

Improving the Effectiveness of Libraries through Improvements in the Quality of Working Life

The purpose of this article is to examine techniques for the redesign of work in academic libraries. The history of work system design is traced. Several methods that adhere to quality of working life (QWL) principles are presented. The state of knowledge about and the application of these methods in libraries are reviewed. By implementing these or similar advanced methods of organization and work system design, academic libraries should be able to respond more effectively to rapid changes in user demand and improve the QWL of their employees.

HOW CAN WE IMPROVE the quality of working life (QWL) in our libraries? What methods are available? Work system design is one of the most innovative methods that have emerged. Avoiding past tendencies to focus narrowly on tasks and jobs, it combines a set of value judgments, systems perspectives, and techniques for improving the QWL of organizational members and simultaneously expands the ability of the organization to cope effectively with the consequences of rapid change. Explicit in the concept and its application is a system of thought that stresses the humanizing and self-fulfilling potential of work. (See table 1 for the relationship between work system design and earlier forms of job design.) This approach considers the organization-wide role of the employee and the social system of the employee's work place.

QWL principles include: (1) security; (2) equity; (3) autonomy and learning; and (4) democracy.¹ Work system design incorporates these principles and emphasizes the need for autonomous or self-regulating groups, meaningful work, and feedback mechanisms that act as monitoring devices

for determining the organization's success in serving its clients. Design or redesign of the work system is accompanied by changes in the organization design.

By implementing basic changes in the occupational roles of librarians and by redesigning the organizational structure of the library itself, libraries should be able to become more client-centered. This effort parallels Ralph Blasingame's recommendation to rethink "our objectives as operators of social institutions and as people."² Before adopting work system design as a viable change strategy, librarians need to understand its basic assumptions, techniques, and potential. This article will attempt to address this need by highlighting the history of work system design, the state of work system design in libraries, and its potential application to libraries.

HISTORICAL PATTERNS

Traditional attitudes toward the design of work emanate from the economic demands and imperatives of the industrial age. In the early 1800s, Charles Babbage began to design jobs to match these demands. It seemed to Babbage that within a scheme of "social physics," the place of man could be charted with high precision. "Perhaps the most important principle on which the economy of a

Charles Martell is head, Acquisitions Department, University of Illinois at Chicago - Circle.

TABLE 1
RELATIONSHIP BETWEEN WORK SYSTEM DESIGN AND EARLIER FORMS OF JOB DESIGN

	Early 1900s	1930s	1960s	
Management Philosophy	Scientific Management	Human Relations	Human Resource Development	
Unit of Analysis	Task and Job Rationalization	Job Context	Job Content	Role (Occupational) Content
Design Methods	Work Simplification Time and Motion Study Task Analysis	Job Sharing Flex-time	Job Enlargement Job Enrichment	Work System Design – Sociotechnical Systems – Autonomous Work Groups – Self-regulation Organization Design
Job Dimensions	Efficient Tools and Work Routines	Organizational Climate Health and Safety Work Hours	Variety of Tasks Scheduling of Tasks Inventory Control Increased Autonomy and Responsibility	Meaningful Work Self-regulation Feedback/Control
Goal(s)	Productivity	Productivity Satisfaction (Extrinsic)	Productivity Satisfaction (Intrinsic)	Quality of Working Life Productivity Satisfaction (Intrinsic)

manufacture depends, is the division of labour amongst the persons who perform the work."³ He listed the advantages of this principle: (1) the infrequent change of tools; (2) the skill acquired by frequent repetition of the same task; and (3) shortened training time. Tools and machines were designed to further the division of labor.

In the early 1900s, Frederick Taylor developed a unified approach to the design of jobs and termed it *scientific management*. The key to this approach was the task, the fundamental, molecular unit of work. The sum total of a worker's tasks constituted the job. Taylor advocated the creation of routine, highly specialized, and narrow task activities as a means for achieving the greatest efficiencies. Scientific management still remains the predominant mode for designing jobs.⁴ Its principles have been extended beyond the production line and currently penetrate many facets of human, work-related endeavor.

