation presented in this section are based upon data gathered from the study of organizations. A summary of the major studies is provided in Table 1, detailing various organizational studies and present and future trends.
phase of an individual's career. Contentment with performance does not appear to induce innovation; instead, dissatisfaction with the "performance gap" is the catalyst to change. A moderate gap between what individuals desire and what they are presently able to achieve may be necessary to create the energy required for change and accomplishment. 1

According to Michael Moch and Edward Morse, there is an identifiable cluster of characteristics that determine an organization's propensity for adopting new techniques. 2 In the theory developed by Tom Burns and G. M. Stalker, the environment heavily influences organizational adoption of mechanistic or organic management techniques. 3 The environment is apt to show more adaptiveness because there is reduced ability to standardize tasks. 4 Aiken and Hage have found empirical support for the notion that the organic organization has characteristics that facilitate innovation. 5

Aiken and Hage have developed a major theory relating innovation to organizational structure. They have identified several organizational characteristics—including complexity, centralization, formalization, and stratification—that affect the rate of innovation in organizations. They hypothesize that the higher the formalization, centralization, volume of production, centralization, and emphasis on efficiency, the lower the rate of innovation. 6

Innovative organizations also have more elaborate committee structures than noninnovative organizations. 7 Central to their theory are propositions drawn from the writings of Max Weber's model of bureaucracy, Chester Barnard's stratification theory, and Victor Thompson's growth of occupational specialties. 8 Aiken and Hage suggest that increased formalization and higher degrees of job codification in an organization decrease the rate of innovation. However another study disputes their conclusions and proposes that it may be best for autonomy rather than job codification that is associated with new programs. The scales for job codification, designed to observe and measure formalization, may not be measuring that specific construct. 9

Using educational organizations as an example, Karl Weick has argued that the prevailing view of organizations operating through dense, tight linkages such as planning mechanisms is probably false. Educational organizations might be better described as loosely coupled systems. This characteristic of educational systems could promote more sensitivity to the environment and localized adaptation. 10 Burton Clark suggests that the basic direction of change in the bottom-level operating units of the university is toward fragmentation and loose coupling. He indicates that the fundamental adaptive mechanism of universities and larger adaptive systems is the capacity to add and subtract some fields of knowledge and related units without much disturbance to others. The sources of change are the interests, ideas, and organization of each of the units and their present identities. The diversity and fragmentation of the units creates intense competition for scarce resources. 11

Aiken has hypothesized that the rate at which an innovation occurs is a process and distinguishes between the initiation and implementation stages. A five-stage model of innovation is presented. The two major stages are (1) initiation and (2) implementation. The initiation stage is further segmented into three divisions, knowledge-awareness, formation of attitudes, and decision. The implementation stage is segmented into two divisions, continued-sustained implementation. Zaltman suggests that complexity of the organization may have both positive and negative effects upon innovation: positive in the more loosely structured proposal stage but negative in the more tightly structured implementation stage. 12

The organizational characteristics facilitating innovation in the initiation stage are more complex but less formal and centralized. However, at the implementation stage organizational characteristics facilitating adoption are lower in complexity, but higher in formalization and centralization. 13

Since the development of the original theory by Aiken and Hage, Hage and Robert Dewar have found that none of the structural variables (complexity, centralization, formalization) is as effective as the values of the elite inner circle of executives in predicting differential rates of program innovation. 14 The elite inner circle is composed of the executive director and those managers who participate in strategic decisions about policies, programs, personnel, and promotions. Hage and Dewar find that the values of the elite inner circle are more influential than those of only the chief executive or of the entire staff, particularly if one uses a behavioral rather than a formal definition of elite values. 15 Hage observes that centralization generally will be positively related to innovation rate if the values of the dominant coalition (those participating in strategic decision making) are pro-change. 16 Argyris also studied the influence of top management upon organizational innovation and found that the dominant coalition is influential. He concludes that management with weak interpersonal skills will cause deterioration of innovation in the organization. 17

