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Technical Services in an Automated Library

The context in which this paper is set is that of the research library. The automation of technical processes in those libraries is already underway, is increasing and should be encouraged. I shall not here address the topic of the organization of technical processing in the future "paperless library"; rather, it is my belief that in the medium-term future, technical processing, as outlined in this paper, will provide a structure not only to meet medium-term future needs and exigencies but also to be responsive to the drastic changes in our communication systems that are implied by the terms "electronic" or "paperless" society.

Before giving my views on the future of technical processes and their organization, it is necessary to outline where technical services are now and to indicate the forces and pressures which will change those processes. It is fundamentally important that we make a clear distinction between the *processes* and the *methods of organization* of those processes. For example, libraries in the foreseeable future will have the extensive and complex problems associated with the control of serials in one form or another, but this fact does not by any means imply the need for a serials department or division in libraries, or even for a person dedicated exclusively to the control of serials. We must engage in some form of cataloging but we need not have a single, comprehensive cataloging unit.

Where are we now? I have over the last year visited a number of large and medium-sized academic libraries in North America. Without exception they have had a major division concerned with technical services or technical processing. From this point of agreement one finds a considerable range of divergence. A major difference lies between those libraries which have a strictly centralized technical processing operation and those

which have decentralized technical processing in that, for example, there are separate technical services departments in their law or music libraries, or in major autonomous libraries within their system (such as Stanford University's Hoover Institution on War, Revolution and Peace). Commonly, there is a combination of centralization and decentralization.

Another major difference between technical processing departments lies in what they contain. Most technical services operations cover the ordering, claiming and receipt of materials; the cataloging and classification of materials; and serials control. Outside this common core one finds that some technical services operations contain some or all of the following functions: circulation, documents, foreign language and special collections, and bibliographic instruction in technical services areas. This leads me to believe that the distinction between technical services and public or reader services in individual libraries is based on custom and tradition arising out of incidental circumstances, rather than on fundamental principle.

The next major difference lies in the basic organization of technical processes. Broadly speaking, technical services departments can be organized by *function* (ordering, cataloging, etc.) or by *types of material* (serials, monographs, audiovisuals, foreign language, etc.) or by a combination of these. The decision on this fundamental organization was, in many cases, made years ago for reasons which may then have been cogent but are now almost certainly forgotten or irrelevant. The future of technical services departments will involve a basic reconsideration of their organization.

In summary, we have an idea of present-day technical services as being centralized or decentralized to some degree, as containing certain core activities and a number of other activities, and as being organized around types of material or functions. What, then, are the forces exerting pressure to change? I believe they are three in number, and will examine each of these forces and attempt to predict their impact on the future of technical services.

Automation

The first of the major forces is automation. Within a 20-year career in different types of libraries I have seen a number of changes. Without exception the most striking have resulted directly or indirectly from the application of computer technology to library activities. This has been especially marked in technical processing. Although I have found one (not especially distinguished) academic library which denies that automation will play any role in its present or future technical processing, the overwhelming majority of libraries are already at the stage where automation is a reality and an essential part of their forward planning. Libraries are in a transitional stage in their use of automation, a period full of signs and

portents which though they embody contradictions in detail which make understanding difficult, they nevertheless show a markedly progressive tendency. To take one obvious example, the use of central data bases (the "utilities") to prolong the life of the card catalog is clearly a transitional phenomenon. It is unfortunate that automation has been used in this way but it is important to note that at the same time substantial reserves for the future—in the shape of massive, centralized machine-readable data bases and individual library machine-readable records—have been created. It is virtually certain that the use of automation to shore up card catalogs and to produce microform catalogs will be a minor feature in the future. Within the next decade, the main use of centralized data bases in the technical processing activities of research libraries will be for the production and maintenance of the integrated bibliographic tool which will replace the numerous and inconsistent bibliographic processes based on ineffective paper files. Concurrently, we shall see a degree of cooperation and resource-sharing unprecedented in the history of academic libraries. I believe this period of resource-sharing will bring the end of the self-contained library and the "fortress library" mentality which has prevented progress for so long. Indeed, we may see the day when the calf and the lion shall lie down together in the shape of true cooperation between academic and public libraries within a region. (As a cautionary note, it is vital to remember the philosopher Allen's dictum that the "calf shall lie down with the lion, but the calf won't get much sleep.") As a result of cooperation and resource-sharing, we will see the better use of library resources (financial and bibliographic) to serve the wider community.