It should be noted that Taylorism and a misplaced conception of efficiency is not restricted to assembly-lines or, for that matter, to the manufacturing section of the economy. The service sector is not exempt. For example, in the medical care industry, the phenomenal growth in employment over the past decade or so has occurred largely in lower-level occupations. This growth has been accompanied by an attempt to increase the efficiency of the upper-level occupations through the delegation of tasks down the ladder of skills. This un-

doubtedly results in greater efficiency in the utilization of manpower, but it rigidifies tasks, reduces the range of skills utilized by most of the occupations, increases routinization, and opens the door to job dissatisfactions for a new generation of highly educated workers.⁵

The dynamic environment characteristic of postindustrial society demands of the worker not a passive role but an active one exhibiting the qualities of initiative and self-regulation.⁶ Traditional models of job design discourage these qualities.

Not until the post-World War II era were job design techniques developed that specifically targeted the psychological needs of the employee. One of the earliest techniques to appear was job enlargement. Enlargement occurs when the variety of a job's tasks is increased. Many thought that this would lead to increased job satisfaction and to a positive response toward higher-level psychological needs (i.e., self-esteem and self-actualization). This assessment did not prove accurate, and, in fact, the approach frequently resulted in the design of equally meaningless work.⁷ The absence of four vital factors was subsequently documented: autonomy, control, decision making, and feedback. These are the vertical factors in a job, whereas the number and variety of tasks are the horizontal factors. This relationship is shown in figure 1.

Job enrichment, as a job design technique,

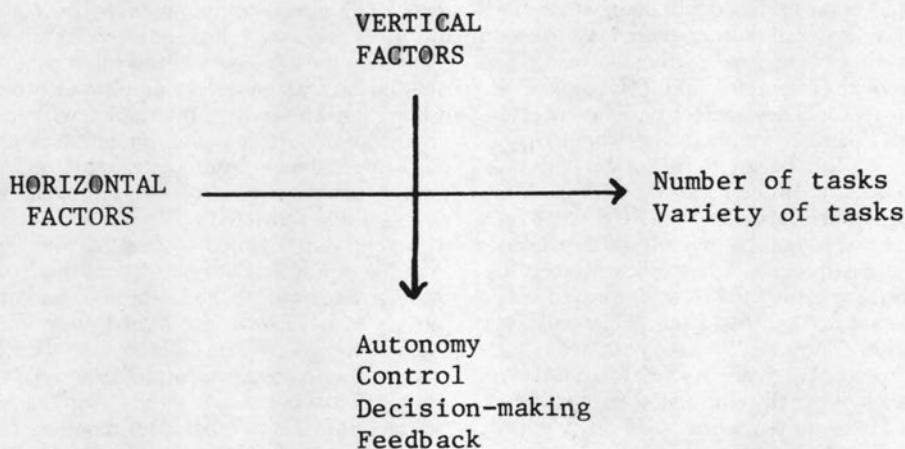


Fig. 1
Vertical and Horizontal Factors

was developed to include important vertical factors. An enriched job can lead to experienced meaningfulness, responsibility, and feedback by increasing the amount of autonomy and responsibility needed to perform a job. Five core dimensions are involved: skill variety, task variety, task significance, personal responsibility, and open feedback channels.⁸ (Figure 2 depicts how the core dimensions interrelate with five implementing steps.)

Before a job enrichment strategy is undertaken it is necessary to diagnose the employee's job and his attitude toward it. The following questions should be answered:⁹

1. Are motivation and satisfaction central to the employee's problem?
2. Is the job low in motivating potential?
3. What specific aspects of the job are causing the difficulty?
4. How ready is the employee for change?

The diagnosis can be carried out through a series of tests on employee satisfaction, motivation, growth-need strength, and work performance. If the diagnosis indicates the need for enriched jobs, five implementing steps may be taken: (1) the formation of natural work units; (2) the combining of tasks; (3) the establishment of client relationships; (4) increases in the amount of autonomy and responsibility necessary to perform the job; and (5) the introduction of open feedback channels.¹⁰

In a study of 1,000 employees in more than a dozen organizations, Hackman found that employees in enriched jobs had greater motivation and satisfaction than employees in jobs that were low in these areas.¹¹ The American Telephone and Telegraph Company (AT&T) has used job enrichment extensively. Using the basic job enrichment package, AT&T began to bring related tasks together, a process called *nesting*. Mini-groups were formed to create a work flow that fostered natural and mutual dependence among employees. One nesting strategy designed for typists led to an improvement in orders issued on time from 27 percent to 90 percent. These results were obtained despite a 21 percent increase in work load. Job turnover was virtually eliminated.¹²

