



Service To Industry and Research Parks by College and University Libraries

NATALIE N. NICHOLSON

THE PHRASE “research parks” in the title of this article recalls Eugene B. Jackson’s 1961 prediction:

In 1980 there will be universally-managed and industry-sponsored special libraries in the vicinity of the principal universities. Their advanced use of new methods of bibliographic control, information retrieval, and data exchange will make their operations indistinguishable from those of special libraries of outstanding profit-making organizations in the same subject fields. . . . Significant assessments will be made on the participating organization in research parks not only for the financing of day-to-day operations of facilities, especially set up for their benefit, but also for the total enrichment of the university library resources.¹

This quotation closed an earlier paper, “Service to Business and Industry,” written by the present author.² (Readers are referred to this paper for an account of the historical development of the relationship between special libraries and universities, of the kind and quantity of service required by industry, and of the difficulties as well as the benefits arising from the relationship.)

Special libraries in industry were first established in the second decade of the twentieth century, growing slowly until the demands of research during World War II accelerated their development. Since then the scientific age has increased the extent of research, the amount of literature published, and the need for information. By the late 1950’s a few large academic libraries, particularly those in urban areas,

Miss Nicholson is Associate Director of Libraries, Massachusetts Institute of Technology, Cambridge, Massachusetts.

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were noting the use of their collections by research firms, and wondering if they could continue to absorb the demands without infringing on good service to their own students and faculty.

The erosion of service can be subtle. It is difficult for a reference librarian to terminate a telephone conversation with a representative of industry because a student is waiting for assistance. It would seem unreasonable not to respond to a simple inquiry asking if the library has a certain book. Often, however, what appears to be a simple request turns out to require a lengthy search for bibliographic identification. On a campus with many libraries, several calls may be necessary to locate an available copy. In addition industry usually exerts pressure for speed. Should an important inquiry from a faculty member be delayed to speed material on its way to an industrial concern?

Although the situation is improving, the fact exists that many companies have people in charge of their information needs who are not careful to give accurate and complete references. Nor are assistants always aware of the American Library Association Interlibrary Loan Code. For example, they ask to borrow current in-print titles of a general nature, easily available for purchase. In spite of the few abuses, most companies are cooperative and grateful for the resources and services of the libraries upon whom they call.

Regional union lists of periodicals aid in the identification problem, and turn some of the borrowing away from the large research library to smaller specialized ones. Such lists, modestly priced in almost all cases, aid the efficiency of information transfer, allowing the requester to give an accurate citation, sometimes even the location within a library system, which is especially important for quick delivery.

Special librarians have been leaders in developing such lists and in furthering the application of machines, computers, and data processing techniques to the control of scientific literature and information. Many academic libraries have benefited from such experiments and are now involved in applying new systems to their larger collections.

More and more, universities are acknowledging their national or regional responsibilities to make their storehouses of knowledge available to all, realizing also that there are benefits derived from this association with industry and government. This is particularly true in scientific areas where there is close relationship and exchange of information between industrial personnel and faculty members.

This intercourse is fostered by the tendency of industry and government agencies to locate near large universities. Indeed careful inquiry is often made of the possibilities of access to professional consultation, advanced courses, and library privileges before a site location is chosen. A young company usually finds it impossible to acquire more than its current literature needs. Organizations in fairly narrow subject fields discover that they need material from many diverse disciplines.³ All must depend upon a large library for the long runs of scientific journals, early proceedings of professional associations, academies and societies, and many foreign language titles.

Meanwhile academic libraries find that their universities foster the scientific literature explosion by constantly adding new research programs, often of a broad interdisciplinary nature, and in doing so create a budgetary race to meet the resulting pressure for more journals, proceedings, symposia, abstract services, and the staff to process and service them.

There seems little doubt that industry's demands on these materials have been increasing, although the author has on hand only a few sets of reliable figures, obtained from private correspondence. Those of her own institution show that the number of companies and industrial/government borrowers has increased by about 38 per cent in the last four years, the number of interlibrary loans by 57 per cent, and the number of photocopy orders by 54 per cent. California Institute of Technology's (C.I.T.) "interlibrary traffic"—i.e., loans and photocopying—has been increasing at a rate of over 10 per cent per year for several years. The University of Pennsylvania's interlibrary loans have remained fairly stable but photocopying has increased tremendously.