What then are the specific effects of automation on libraries' future organization? First is the enormous impact of shared cataloging networks, notably OCLC. When one compares libraries today with those of a decade ago, the most striking difference is that the use of centralized cataloging—which chiefly revolved around the emendation of LC cards—has been replaced by a degree of use of OCLC (and, to a much lesser extent, the other "utilities"). This use is phenomenally high, varying between 70-99 percent. Such a reliance on externally produced records is unprecedented in library history and has led to profound changes in attitudes and organization within libraries. Where is the library using OCLC's services that could survive the withdrawal of those services? Where is the library with an organization that has remained unaffected by such a massive switch from homemade cataloging to the cataloging of others? The use of OCLC in my own library at the University of Illinois at Urbana-Champaign—one of the largest libraries in the world—has had a profound impact both in terms of cataloging efficiency and organization. We have gone from having a huge and growing backlog of cataloging to being the largest current user of

OCLC, and to having a negligible backlog of cataloging. We are presently cataloging over 10,000 titles a month. This is approximately 20 percent more than our current intake, and will inevitably clear our backlog in less than two years. This has been achieved through major changes in organization.

The most important organizational impact of the use of centralized data bases via terminals is that it implies the centralization of automated cataloging. Typically, the library starts its flirtation with automation by acquiring terminals connected to OCLC and then trying to fit the use of those terminals into its previous procedures. This first tentative advance is generally a failure. The successful use of OCLC and the other "utilities" demands a reconsideration of the workflow and, more importantly, of the level of staff (clerical or professional) performing that work. Such a reconsideration inevitably leads to the conclusions that, first, automated processing must be centralized and integrated in order to avoid the dissipation of resources which scattered and intermittent use of terminals produces; and, second, a sharply decreasing level of professional involvement is necessary in order to achieve speed and cost-effectiveness in the cataloging process. In the library of today, where 80 percent or more of all cataloging is done by staffs largely composed of nonprofessionals and paraprofessionals, it is impossible to justify maintaining the large staffs of professional catalogers which have been necessary in the past.

The centralization and automation of the bulk of technical processing also implies integrating those processes. In the premachine era there may have been good and sufficient reasons to have separate operations for the processing of monographs, serials, documents, maps, music, nonprint materials, and materials in nonroman languages. This situation is no longer tolerable if the library is to achieve efficiency, speed and financial savings by means of automated processing. Such dispersion of activities also leads to inconsistencies in the handling of materials and disparities in the allocation of human resources. It is necessary for each library hoping to use automation effectively to consider each of the divisions by types of material with the idea that, unless there is some strong reason to the contrary, those divisions will be eliminated. The ideal is a single sequence of activities (ordering, claiming, receiving, copy cataloging, etc.) which would be applied to all materials. Some materials demanding special expertise, such as those in foreign languages and perhaps government documents, may continue to demand special treatment, but such separations should be kept to a minimum.

Automation within one library should be built on a single data base which contains bibliographic records for all the library's holdings and records of all the activities surrounding those materials (ordering, circula-

tion, binding, etc.). Thus, all the hitherto-dispersed information about the library's collection will be brought together and made available to all. The bulk of the work involved in building and maintaining this central, integrated library tool will be done centrally by largely nonprofessional staffs.

However, the centralized data base can and should allow decentralized input in some instances. Two potential uses of decentralized input are of particular significance: decentralized serial check-in and decentralized original cataloging. In many libraries with a departmental or branch structure, serial check-in is performed twice; once centrally in maintaining a central serial record and once at the branch library which maintains its own files. This is clearly inefficient and wastes money. In the automated library it will be possible for each branch or service point to receive its serials directly and to record their receipt via a local terminal linked to the central data base. In this way the maintenance of a central (and universally available) record will be carried out in a decentralized manner without the wasteful duplication of effort demanded by our present system. As far as original cataloging is concerned, decentralized input will allow subject and language specialists to catalog materials within their area of specialty as only one among a number of professional tasks. Thus, the elimination of the physically discrete central cataloging department, containing professionals who do cataloging exclusively, is foreshadowed by the ability to contribute data to a central data base from any location within the library system.