To some, job enrichment is a single remedy technique, similar to job rotation and management by objectives.¹³ L. E. Davis, for ex-

ample, believes that too much attention is centered on the job itself, thereby ignoring work roles, employee control over functions performed, and the organizational or work system within which the job is embedded.¹⁴ A thorough design must therefore involve organization design as well as job design. Accordingly, Davis dropped his use of the term "job design" and replaced it with "work system design," thus allowing him to dovetail his theories and consulting experience with both the developing systems perspective of organizations and role theory.

CONTEMPORARY PATTERNS

Several features distinguish work system design from job design. Work system design:

1. Emphasizes the occupational role of the individual.
2. Recognizes the importance of the work group in promoting individual feelings of acceptance and self-esteem.
3. Uses significant job characteristics (e.g., autonomy and responsibility) to provide the individual employee with a sense of competency.
4. Reconciles the technical needs of the organization with the social needs of the individual (i.e., sociotechnical design).

Each of these distinguishing features will be discussed briefly.

1. Occupational role can be defined as "a set of rules and expectations from the employee as well as the organization, which direct all of his occupational or 'at work' behavior."¹⁵ This is a contemporary concept, not a historical concept. Job design, for example, focuses on the aggregate of tasks that constitute the job and ignores the employee's other occupational behaviors. Interaction with the organization's external environment or with other internal units is minimized, and the autonomy and responsibility of the employee is purposefully restricted. The dynamic and turbulent environment characteristic of many postindustrial organizations has led some managers to recognize the need for employees to have sufficient discretionary authority to adapt work-place activity to changing circumstances and to be predisposed toward corrective action. A manager can facilitate this new behavioral pattern by guiding the employee's action toward overall organizational goals. Similarly, Seashore be-

believes that designers'/managers' attention should be directed toward effectiveness in work roles rather than in the direction of job satisfaction.¹⁶

2. Classical organization theorists and industrial psychologists overlook the fact that most work is done in groups.¹⁷ Whyte suggests that work group relations have not been overlooked, but that specific efforts were undertaken to thwart the development of such relations.¹⁸ The practice of fractionating work has contributed to the isolation of the individual by minimizing the degree and complexity of work-related interdependencies.

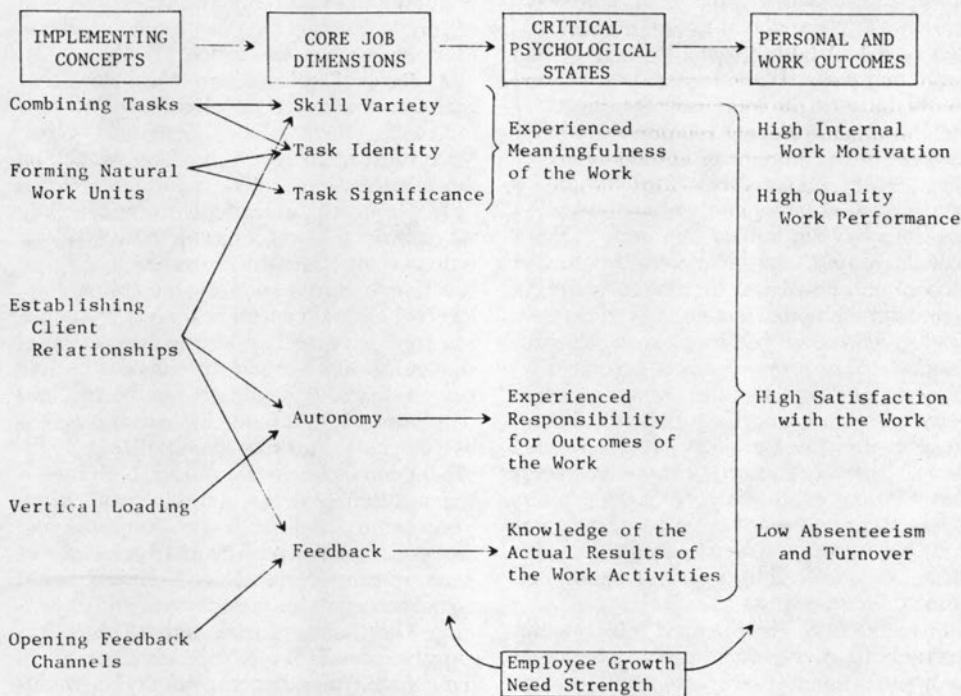
Rarely disputed today is the importance of peer relations to most organizational members or the valued friendship opportunities derived from everyday work situations. Lorsch and Trooboff explain "that management can make full use of the potential ca-