Henry Mintzberg's work on organizational structure is also of interest. Mintzberg defines innovation as creative deviation from established patterns. Thus, the truly innovative organization cannot rely on any form of standardization in coordination. It must avoid all the trappings of bureaucratic structure, notably the sharp divisions of labor, extensive formal differentiation, highly formalized behaviors, and emphasis on planning and control systems. 18 However, Mintzberg is talking about radical innovation. He does observe that existing programs can be perfected and standardized by specialists, but new ones usually cut across existing special boundaries. 19 Mintzberg calls one organizational structure the "professional..."
bureaucracy." The organization allows for both standardization and decentralization. Coordination is provided by employees sharing a standard set of skills and knowledge that transcends organizational boundaries. The professionals use their skills in response to predetermined service categories. Clients are categorized in terms of the functional specialties the library offers. Change in the professional bureaucracy occurs through altering of the type of people who enter the profession, their norms, skills, and knowledge acquired in professional schools and in subsequent continuing education. 40

Other researchers have also found professional contacts to be important. Daft reported positive associations between professionalism and innovation in the technical area. 41 Professionalism can also have some negative effects upon innovation. Mayer Zald and Patricia Denton identified predictors of innovation as the breadth of organizational goals and the absence of a single dominating professional ideology. 42 Aiken and Hage found that it is the current degree of involvement of staff members in extraprofessional professional activities, not the initial level of professional training, that is most highly related to successful implementation of innovation. 43 In confirmation of this research, Katz found that isolation from sources providing evaluation, information, and new ideas is the most critical factor resulting in ineffective project performance. 44 James Utterback's work also indicates that the primary limitation on an organization's effectiveness in innovation is neither costs nor technical knowledge, but the ability to recognize the needs and demands in its external environment. 45

For Zaltman, the organization is an open system in continued interaction with its environment. The organization must determine which products or services will be most readily received by the end users and focus innovative efforts in those areas. The organization must also adapt its technology to produce these new products or services and monitor the environment for feedback to determine if the innovation is effective in meeting the demands of the environment. 46 Hage and other theorists have concluded that innovation and efficiency are negatively related and appear to require opposing types of organizational structures. Efficiency is usually positively associated with centralization and formalization, and may be either positively or negatively associated with complexity. Yet organizations must be both efficient and innovative to survive in a changing world. 47 Jon Pierce and Andre Delbecq suggest that the solution to this paradox probably lies in capital venture systems, matrix systems for initiating and varying the organizational design using project groups in the initiation stages and structured decision bodies in the implementation stages. 48 The matrix system provides a dual focus when more than one orientation is critical for managing the organization.

An organizational structure, which Mintzberg terms the "adhocracy," uses the functional and market bases for grouping in a matrix structure. The experts are grouped into functional units for normal purposes, but are deployed into project teams for the purpose of encouraging innovation. 49 Mintzberg observes that even hospitals and universities, which are closest to the "professional bureaucracy" for their routine clerical and teaching work, are drawn to the "adhocracy" when they attempt truly innovative work. Specialists must join together in multidisciplinary teams to create new knowledge and skills. 50 Figures 1, 2, and 3 illustrate the theoretical difference between typical hierarchical and less traditional structures in libraries.

ORGANIZATIONAL STRUCTURE AND INNOVATION IN LIBRARIES

Certainly innovation in itself is intrinsically neither good nor bad. Multiple views have been expressed on the value of a recent innovation in librarianship, the adoption of AACR2. Another innovation in library services, networking or resource sharing, also has both positive and negative attributes. Networking can increase access to resources but may result in the loss of local library autonomy in setting

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*FIGURE 1 Example of Traditional Hierarchical Structure*
FIGURE 3
A Schematic of Matrix Organization for the Reader Services Division of San Francisco State University

Discussions of Innovation in Library Literature

Automation, budget crises, increasingly sophisticated patron needs, complex copyright regulations, resource sharing, and demands for professional autonomy are factors leading to a flurry of demands in library literature for change, creativity, and innovation in libraries. Mary Lee Bundy advocates the release of "powerful growth forces" to counteract tendencies toward conformity and restriction of service modifications. She proposes restructuring the organization into two areas: one would operate collegially in discipline units providing selection, indexing, and reference; the second area would be auxiliary services, governed by committees of professionals who would set policy for the purchasing, processing, and inventory units composed of support staff. This arrangement is similar to the innovative structure successfully implemented at Sangamon State University. Howard Dillon has described this experimental organization composed of support staff. Bundy's structure could provide responsible units and individuals with increased decentralization of decision making. It would also decrease formalization of professional activities while maintaining the high degree of formalization already present in auxiliary services and increasing the stratification of rewards between support staff and librarians.