These three institutions were among thirty surveyed by the author in 1962. A limited resurvey was done in the spring of 1965. Twelve institutions were queried, including eight of the original thirty, and four new ones known to be used by industry. Four important points were brought out in the responses, which supplied the information on the policies of specific institutions described later. First, there is increased use of university libraries by industry; second, photocopying has greatly diminished the need for interlibrary loan and room use; third, the opinion is growing that there should be full reimbursement by industry for the costs of library service; and fourth, in consequence, more formal plans for service to industry are being made.

The growth of photocopying in lieu of loan is the most interesting

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aspect of increased use. Better quality copying machines, accompanied by more efficient and speedier service, has had its effect. Comments from a few industrial librarians queried also in the spring of 1965 indicate great satisfaction with photocopying services, although one pleaded for the availability of deposit accounts as standard practice. Particularly important is the cash-and-carry service from the Xerox 914 copiers now available in almost all libraries. However, many companies are not located near enough to a university for a librarian or scientist to visit in person. Such companies usually use large libraries, either university, public, or government, where complete photocopying facilities are available. By far the greatest need is for journal articles. Practically all libraries now limit circulation to journals, particularly scientific titles. When the price of copying can be further reduced it may well lead to the non-circulation of almost all library materials. Widespread photocopying has profoundly altered the pattern of library services, and its influence will continue to increase.

Although research librarians are pleased with their ability to disseminate information and keep it too, their worry over wear and tear on physical volumes from repeated exposure to copying machines is more than nagging. Obviously, for many heavily-used titles, replacements will have to be made. How? Many are out-of-print. Purchasing or buying reprints is expensive. Should photocopying customers pay for replacement or for the microfilming of heavily used titles? Should they help defray the expense of purchasing the multitude of new titles for new fields of research from all over the world?

At present most libraries are charging industry on a direct-cost-only basis. Those with small demands from outsiders may not be charging direct costs, and it may not be worth the trouble to set up billing procedures. Yet the belief that industry should pay its way, as against the arguments that fees are counter to the democratic tradition and damaging to interlibrary cooperation and local public relations, appears to be gaining ground. Yale's Associate Librarian writes: "While we show little evidence of increased activity with industry, it is our opinion that academic libraries have a great deal to offer and that industry, in turn, could lend considerable support to our activities."⁴ Yale does not charge fees to industry as such, only a \$25 outside user privilege fee for individuals. David C. Weber reminds us that ". . . 'free access' is not really free at all but made so because others pay the cost."⁵ He goes on to advise that in fact public relations of private institutions may be damaged by not charging. The dissipation

of funds that occurs when all outsiders are served without charge may not meet the approval of the university's supporters. Indeed most companies realize the high cost of good library service, and are accustomed to paying in full for services rendered.

The general pattern of university library service to industry is that of interlibrary loan without charge, photocopy service at cost, and free reference information by telephone, mail, or in person. There is some variety within this pattern and an even greater variety in the regulations for borrowing by individuals: some loan, some do not, the charges vary. For example, at the University of California (Berkeley) no interlibrary loans are available to libraries within a fifty mile radius, but qualified individuals may borrow directly for an annual \$6 fee. No changes are planned.

About half of California Institute of Technology's demand stems from its Industrial Associates. These are firms that make substantial financial contributions to the Institute. These companies have the right to borrow books, and receive allotments of free reproduction of library materials. Other individuals may not borrow from C.I.T. Interlibrary loan is available except for journals and domestic books in print.

The University of Pennsylvania charges only for photocopying, and is representative of some state universities in feeling that industry, which contributes in either direct or indirect ways to the University, should probably have free library services.

Tulane has had a high percentage increase in interlibrary loans due to the recent installation in New Orleans of the National Aeronautics and Space Administration and divisions of Boeing and Chrysler. It does not charge directly, but maintains a \$10 fee for individual borrowing.