pacities of its human resources only when each person in the organization is a member of one or more effectively functioning work groups."¹⁹

3. Work system design principles are based on the assumption that most individuals desire a more fulfilling work life.

An organization built on the assumptions and values of self-actualizing man is more likely to create a climate conducive to the emergence of psychologically meaningful groups because of the organization's concern with the meaningfulness of work. However, such organizations—for example, research divisions of industrial concerns or university departments—often fail to see the importance of groups as a means for individual self-actualization.²⁰

Not everyone desires self-actualizing work. In their work on occupational experience and psychological functioning, Kohn and Schooler nevertheless conclude that "the



Source: J. Richard Hackman et al., "A New Strategy for Job Enrichment," *California Management Review* 17:62 (Summer 1975).

Fig. 2
The Full Model: How Use of the Implementing Concepts
Can Lead to Positive Outcomes

central fact of occupational life today is not ownership of the means of production; nor is it status, income or interpersonal relationships. Instead, it is the opportunity to use initiative, thought and independent judgment in one's own occupational activities."²¹ Other research studies support this conclusion.^{22,23}

The harshness of Kornhauser's conclusions is worthy of note:

Appraisals of the industrial system must balance intangible personal and social effects against the traditional imperatives of economic efficiency. Among the intangibles are the matters studied here: the brute facts of unchallenging routine jobs; passive, goalless orientations to life; frustrating failure to achieve the goals of "success" instilled by our culture.²⁴

4. Most of the early writings on sociotechnical design were based on actual industrial experiences in which workers attempted to humanize their work. The 1950s case study of the social structure among a group of coal miners is an early landmark.²⁵ More and more case studies on the humanization of work have appeared in the intervening years. The case studies indicate that work system design has had sufficient success to warrant consideration as a technique for organizational change. Although the specific circumstances leading up to the initiation of these changes vary, they share goals in common: to improve satisfaction and productivity. Researchers have examined hundreds of work redesign studies and have compiled lists of successful innovations in their attempt to document their effectiveness.

Thirty-five case studies of successful humanization of work projects are cited in *Work in America*, and the human and economic results are judged significant.²⁶ Almost 80 percent of these projects have been initiated since 1964. The authors note, however, that with one exception none of the projects involved a whole plant or an entire corporation. In conclusion, they recommend the implementation of additional, more thorough redesign innovations.

Srivastva et al. cite in excess of 600 studies that qualify as empirical (quantitative) field studies in the area of satisfaction and productivity.²⁷ Fifty-seven qualify as work innovations actually implemented in organizations that were generally successful in producing effective change. Stressed in these field

studies is innovative change, not the creation of valid knowledge.

Glaser analyzes twenty-five cases of successful innovation.²⁸ He is most intrigued by the low rate of diffusion, even among the clearly successful work restructuring projects. In a *Guide to Worker Productivity Experiments in the United States 1971-75*, Katzell et al. differentiate among fourteen categories of productivity programs.²⁹ Their list includes job design, group design, and sociotechnical system categories. Twelve sociotechnical experiments qualify for the authors' review, and improvements are reported in eleven cases.

Work system design incorporates normative assumptions about how organizational technologies should be used in conjunction with the human component. These assumptions are reinforced by the changing nature of technology. One school of thought believes that recent technological developments promote the need for greater autonomy, self-regulation, decision-making authority, and creativity among organizational members. Many research studies support this view. Another series of studies supports the view that recent technological developments will permit management to exert increased control. Nevertheless, it is generally accepted that the newer technologies will affect organizational tasks, structures, and people in far-reaching ways. Strict adherence to one attitude or one style of management will eventually be dysfunctional. In dynamic organizations, high levels of central control will severely handicap timely, corrective responses to external change. Similarly, rigid structures, inflexible work systems, and limited role perceptions will restrict adaptability and constrain creative responses to those changes. New high-production technologies and the high rate of organizational decay among institutions have led to frequent suggestions for new forms of work design. The main principles of work system design and sociotechnical design are addressed to the need for new forms.