Automation and its concomitant centralization and cooperation demand a different approach to standardization. Too often in the past, "quality" in technical processing has meant the perpetuation of local practice regardless of its utility, the proliferation of meaningless and petty regional variation, and the blind adherence to the letter of rules without regard to their spirit or intention. In automated processing an adherence to agreed standards (in descriptive cataloging, subject cataloging and content designation) is needed. Foolish consistency is neither required by the new systems nor called for by the users of those systems. Standards there must be, however, and the mechanisms for agreeing on those standards and on achieving their common use will be an important part of the emerging bibliographic environment.

In sum, automation is a powerful force operating on the library as a whole, bringing predictable and unpredictable changes in the nature of library processes, and implying a reconsideration of all our traditional ideas on how the library should be run and how work should be allocated. In particular, automation inevitably implies a deprofessionalizing of all ordering and claiming procedures, of the bulk of cataloging procedures,

and of all procedures involved in maintaining the central record of the library's holdings and activities.

Financial Constraints

The second major force exerting pressure for change is money. The politician's cliché is that we live in an age of diminished expectations. The money that seemed so plentiful only a decade ago has gone. Unfortunately, in even the most enlightened societies libraries and other superficially "inessential" social services are the first to suffer in a climate of economic austerity. We who believe in the overriding social and cultural value of libraries must adjust to this austerity, not just by opposing the proponents of Proposition 13, but by creative and profound thinking on the necessities and priorities of today's libraries and what we must do to preserve those libraries for today and posterity. We have to make sure that none of the money we have is wasted, and we have to search constantly for cost-effective replacements for our traditional library procedures.

In technical processing this search for acceptable economy leads to a number of conclusions. First, no library can survive without the direct or indirect use of cataloging data from other libraries made available in machine-readable form. In our present situation this means that the library must search for access to high-quality, large data bases which supply as high a percentage as possible of records which match the library's acquisitions. This question of maximum correspondence between data bases and the library's collection is crucial and overrides almost any other consideration in the relationship between libraries and "utilities." No library can afford an unacceptably high proportion of original cataloging. Second, the library must strive to increase its use of machines in place of human labor, and to increase the efficient use of nonprofessional labor. No library can afford to pay persons to do work which is better done by a machine, nor can any library afford the luxury of underemployed or inappropriately employed professional labor. This means an inevitable concentration of the professional quotient of the work presently done by professional staff, so that overall the library will have fewer professional staff but those professionals will be doing more professional work. Third, our economic realities demand that all libraries share resources—human, financial and bibliographical. We have the economic imperative to cooperate more, the means (in automation) to cooperate more effectively, and the incentive in the established fact that cooperation provides better service to our library users.

The major impact of financial constraints will be in the necessity for libraries to examine their processes very closely. As far as technical processes are concerned, this analysis will be directed toward the elimination

of duplication and waste. As I have stated earlier, the answers to these problems lie in centralization and organization by function rather than by type of material. A searching analysis of the relative roles and strengths of professionals, paraprofessionals and nonprofessionals in performing processing tasks will also be necessary in order to lower or to contain the ever-increasing expenditure on labor. Connected with this last is the necessity to transfer tasks from human beings to machines whenever this is possible and desirable. Another important area of analysis is the preparation for the transfer from manual or semiautomated systems to fully automated systems. In technical services it is vitally necessary to be aware that change from pre-machine processing to machine-era processing is not just a change in the direction of more speed and less wastefulness. It is a true change which will alter the substance of what is done as well as the methods of doing it. It is a fundamental error to automate what one has. Rather, one should automate in the direction of what can be. In order to achieve this, it is necessary to analyze the purpose of a task as well as the method of performing it.

Beyond the problems of technical processing departments, financial constraints will certainly bring about a reconsideration of the overall organization of the library. It is impossible to imagine a major restructuring of technical services which does not imply a rethinking of all the library's processes and services. In particular, it is evident that the strict division between technical and public services will be eroded in the near future. That distinction has undoubtedly wasted money and human resources because the specialization implied by two types of librarians within one library has not allowed either category to reach full efficiency, nor has it allowed the library to make the best use of its employees.