Bundy proposes that support staff be compensated equitably for their work. The positive effects of collegiality and decentralized decision making upon the rate of innovation, which are predicted in the Hage and Aiken model, might be negated by excessive formalization, rigidity, and stratification in auxiliary services.

Robert Moran accuses academic libraries of maintaining an organizational design that "addresses only internal matters," hindering their response to the environment. He proposes an "outside surveillance" unit, specifically collection development, which would be decentral-
ized and informal. An advisory group of librarians would be formed to provide the director with insights gained from participation in external professional associations. The director would assume responsibility for attending to external matters as well as internal needs. Moran states that this modulated bureaucratic model would offer a more responsive, open system. The organizational changes proposed by Moran are supported by Hage and Aiken’s theory, which predicts that decentralization and informalization will increase the rate of innovation.

Karl Musmann observes that libraries have the same problems with structure and innovation that Mintzberg outlined. As agencies that are externally controlled for the most part, their structure is highly formalized, bureaucratic, and centralized. Musmann says this is “not conducive to successful survival in a dynamic environment nor is it especially suited to encourage innovative behavior.”

The Booz, Allen, and Hamilton study of Columbia University in 1970-71 advocated restructuring the organizational design so that the library would be better able to function as an open system and effectively respond to the changing needs of the academic community. Lowell Martin believes that the proper structure cannot be determined until the organization’s objectives are clarified. According to Martin, applying Drucker’s basis of organization, Drucker states that organizational structure is a university library structure could result in one or more of the following: the instructional division and the graduate or research division. This structure would shift the organizational emphasis from the traditional functions such as acquisitions, cataloging, reference, and circulation, to a focus on the library’s purpose and users. Academic library structures based upon undergraduate libraries and graduate research branches appear to incorporate the basic concepts embodied in Martin’s two-divisional design.

Another redesign suggestion comes from Gardner Hanks and James Schmidt, who feel that the professional model is deficient because it discourages change. They argue that it encourages the development of a closed system with no concern for the external environment. They recommend the replacement of this model with a more open system that brings librarians together into small work groups allied with designated clients in the academic community. Librarians would perform many functions within these units: advanced reference, connection development, online searching, and original cataloging. They indicate that this design bears some resemblance to the Booz, Allen, and Hamilton’s design for Columbia but has greater emphasis on client needs.

Support for Martin’s design can be found in current popular works such as Corporate Cultures by Terrence Deal and Allan Kennedy and In Search of Excellence by Thomas Peters and Robert Waterman. Deal and Kennedy predict that managers of the future will structure and negotiate appropriate economic arrangements with workers banded together into semi-autonomous units. Freedom and autonomy will be gained when telecommunications networks and systems exist to provide communication links and coordination of people in large organizations. Culture will become the key to managing the new work groups.

This structure may also be more conducive to innovation.

In observing excellent companies, Peters and Waterman note that these companies are “better listeners.” They pay attention to their lead users, and most of their innovations come from the market place. Peters and Waterman also question the value of the matrix structure and note that it almost always coexists to be innovative after a short time. They suggest that the product division is probably still the best form around for providing the simple structural form and lean staffing so necessary for organizational flexibility at the corporate level. They note that this simple structural form can be reorganized around the edges, e.g., by creating experimental units. There is evidence that large library organizations do not facilitate the adoption of new technology. Musmann found evidence that the large size, complexity, and decentralization of power within the California State University and Colleges System contributed to an environment of slow decision making.