1. The design process and its objectives must be compatible.³⁰ To design a system capable of self-modification, those individuals who are to be intimately involved in the self-modification should also be involved in the design process.

2. The design should be based on minimal

critical specification. This applies to tasks, tasks to jobs, jobs to roles, and methods. "While it may be necessary to be quite precise about what has to be done, it is rarely necessary to be precise about how it is to be done. In most organizations there is far too much specificity about how and indeed about what."³¹

3. If variance (i.e., any unprogrammed event) cannot be eliminated, then it should be controlled near its point of origin.

4. Traditional forms of organization should be rejected if there is a need for organizational members to be capable of responding to a range of unprogrammed events. Organic, or adaptive, forms of organization structure are preferred to the mechanistic forms, which are based on highly specialized, fractionated tasks.

5. The role of the manager is closely connected with the negotiation of boundary-spanning activities for the internal group. The boundary-spanning maintenance role ensures that adequate resources are obtained for the internal group, and that proper coordination is taking place with other units. In highly successful situations it is to be expected that the internal group itself can manage its own boundary relations, with the manager becoming a "resource" for the work group.

6. Information should be available when and where it is needed. Traditionally, management has hoarded information and distributed it only when necessary to maintain its source of power. This practice needs to be severely limited.

7. "Systems of social support should be designed so as to reinforce the behaviors which the organization structure is designed to elicit."³² Systems of payment, selection, training, conflict resolution, work measurement, performance assessment, timekeeping, leave allocation, promotion, and separation should be reviewed and redesigned to ensure that management's actions are consistent with its expressed philosophy.

8. The organization design should provide a high quality of work.

9. The design process is constantly iterative. If the intent is to design an adaptive organization, then feedback mechanisms should be maintained so that the organization can continually monitor and change its tasks, structure, roles, and technology in re-

sponse to external demand.

Both Cherns and Davis are disturbed that so few research groups are involved in new types of work system design:

In all of the United States and Western Europe, there were probably not more than fifteen or twenty social scientists in 1973 with the requisite competence and experience to engage profoundly and responsibly in this process—a glaring need that will have to be remedied before extensive efforts to enhance the quality of working life can be undertaken through designing organizations and jobs.³³

STATE OF WORK SYSTEM DESIGN IN LIBRARIES

If the actual state of work system design in libraries is realistically described and reflected in the literature, then one can assert that traditional practices are generally followed. Only in the last four years have the concepts related to work system design appeared in library literature.^{34,35} It is not suggested that libraries have been remiss in their duties to their employees. Time-honored principles have been used. Nevertheless, some of these principles are dysfunctional in today's world. Knowledge of the psychology and motivation of workers has advanced beyond the nineteenth-century attitudes upon which our traditional job design principles are based.

Organizations have seldom engaged in the practice of designing jobs beyond the job enlargement stage. Libraries are no exception. Libraries are at an equally elementary stage in their use of modern organization design techniques. In the literature of librarianship, one notes widespread recognition that basic changes are necessary in the ways that libraries function. There is also recognition that computer technologies will lead to substantial reorganization in the technical-processing area.³⁶ Although this recognition is repeatedly acknowledged, the need for solutions remains. The basic changes called for will not be accomplished easily. In fact, the perceptual and technical skills required to develop and implement contemporary work system design may not yet exist within librarianship.

The tendency to look at tasks and jobs rather than organizational roles is a major factor that constrains efforts to develop more effective organization structures for libraries.

The task analysis studies of Ricking and Booth³⁷ and Canelas³⁸ are typical of traditional job design concerns (i.e., task and job rationalization). Ricking and Booth suggest that to achieve the optimum in organizational rationality, the highest knowledge and skills should be concentrated in the fewest possible jobs. This represents the archetypal, scientific management approach to job design.