The Search for Professionalism

The third force exerting pressures for change lies in the nature of professional librarianship. Because it is evident to every thinking librarian that the library of the future will be radically different from that of the past, we have started to revise our ideas of the role, the nature and the purposes of professional librarianship. In library education and in the practice of librarianship one can sense a questioning arising from changed circumstances. This questioning focuses especially upon the achievement of a well-rounded and satisfying work experience. Few young librarians are willing to dedicate themselves (or perhaps confine themselves) to being a "technical services person" or a "public services person." Many librarians feel that a choice made early in their career has proven to be a restriction on their professional experience. This limitation of people to particular facets of librarianship is not only perceived as inimical to their full professional

development but also inhibiting to the efficiency of the library. There seems to be little doubt that the division between the two types of librarian will be done away with in the next decade, partly because the division itself is harmful and partly because of the dissatisfaction of librarians themselves.

It is easy to see how the technical/public service division has wasted good people. Who does not know a specialist cataloger with vast knowledge of her or his subject and its bibliography who is seldom if ever called upon to use that knowledge in the direct service of the library's patrons? Who does not know a reference librarian whose deliberate ignorance of cataloging and technical service matters has inhibited her or his effectiveness in serving the public? Who has not seen important initiatives in a library thwarted by mutual incomprehension and failure to communicate on the part of both "factions"? The time has come to end this divisiveness, to use all librarians more effectively, and to plan for a new structure for the library of tomorrow.

In academic libraries in particular a new challenge has arisen, one which causes librarians to reconsider the nature of their profession. The increasing importance of "faculty status" to academic librarians and the increasing pressure on those librarians who carry that status to conform to, and be judged by, normal academic criteria have meant that in many academic libraries the nature of the librarian's calling and the respective duties of academic and nonacademic library workers have come under close scrutiny. In academic libraries the "publish and flourish" philosophy means that the days of the professional librarian as high-level clerk are either over or at least numbered.

The effects of this move toward more professionalism in librarianship can be stated simply. They are that the search for better-rounded professional experience will contribute to the end of the technical/public service dichotomy and that the rethinking of the role of the professional librarian will lead to the fundamental rethinking of the organization of libraries.

Future Prospects

I have described the three forces (automation, money and the drive toward professionalism) which I see as affecting the organization of technical processing activities. I will now describe the short (1- to 5-year) and medium (6- to 15-year) term prospects for the accomplishment of technical processing which I believe will result from the action of those forces upon our present situation. In the short term, I believe that technical processing will be carried out by an administratively distinct element of the library. However, I discern certain inevitable developments which will change technical processing in libraries over the next five years. First, organization

by function rather than by type of material will come to be seen as the most efficient response to the use of "utilities" and other developments in automation. Therefore, the typical technical processing operation will bring together all ordering and receipt operations, all bibliographic operations, all operations connected with the use and maintenance of automated data bases, and all professional cataloging operations. Such functional organization will undoubtedly pay in dividends in terms of productivity and the most efficient use of personnel. Second, this functional organization will demand the centralizing of activities, especially those of a clerical nature and those intimately connected with automated procedures. Third, technical processing departments will increasingly concentrate on the "core" activities described early in this paper and will have a tendency to shed some of the "fringe" activities (special collections, book selection, etc.) which have accrued to technical services departments by happenstance or tradition over the years. These activities will be dispersed throughout other library departments or will be gathered together in a "third force" between technical and public services. Thus, in the short term we can see technical processing as functionally organized, centralized and concentrating on "core" activities. This will provide a good basis for processing in the transitional period between the post-paper file library and the fully automated library. In the fully automated library one will need another solution.

The most striking feature of technical processing in the fully automated library will be the abolition of technical services as a major administrative subdivision of the library. This will coincide with the abolition of public services as a separate administrative subdivision of the library. Although this major reorganization will go far beyond nomenclature, it is significant that both units are named restrictively—"technical" service with its overtones of technological elitism and "behind the scenes" secrecy, and "public" service with its implication of exclusive rights to serve the library's patrons. We will be better off without both terms.

Once we have done away with this basic division, we will be free to apportion work correctly and to see the library as a functional rather than traditional organization. I believe that libraries at the end of the 1980s will be organized along the following three basic groupings:

1. a centralized automated processing operation, staffed primarily by nonprofessional and paraprofessional library workers;
2. professional groups organized around special subjects and services; and
3. a centralized library management operation.