Southern Methodist University's Science Library has a contract with the Graduate Research Center of the Southwest whereby the Research Center, in return for payment of the salary of a librarian and an annual fixed fee, may borrow books and journals, either directly or on interlibrary loan. Photocopies of journal articles of ten pages or less are supplied in lieu of loan. For longer articles, regular rates apply.

Princeton has 122 organizations and 570 individuals now registered for borrowing privileges. At present there is no charge, but Princeton has for some time recognized the need for covering this cost, with a

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full-time staff to handle outside bibliographic needs. It is working on the details of a plan somewhat similar to Stanford's.

As far as is known from the published literature and private correspondence, Stanford and Massachusetts Institute of Technology (M.I.T.) remain the only institutions with formal plans which attempt to recover the costs of library service to industry. Both plans were described in some detail in the author's 1962 article.⁶ Briefly, Stanford has set up a separately staffed department within the library—the Technical Information Service (TIS)—to which all types of requests are funneled, charges being made on a transaction basis. Massachusetts Institute of Technology, on the other hand, handles industrial requests through its regular library departments, charging an annual fee to join its Membership Plan for Industry (MPI) which gives ten individual library privilege cards for direct borrowing of fifty volumes on each card, unlimited interlibrary loans, and free copies of two annual bibliographies—"Current Serials and Journals" and "Publications and Theses." All photocopying is handled on a fee basis by the library's Microreproduction Laboratory.

After five years of operation, Stanford reexamined TIS. Its experience and recent changes are described by Jack Pooler and David Weber in their article on "The Technical Information Service in the Stanford University Libraries."⁷ In the beginning the base fee was \$5 per citation, whether for a loan or up to forty pages in photocopy, a price calculated to cover expenses and the costs of maintaining and developing library collections. In 1958 the staff consisted of a part-time director and three assistants. In addition to supplying loans and photocopy, access to reading rooms by individual research personnel was arranged, and bibliographical service was provided when it did not involve extensive searching.

By 1963 total annual transactions numbered 13,371. In 1964 the TIS staff was augmented by two professional librarians. Courtesy memberships (occasional users, up to six months) were eliminated, as the required bibliographic work and record-keeping hindered speedy service to regular members. The transaction fee was increased to \$6, because of the rise in direct operating costs. Literature searches, translating, and abstracting services are being planned on a cost basis.

Stanford feels that its original plan was sound, and notes that "while the university library does not wish either the administrative burden or space problems of a mammoth TIS, such liabilities are

small in comparison to the fair cost returns, to the protection against undue circulation loads, and to industrial good will and general public benefit. . . .”⁸

Massachusetts Institute of Technology too has reevaluated its program, first established in 1960. An attempt has been made to analyze costs. The resulting estimates turn out to be an average of approximately \$5 for an interlibrary loan, \$1 for a direct individual loan, and \$2 per information/reference question. The average charge for photocopies is about \$6.50 per volume handled, including dissertations as well as journal references. All figures include an allowance for the cost of developing and maintaining the library's scientific and technical collections.

Further analysis of MPI membership shows that the present \$250 membership fee frequently does not cover the costs of services given the company. The picture at M.I.T. is complicated, as is that of C.I.T. and some other universities, by the existence of a group of companies which contribute to the Institute's overall program for financial support by industry, and which constitute the heaviest users of the Libraries. Approximately forty-four of these companies borrow two-thirds of all interlibrary loans to industry. Three companies account for 50 per cent of such loans. (Stanford noted nine firms accounting for 87 per cent of their 13,371 annual transactions.) As of this writing, changes in M.I.T.'s present fee structure and staff organization for servicing industry are under consideration.

At present, M.I.T.'s level of activity for industry is over 6,000 direct or interlibrary loans per year and around 12,000 volumes handled annually for photocopying requests. These figures do not include several thousand bibliographic citations and reference questions asked of the staff throughout the library system, nor photocopying on a cash and carry basis from Xerox 914 copiers.

Actual costs are difficult to ascertain without detailed accounting, but even estimates are helpful in planning how, and how much, service can be extended without jeopardizing the library's first responsibility to students and faculty. When ones does establish fees, good service is implied and must be provided through suitable procedures and staff arrangements, whether in a special department, or diffused throughout the library system. Each library must decide its own best arrangement in accordance with local conditions.