Thomas Shaughnessy was concerned that decentralization can deteriorate into an overemphasis on specialization at the expense of overall organizational needs. Organizational redesign can be used to maintain the balance between specialization and attainment of overall goals. “Coordination by plan” is a mechanistic response, effective in stable situations where units have standard tasks, policies, and interactions. “Coordination by feedback” is an organic response to dynamic, changing situations. Shaughnessy sees the latter as becoming more prevalent through the employment of such devices as coordinator positions. Citing Alan Dyson’s study of library instruction programs, Shaughnessy recommends increased support for coordinator positions in order to make the library a more open system. Theoretical support for such a structure is provided by the Hage and Aiken model, which would predict an increase in innovation by decreasing centralization, formalization, and specialization. Textbooks on library management usually have not addressed the design of an organization around functions but a gradual shift towards functionalization. The library organization is consistently divided into public and technical services and is hierarchical. One exception is John Rizzo’s text, which makes no attempt to review the literature of library management. Instead, Rizzo reviews the larger world of management theory and research for librarians, who are expected to make their own judgments on applicability. While the work devotes most of its attention to group dynamics and techniques, it does touch lightly upon aspects of organizational design as characteristics to be manipulated rather than accepted as permanent features. Division of labor, task design, job enrichment, formality, centralization, organizational development, project teams, matrices and committees, the need to tolerate ambiguity, and equita-
Hage and Aiken's hypothesis in four academic libraries had a negative relationship. In her study broadly as the generation, acceptance support McDonald's or Hanks and various research on the effects of organizational degrees earned. Howard's findings differ from Hage and Aiken's. In their study of health and welfare agency workers, occupational specialization and professional activities were the two indexes of complexity most positively related to innovation. Professional training had a negative relationship. In her study of librarians, Howard found innovation to be more strongly correlated with professional training (total subject and professional degrees earned). Howard's findings should be replicated since they do not support McDonald's or Hanks and Schmidt's beliefs that professional training serves as an obstacle to innovation.

Specialization and professional activities were only weakly associated with innovation. Howard suggests this may be because librarians have been conditioned to think of themselves as generalists. While librarians may possess such specific titles as 'selector', 'head of map room,' or 'East Asian bibliographer' if Burns and Stoker is noted: "their job title may not signify the clear distinction between occupational specialties found in another industry employing a wide diversity of professional degrees. The weak correlation between professional activities and innovation may indicate that the quality of professional activities needs to be strengthened in order to contribute to innovation as they do in the health and welfare professions.

In systems of higher education, Clark observes that change promoted by external influence comes about in largely unnoticed ways through boundary roles at the bottom level of the academic system. Professors engage in activities characteristic of boundary roles, such as information gatekeeping, transacting with other groups, and linking and coordinating with the inside and outside. Charles Burgess reports that two-thirds of the reference librarians in thirty-five libraries he surveyed relied on conferences and workshops to update their knowledge and skills. Howard's study raises an important question: Are professional associations their potential as catalysts for innovation?

Participation in decision making was another strong indicator of innovation in libraries. This supports Hage and Aiken's hypothesis that decentralization encourages innovation. The scales used in developing the measures of decentralization and formalization have recently been criticized by Robert Dewar, David Whetten and David Boje. Further testing of the instrument is recommended before use in another study.

Howard reports that 31 percent of the innovations were in organizational structures (reorganizations of major portions of a library); 25 percent in the production process (e.g., adoption of OCLC); 25 percent in people, e.g., appointment of new occupational specialists, staff development; and 19 percent in products and services. Howard states that the "reorganization total (31 percent) supports the literature, which gives the impression that all organizations are in a frenzy of change whether they need it or not." This observation also coincides with Drucker's view that change is used as a substitute for getting at the real cause of problems, especially personnel problems.

Maurice Marchant measured patron, faculty, and staff evaluations of academic libraries as an end product of an open system. His findings suggest that participatory management ultimately results in faculty and staff perceptions of better service. Further investigation is warranted to determine if the correlation Howard found between innovation and participation does indeed produce improved or more effective services. One should keep in mind Jane Flener's observation that in most libraries less than 50 percent of the staff seemed interested in participating in management.

Beverly Lynch concludes that the technology of library work, as defined by employee perceptions, appears to vary in degree of difficulty or sophistication fairly uniformly across different libraries. She defines technology as "the actions that an individual performs on an object, with or without the aid of tools or mechanical devices, to change its condition, and positively related to a functional description of that object" and bases her study on measures of technology developed by Charles Perrow. Lynch's research results could be compared with Howard's work to see if variations in the highly centralized, formalized, and stratified institution, such as those Lynch studied, demonstrate increased innovation when the organizational structure is redesigned into a less traditional form.