The centralized processing operation will be based on the construction and maintenance of the integrated, automated system which will replace our presently scattered paper files. This system will use a single

data base in which is recorded the existence and current status of all the materials which the library holds. The single, automated multipurpose tool will revolutionize the service which the library is able to offer its patrons and, more germane to the subject of this paper, will necessitate the creation of a new structure within the library. The tasks which the central processing unit will perform are:

1. the ordering, claiming, receipt and routing of library materials;
2. automated/rapid cataloging based on the use of OCLC or another "utility";
3. the maintenance of data base records (including order records, circulation records, bibliographic monograph and serial records, etc.) relating to the library's materials;
4. the addition to the central data base of newly created machine records; and
5. accounting, bookkeeping and other "housekeeping" activities.

The central processing operation will be staffed almost entirely by nonprofessional and paraprofessional staff. Professional involvement will be restricted to policy-making and a limited amount of supervision. In fact, there is no proven reason why any professionals need be involved in this kind of library activity. There would seem to be a role for the paraprofessional supervisor that already exists in many large libraries.

If one were being fanciful one might have an image of the central processing operation of the future as the engine which drives a large machine. Such an engine is central to the working of the machine but it is not essentially what the machine is about. Pursuing the analogy of the library as a machine, we can see the purpose of the machine as delivering materials and services to the library users. This purpose will primarily be carried out by the second element to which I have referred: the groups (or "clusters") of professional librarians organized to carry out services to the library's users in connection with subjects, particular services or special types of material. These clusters will probably be relatively small in number (one eminent modern librarian believes strongly that twelve is the maximum number for effectiveness in administration; history abounds in instances which support his view) and will carry out all professional duties associated with their subject area (sciences, social sciences, etc.), services (undergraduate services, domiciliary services, etc.), or special materials (audiovisuals, nonroman languages, etc.). These professional duties will include:

1. the selection of library materials,
2. the original cataloging of all materials for which copy is not available (the results of this cataloging will be processed by the central processing unit),

3. reader and reference services,
4. bibliographic instruction, and
5. professional bibliographic services.

It is evident that these groups will overlap in some particulars (e.g., science materials in an undergraduate library), but it is also true that such overlaps occur in our present pre-machine libraries and that professionalism implies a willingness and an ability to cooperate. Besides, these groups are not intended to be hermetically sealed and may be visualized as overlapping circles. Such an arrangement will be advantageous to the professional librarian in that it will offer him or her a thorough professional training and a satisfying and well-rounded professional experience. It will benefit the users of the library in that the best use of professional talent best serves the library user, and also in that the concentration of professional librarians in particular areas of expertise (subject or otherwise) will ensure a depth of service that our present systems rarely achieve.

The third element of the future library's structure is administrative. Anyone viewing modern libraries dispassionately will grant that administrative excellence is rarely encountered and that even an adequate (or commonsense) level of administration is often lacking. It is essential that the differently structured large library of the future be managed well. This does not imply that rigid hierarchical doctrines or business pseudo-expertise should be imported into libraries. In fact, such archaic administrative ideas (rightly despised by librarians for years) are no longer found even in the most cynically exploitative business enterprises. What we need in libraries, now and in the future, is responsive, human and intelligent management and coordination. The tasks of this third element will include:

1. general administration,
2. personnel and career services,
3. quality control,
4. coordination of library services,
5. budget allocation and control,
6. policy formulation and coordination, and
7. coordination with other libraries and library agencies.

The administrative element should not be seen as the highest of the three elements. On the contrary, this future library organization should abandon hierarchical and elitist concepts, allowing everyone—nonprofessional, paraprofessional, professional librarian, administrator and librarian/administrator—to find a fulfilling role in a cooperative and multidimensional environment.

For the reasons outlined earlier in this paper, I believe that the library of the medium-term future—the post-machine but pre-electronic library—will have a different structure from that of the library of today. Because of the forces molding libraries at this time, such change is inevitable. The pressures of automation, finance and the search for professionalism in librarianship will shape a new kind of library. That library will be geared administratively to the post-machine age, will allow well-rounded professionalism to flourish, will make the best use of automation, and will be effective in terms of cost, in terms of the use of library personnel, and in terms of service to its local, regional and national community.