Although it is commonly acknowledged that industry and some government agencies will continue to depend upon universities for

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part of their information needs, a few of the larger companies are becoming increasingly self-sufficient. One librarian wrote that 50 per cent of her interlibrary borrowing is from intra-company libraries, 40 per cent from nearby universities.⁹ This expansion of libraries in the bigger companies has brought about an interesting phenomenon mentioned in the same letter—smaller special libraries increasingly use industrial research libraries with large holdings for their interlibrary borrowing, possibly to avoid fees of a university library, thus causing a potential burden on the larger company. Will they have to start charging for service too?

Statistics and more detail concerning the attitudes of industrial research organizations toward academic libraries will be revealed in a doctoral dissertation being done by Harold J. Mason for the School of Library Service, Columbia University, under a contract with the U.S. Office of Education. Questionnaires have been sent to 449 industrial libraries, and the 62 academic library members of the Association of Research Libraries. This project is one of several indications that the relationships between academic and industrial libraries are of considerable concern to library administrators.

At its meeting of July 13, 1963, the Association of Research Libraries devoted its program to the topic of service to off-campus individuals and groups. All three papers^{5, 10, 11} revealed that, aside from problems caused by students of other universities, the most pressing need was for the control of library use by business and industry. In fact two of the papers dealt almost entirely with this subject.

Robert Muller, in a long and thoughtful paper, concerned himself particularly with the obligation of a university library to render service to outsiders, and whether or not this should be free service. He considered especially the tax-supported institution. Muller explored fully the argument that such institutions should provide free service to tax-paying citizens and concludes:

Just because a company pays taxes, it does not bestow upon it the right to make use of governmental facilities unless such facilities are set up specifically for the purpose of serving all companies without charge. Universities . . . are primarily established for the purpose of providing higher education to registered students or to conduct research by an authorized staff . . . The 'thing' given away by a university library is often not conspicuously visible, but is just as real: It is staff time paid for by appropriated funds that might have been better spent on service to students and faculty.¹²

Muller's paper goes on to advocate a national or regional network of research libraries to serve scientific and industrial research. He recognizes that as long as some individual universities subsidize service to industry such a plan will not be developed.

A scheme along this line was proposed in 1960 by the New York State Commissioner of Education's Committee on Reference and Resources, recommending state support of five regional reference and research library systems to disseminate information needed both by students and industrial research personnel.¹³ Would such a state system evolve into a regional or national system? The establishment of a national library of science and technology has its proponents. Would this solve the problem of quick access? We now have the Library of Congress, the National Library of Medicine, the National Library of Agriculture, as well as libraries with special services for industry and the professions like John Crerar and Linda Hall. Until information transfer, including bibliographic identification, subject selection, and transmission of copy, can be tremendously speeded up and reduced in cost by technological developments, it seems unlikely that private research will change its habits of going to the nearest probable source of information.

It is true that the National Lending Library of Science and Technology seems to be working well in Britain, but the size of that country and its organization of research present an entirely different situation to that in the United States. Pooler and Weber¹⁴ feel that the formation of such a library in this country would be a costly duplication of government facilities already existing, those mentioned above plus National Aeronautics and Space Administration's Office of Scientific and Technical Information, Atomic Energy Commission's Division of Technical Information Extension, etc., and of the new specialized information centers established in line with recommendations of the Weinberg report.¹⁵ Much more natural, and simple, would be the establishment of more plans like those at M.I.T. and Stanford in some fifty or more university libraries strategically located in the United States.

One interesting new approach to industrial cooperation is the investigation by Harvey Mudd College, Claremont, California, conducted under a grant from the Council on Library Resources, of the possibility of establishing a science library to serve both the academic and industrial community.¹⁶ The college surveyed its own research needs and the holdings and activities of some fifteen companies in

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the area, and studied those companies' interlibrary loan requests from the California Institute of Technology. Estimates were made of the number of journal subscriptions needed to satisfy the total demand with fast reproduction service. Emphasized in the proposal is the design of an automated system of storage, and keyword searching of journal articles to produce lists of call numbers. Cost estimates for setting up and operating such an information retrieval system have been given, including a staff of indexers and machine rental. It is proposed that if thirty-five companies subscribed, the average annual cost would be about \$5,500 apiece. Currently an advisory committee of industrialists is working with the college to establish a pilot program.