Flex-time, work simplification, job rotation, and job sharing are four work-related techniques that are regularly mentioned in library literature. Flex-time does not address the achieving, self-actualizing needs of the employee. Work simplification parallels scientific management and can be categorized as a traditional form of job design even though employees often participate in the design. Job rotation may be helpful in providing new employees with an understanding of the various jobs performed in the library. It can also be used to add variety to the seasoned employee's circumstances, to provide valuable experiences, to develop managerial talent, and to relieve boredom. In some instances, the job into which one is rotating may include greater decision-making content and less routine tasks. This is frequently an incidental feature, however. Job sharing is a means by which two unit members share one full-time position. This technique helps employees who, for one reason or another, prefer part-time work. By accommodating non-work activities, job sharing can provide extrinsic, albeit temporary, satisfaction to the employee.

Several articles have appeared in the *Journal of Library Automation* and *Library Resources & Technical Services* addressing library automation and related technical issues. Only a few discuss how technical developments will affect existing social systems within libraries. Virtually no mention is made of plans to offset or redesign the work of the individual library employee in keeping with contemporary concepts about the psychological needs of that employee. That this situation exists is not remarkable:

The present view of the relationship of technology to organization and job structure, carefully nurtured for the past 150 years, is that of technological determinism—and it is dangerously simplistic. It holds that technology evolves according to its own inherent logic and needs, regardless of social envi-

ronment and culture. Further, it holds that to use technology effectively and thus gain its benefits for society requires that its development and application be uninhibited by any considerations other than those that its developers—engineers or technologists—deem relevant.³⁹

A concept that has gained great popularity in librarianship within the past decade is staff development. This reflects a wholesome departure from traditional attitudes toward employee relations. Staff development is often closely tied to the progress of participative management, although participative management may sometimes be misused as a manipulative tool. For example, staff participation is often viewed as a means for disguising where the actual sources of power and influence are located in the organization. Typically the participative role is consultative, with the employee being used to lend support to predetermined solutions. This is not a difficult technique to practice, since managers are usually able to structure the problems addressed and tailor the means for studying these problems. Stewart notes that "the concept of staff development in the operation of libraries has appeared in library literature for many years. It has, however, been rather naive, and has rarely shown a comprehensive awareness of research conducted in other disciplines."⁴⁰ Indeed, there is almost nothing in the literature that connects staff development or participative management to the design or redesign of jobs.⁴¹ Also missing are on-the-job activities that directly promote autonomy and self-regulation. A concerted effort is required if, as library professionals, we are to create an awareness of new design possibilities.

NEW DESIGNS FOR ACADEMIC LIBRARIES

A viable work system or organization design for an academic library must be based on local, situational needs. Accordingly, one must first identify specific problems (or opportunities) that need to be addressed. High staff turnover and absenteeism, observable discontent and boredom, poor unit performance, and the introduction of new technologies constitute situational factors that might be ameliorated by changes in the design of work.

Problem identification should include: (1) the number of employees involved; (2) posi-

tion classification of employees; (3) units or departments affected by the problem; and (4) probable causes. Problem solving is the next step. Changes in the system of work may be warranted. For example, a valuable employee may be showing signs of boredom and disinterest. A job rotation assignment might help, or perhaps the employee requires greater responsibility and job challenge. A program of job enrichment might be beneficial. Awareness of these design possibilities should lead to the use of more effective problem-solving techniques.

Since the implementation of a job enrichment program and other more advanced techniques is complicated and time-consuming, it may not be feasible to create a program tailored to a single employee. If an entire unit is involved in a job enrichment program, the organizational benefits of redesigned work are easier to demonstrate. As the number of employees to be included in any work redesign effort increases, the likelihood that the entire work system within affected units will have to be analyzed increases as well. Similarly, attending these increases is the possibility that organizational redesign will also have to be considered.