Wilson Luquire provides us with a study of technical services librarians' perceptions of an innovative system, OCLC. He finds that acceptance of the innovation corresponds positively with participation in decision making, variety and interest in the work, professional training, and organizational size. Howard's results support the predictions of Hage and Aiken: organizational size correlates negatively with acceptance of the innovation. This corresponds favorably with the hypothesis that centralization will have negative effects. However, larger libraries are more likely to have problems with the introduction of shared cataloging systems, as they are more frequently the beneficiaries than the benefactors, and may have a greater need for higher levels of cataloging that will distinguish between editions.

FUTURE RESEARCH NEEDS

Only limited study has been made of relationships between organizational design and innovation in libraries. The present accounts in the literature on the positive effects of adopting a collegial management structure are limited in application. Based upon her experience at a small library, Dickinson College in Carlisle, Pennsylvania, Joan Rechtel says, "the creativity and flexibility generated by our new library organization have yielded maximum results in efficiency and staff satisfaction." Rosemary DuMont identifies the need to improve communication and work patterns and to identify his assertions and determine if this system will function in a library with more than 50,000 volumes.

Many questions remain to be investigated. Louis Kaplan suggests several questions for study. For example, can top management "surrender its policy-making responsibility in a heterogeneous, service-type agency?" Is it the situation or the manager that is participative or autocratic? To what extent will employees be willing to assume responsibility in a shared authority system? And when and why do managers use decision sharing?

One of the greatest barriers to the investigation of organizational design in libraries is that it is difficult to measure effectiveness. If innovation is desirable, it should be beneficial and in some proportion to its cost. Rosemary DuMont proposes an open systems approach that focuses on process rather than product. A
library will be effective, she suggests, if (1) the employees affirm its goals; (2) it responds to environmental changes; (3) it provides timely, relevant and accessible services; and (4) it monitors user needs. 

What has been investigated so far and what do we know? Additional research based on organizational behavior theories and models would permit us to judge whether the results of innovation theories and studies of business firms can be generalized to libraries. More study needs to be done to determine the effects of centralization, complexity, formalization, and stratification upon innovation. These studies need to incorporate variables of various types, sizes, and levels of wealth, private and public institutions, and those with common and divergent goals. These organizational variables must be measured against the different types of innovation characteristics: cost, time required, impact on work group, administration, and users, compatibility with organizational variables, and employees' goals, technicality, and payoffs. Although Howard and LaQuire have measured some of the organizational variables, no study has been done measuring the different characteristics of innovation. And these studies are a "snapshot in time," as it were, and do not purport to investigate the process of innovation: the initiation, introduction, adoption, and diffusion. Does the same innovation take on various hues when viewed from different employee points of view? How will reorganization affect innovation when institutional boundaries are transcended? How does one define success or effectiveness and is it the same across institutions?

CONCLUSION

There is no comprehensive theory of organizational innovation to provide significant insight beyond the boundaries of our own field. Library research could contribute to the systematic study of organizations and provide information on innovation and organizational design. It is imperative that libraries take the initiative in times of limited funding. Richard Dougherty warns, "If innovation activities are sacrificed in order to preserve existing activities, librarians will eventually force their organizations into operational straitjackets." The operational straightjackets provide a closed system for libraries which could be devastating to their survival as organizations. Hage recounts an instance when Burgess at Columbia attempted to get the library to order new books for his courses and to be open for more than two hours a day. When the librarian refused to support his attempts to introduce innovative new courses, Burgess went to the Board of Regents and obtained permission to start an entirely new library.

Recognition of the need for innovation is becoming more widespread. Carlos Calvino provides an excellent summary of the need for librarians to understand and investigate how library organizations can encourage innovation: "It is in no way necessary or inevitable that libraries invest in computers and other paraphernalia to provide new books for his courses and to be open for more than two hours a day. When the librarian refused to support his attempts to introduce innovative new courses, Burgess went to the Board of Regents and obtained permission to start an entirely new library."

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The key to the systematic study of organizations and innovation is the recognition of the need for innovation. In addition, informal innovation can be encouraged by institutional factors. However, these functions are going to take place and if the library does not bring them about, some other type of agency will. That agency will then occupy the central role in the information business—the role that was once occupied by the library.

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