Another such venture, one already established, is the Associated Science Libraries of San Diego.¹⁷ Members include three companies, one public library, one college, one university, and a government laboratory. The intent is to increase resources of the area by avoiding unnecessary duplication of expensive publications, by providing rapid access to information for scientists and engineers by facilitating loans, by referring the inquirer to the best possible source, by giving direct access to materials, and by providing bibliographic assistance.

Probably the greatest step forward in industry's access to research materials, and the ease with which academic libraries can supply it, lies in the development of the new hardware and software—computers, programs, consoles, microfilm coded for retrieval, remote viewing of card catalogs, facsimile transmission of book pages, and text printed out at the touch of a button. Photocopying instead of loan has revolutionized the relationship of industrial and university libraries. Surely a second revolution will occur when a large library has its entire contents indexed in a computer instead of in a card catalog, and when a company, paying for the service by amount of use, can plug in from a console in its own shop, find the items wanted, and have full text or information immediately in hand. When complete systems are available, possibly ten to fifteen years hence, the industrial and academic research communities may be almost one and the same, their information sources linked together into a complete network of information transfer.

References

1. Jackson, Eugene B. "Special Libraries," *Library Trends*, 10:219, Oct. 1961.
2. Nicholson, Natalie N. "Service to Business and Industry," *Library Trends*, 10:488-502, April 1962.

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3. Graziano, Eugene E. "Interlibrary Loan Analysis: Diagnostic for Scientific Serials Backfile Acquisitions," *Special Libraries*, 53:251-257, May-June 1962.
4. Ottemiller, John H. Letter dated Feb. 16, 1965.
5. Weber, David C. "Off-Campus Library Service by Private Universities," *The Association of Research Libraries, Minutes of the Sixty-Second Meeting*, July 13, 1963, Chicago, p. 36.
6. Nicholson, *op. cit.*, pp. 494-495.
7. Pooler, Jack, and Weber, David C. "The Technical Information Service in the Stanford University Libraries," *College and Research Libraries*, 25:393-399, Sept. 1964.
8. *Ibid.*, p. 398.
9. Griffin, Marjorie. Letter dated March 15, 1965.
10. Muller, Robert. "Meeting the Library Needs of Industry," *Association of Research Libraries, Minutes of the Sixty-Second Meeting*, July 13, 1963, Chicago, pp. 14-24.
11. Andrews, James C. "Comments on the Off-Campus Research Facility and its Library," *Association of Research Libraries, Minutes of the Sixty-Second Meeting*, July 13, 1963, Chicago, pp. 8-14.
12. Muller, *op. cit.*, pp. 17 and 14.
13. New York (State) University, The Commissioner's Committee on Reference and Research Library Resources. "A Cooperative Program for the Development of Reference and Research Library Resources in New York State; An Interim Report to James E. Allen, Commissioner of Education." Albany, New York, 1960, p. 28.
14. Pooler, *op. cit.*, pp. 398-399.
15. U.S. President's Science Advisory Committee. *Science, Government, and Information: The Responsibilities of the Technical Community and the Government in the Transfer of Information; a Report*. Washington, U.S. Government Printing Office, 1963.
16. Harvey Mudd College, Science and Engineering, Claremont, California. *A Joint College/Industry Library with Automata*. Washington, The Council on Library Resources, Inc., 1964.
17. Associated Science Libraries of San Diego. *A Plan to Use and Improve Community Science Information Resources through Interlibrary Cooperation*. Prepared by the Committee for the Associated Science Libraries of San Diego, California, 1963.

ADDITIONAL REFERENCES

- Schwegmann, George A., Jr. "Some Speculations on the Future of Interlibrary Loan," *Special Libraries*, 55:216-220, April 1964.
- Flegal, Jean E. "Interlibrary Loan Practice in Small Special Libraries," *Special Libraries*, 55:221-222, April 1964.