The introduction of new technologies frequently leads to significant changes in both the technical and social systems of work. Automated cataloging serves to illustrate this point. Online cataloging can lead to a reduction in the number of catalog department staff and to a change in the ratio of professional to nonprofessional employees, thereby altering jobs both within and among catalog units. At the University of California, Berkeley, the advent of automated cataloging and acquisition systems has modified the traditional boundaries between departments. For example, the Acquisition Department handles online copy cataloging for some categories of materials that are subsequently sent to the Catalog Department for marking. However, job changes such as these have been dictated almost exclusively by relevant technical requirements; the work of the employee changed to accommodate the technology — not vice versa. In the Acquisition Department, automation has led to significant changes in the processing unit. Both the variety and complexity of job-related tasks have increased. Individual staff members are involved in all aspects of the work flow; match-

ing received books to purchase orders, and updating (online) the in-process file; preparing and routing materials; routing approved invoices for processing by the Accounts Division; and searching the Research Libraries Information Network (RLIN) database to determine the availability of catalog information. Because employees participate in the total work flow, understanding of the unit's activities and goals is widely shared. Although training consumes much time, the payoff in perceived satisfaction and performance norms appears to be high. Productivity as measured by the number of items processed per man-hour increased 20 percent in the past five years.

In the Acquisition Department, no concerted effort was made to develop "enriched" jobs. Instead, it was decided that no employee would key at a computer terminal for more than one hour at a time or more than two hours total per day. This was done to optimize the accuracy of data input. Since there are two automated systems used in the department, much of the unit's work must be done online. The quantity of work and restricted one-hour time blocks for work at the terminal are constraints that facilitated the change in jobs from single to multiple task assignments. It is likely that many jobs in technical service areas are evolving in this manner. At the same time, assuming their familiarity with work redesign possibilities, it is probable that managers will be able to monitor this evolutionary process and avoid situations in which the social system is negatively affected by technology-driven change.

With few exceptions, academic libraries are structured according to a functional design (i.e., acquisitions, cataloging, circulation, and reference). Within this overall arrangement can be found departments and small units organized on different principles. Government document departments employ a division of work based on publication source. Map rooms are organized around the form of their material. Although the subject-divisional approach represented a significant alternative to the functional arrangement, it has declined in importance since the 1950s. One major limitation of the subject-divisional approach is the required relationship between the structure of the organization and the physical structure of the building.⁴²

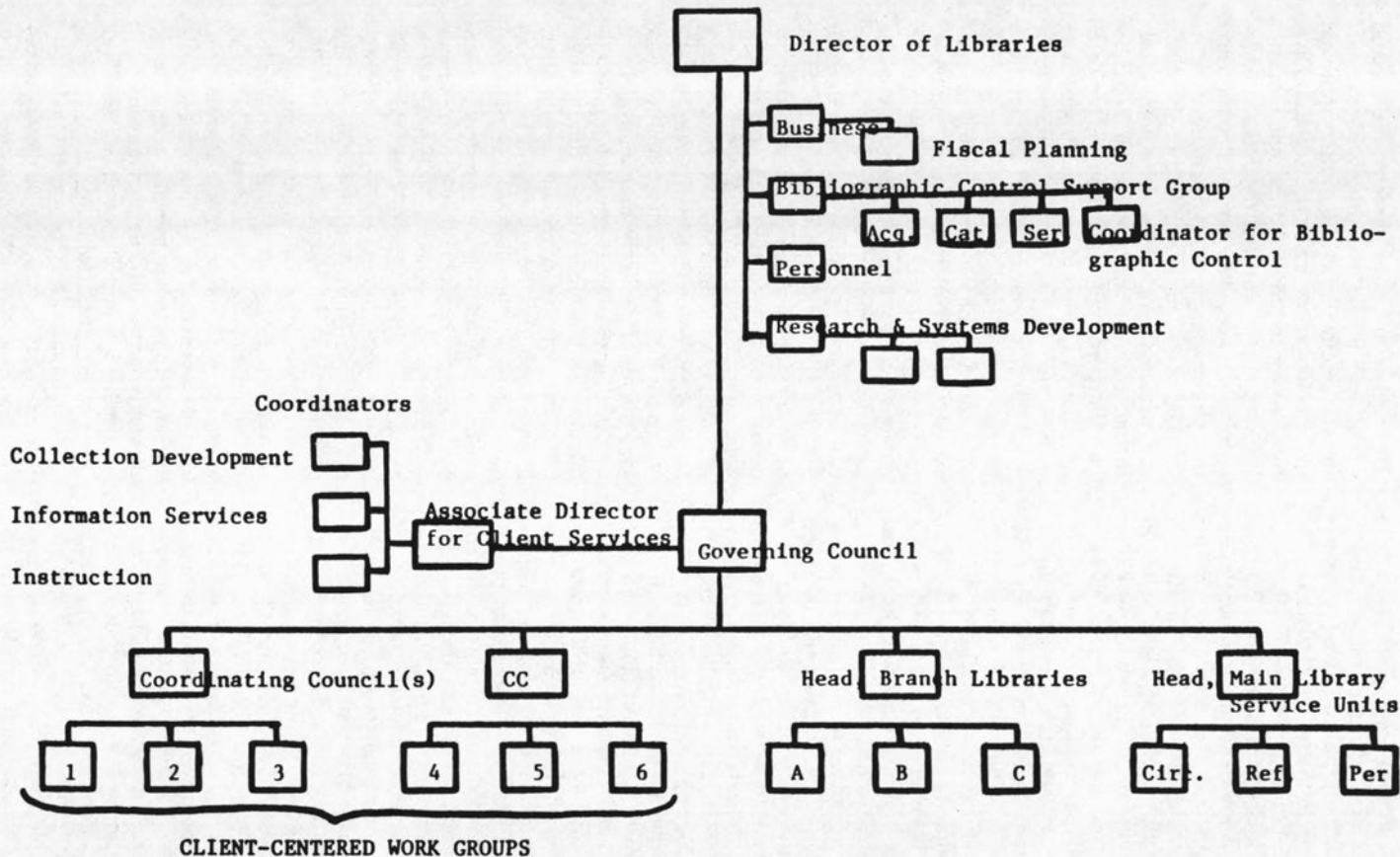


Fig. 3
Example of Organizational Chart for Client-Centered Library

The design of work in libraries that are structured by function is based on the principle of job specialization in which employees carry out a series of tasks associated with that function. Efforts to add significant variety to work roles are therefore restricted by the organization design. By bringing some functions together, the subject-divisional approach provided the potential for multiple function roles that were more satisfying and challenging than those in the single function design. Both Martell⁴³ and consultants in the landmark study of the organization of Columbia University Libraries⁴⁴ have proposed new forms of organization design. Martell has developed a prototype design for the academic library characterized by small client-centered work groups operating on its boundary (i.e., the points at which the library interacts with its user groups). Each member of the work group would perform multiple functions—advanced reference, collection development, instruction, original cataloging, and other forms of information service. The design has three essential components:

1. The library's structure is predicated on a division based on client-centered units.

2. The client-centered units are small (3–5 librarians), and each unit is allied with a different client group.

3. Librarians within the client-centered units act in a multifunction capacity. Bibliographic control activities such as order work, copy cataloging, and serials are no longer in a line relationship to other operations but have been shifted to a staff function. In order to foster a high degree of autonomy in the client-centered units, the traditional lines of authority and responsibility are changed. Coordinating councils and governing councils are substituted, thereby altering the traditional role of management. Within this type of structure the human and material

resources of the library might be more easily allied with client-centered goals (see figure 3). Because there are currently no models for this design, the process of design and implementation remains experimental.

Embedded within and integral to the organization design proposed by Martell is a work system design. This distinguishes it from the Booz, Allen & Hamilton study of the Columbia University Libraries, that focuses on an innovative structure consisting of a Services Group, a Resources Group, and a Support Group. These changes in structure might lead to significant improvements in the work roles of library staff. Although the study does not attempt to design a client-centered organization, it arrives at a design that places the resources of the Columbia University Libraries in closer proximity to client groups than do other existing designs.

Alternative organization structures have been proposed in the past. Both the matrix organization and the project team approach may be cited in this context. While these may have relevance to libraries, no detailed proposals for their use in libraries have been uncovered. The work systems for such organizations might offer interesting opportunities for the development of work roles with high QWL attributes, however. The matrix and project team structures have been used in high-technology research and development firms that require the maintenance of highly creative, motivating environments.

New forms of organization and work system design have the potential to make an important contribution to knowledge work in our rapidly growing information society. Awareness of this potential moves us one step forward. The next step, waiting to be taken, is adapting these forms to the specific needs of academic librarians and the institutions they direct.

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