THE UNION CATALOGUE IN THE ERA OF OPEN SYSTEMS INTERCONNECTION

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ABSTRACT

Describes the development and uses of union catalogues and examines the impact of modern technological changes, in particular the rise to prominence of bibliographic utilities and distributed networks, on the traditional concept of union catalogues. The author concludes that by the mid-1980's, when computer-to-computer linkage of libraries will be commonplace, the large monolithic highly centralized union catalogues will become obsolete, except as cataloguing source files. "Other union catalogue-based functions, such as acquisitions, circulation, public access, will be performed locally, using mini-computers, interconnected from library to library through telecommunication links

LE "CATALOGUE D'UNION" DANS L'ERE DES SYSTEMES OUVERTS INTERRELIES

RESUME

Après un bref examen au développement des "catalogues d'union", cette communication évaluera l'impact des changements technologiques sur les concepts traditionnels. Avec les progrès qui sont faits pour relier les systèmes et le concept de modèles à systèmes ouverts interreliés, nous pouvons nous poser la question suivante: "Est-ce que le très large et unique "catalogue d'union" remplit encore une fonction nécessaire?

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INTRODUCTION

The title of this paper addresses two concepts -- union catalogues and open systems interconnection. The first, union catalogues, is familiar to librarians while the second, open systems interconnection, is a recent addition to the jargon of library and information science.

Many definitions exist for a union catalogue. One which has been widely accepted and which was used by the Canadian Union Catalogue Task Group is: "an inventory common to several libraries and containing all or some of their publications listed in one or more orders of arrangement". (Willemin, 1966)

Open systems interconnection is a phrase which is used "to denote standardized procedures for the exchange of information among terminal devices, computers, people, networks, processes, etc. that are made "open" to one another by virtue of their mutual use of a common set of data structures and procedures". (Buchinski and Islam, 1980)

In other words, with open system interconnection, existing automated library systems can be linked together and the large monolithic union catalogue as we know it today can go the way of the dinosaur and other prehistoric creatures. However, before relegating to the graveyard the catalogues we librarians have worked so diligently to create, let us look briefly at the development of union catalogues and their benefits.

DEVELOPMENT OF UNION CATALOGUES

It appears that the first attempted union catalogue began towards the end of the thirteenth century. This catalogue, known as the "Registrum librorum Angliae", listed the holdings of the English monastery libraries. This was an unsuccessful effort in that it was never completed. (Strout, 1956)

Perhaps, within the confines of North America, the most

significant union catalogue was the one developed by the Library of Congress. This catalogue has existed since 1901 and contains accession records from both American and Canadian libraries. Other union catalogues sprang up throughout the United States, but the National Union Catalog is by far the largest. (Cronin, 1964)

In Canada, the National Union Catalogue has only been in existence since 1950. Other early Canadian union catalogues were in Nova Scotia, which began in 1950, and the catalogue maintained by the Saskatchewan Provincial Library, which dates from 1958. (Canadian Union Catalogue Task Group, 1976)

With the advent of library automation in the late 1960's and early 1970's, the viability of large card union catalogues came into question. The problems of maintaining large card files are well known and need not be reiterated here. Automation was seen as the tool which would free us from the tyranny of the 3 x 5 catalogue card.

Before looking at the changes in approach which the 1970's brought, let us pause to reflect on the reasons why union catalogues were created in the first place.

BENEFITS OF A UNION CATALOGUE

Union catalogues traditionally have fulfilled a number of functions. The Canadian Union Catalogue Task Group in its Final Report stated that the function of a union catalogue was:

> - to locate publications and determine their existence in libraries, which function contributes to the provision of more general access through the interlibrary sharing of resources, and to the possibility, not yet that often exploited, of avoiding the unnecessary duplication of works among libraries. Secondarily, a union catalogue can be used under certain conditions to provide the bibliographic information which can be of assistance to other libraries and individuals in [the] cataloguing of their collections, and in the preparation of bibliographies. (p.5)

This statement of functions underlines the potential benefits which can be realized from union catalogues:

- Improved interlibrary loan services. As the purchasing power of library budgets decreases, use of existing resources within a geographic area must be maximized. Union Catalogues can assist librarians to improve the effectiveness and efficiency of interlibrary loan services by
  (a) improving the routines for verifying requests, and

(b) providing locations for the requested item. Both of these improvements are realized because a union catalogue provides access to a large file of data.

- Reduction in the costs of cataloguing and acquisitions. A union catalogue makes available a large source file which serves to reduce the amount of original cataloguing as well as assists with the verification of bibliographic information during pre-order and pre-cataloguing searching routines.

- Collection rationalization. As noted by the Canadian Union Catalogue Task Group, a union catalogue can be used as a tool for rationalizing collections between institutions. However, other than a few attempts which primarily involve serials cancellations, large scale collection rationalization has not been undertaken.

In order to reap the benefits which can be realized from a union catalogue, libraries must be willing to cooperate and share. Cooperation is not something which comes easily, since it requires a relinguishing of local autonomy. In fact, it has been characterized as "not exactly illegal when practised among consenting adult librarians, not is it totally immoral, but it is unnatural". (De Gennaro, 1980)

THE 1970's UNION CATALOGUES/BIBLIOGRAPHIC UTILITIES/NETWORKS

The early 1970's saw the emergence of the bibliographic utility, "an organization that maintains online bibliographic data bases, enabling it to offer computer-based support to any interested users, including national library network participants". (Dataflow Systems, 1978) This definition encompasses the two key components of a bibliographic utility, a large data base, also known as an online catalogue, and computer-based support for various library operations.

The largest of the utilities, OCLC (Online Computer Library Center), was founded in 1971 and now counts all types and sizes of libraries amongst its membership. Two other utilities exist in the United States:

- WLN "Washington Library Network), founded in 1976, serves libraries throughout the Pacific Northwest, and
- RLG/RLIN (Research Libraries Group/Research Libraries Information Network), which draws on major research libraries for its membership.

In Canada the only major bibliographic utility is UTLAS (University of Toronto Library Automation Systems) which, like OCLC, is a multi-type library network.

The utilities began by offering shared cataloguing services and by maintaining the MARC source files. As the data bases grew, the participants began to actually realize the benefits of union catalogues, as ready access was obtained to other libraries' files. The data base could be used for functions such as verification of citations, verification of orders, and location of materials for interlibrary loan, as well as cataloguing (i.e., all of the major functions attributed to union catalogues).

Almost without realizing it, libraries found themselves involved in networks, which can be defined as:

- two or more organizations engaged in a common pattern of information exchange through telecommunications links, for some common objectives

- an interconnected or interrelated group of nodes. (Dataflow Systems, 1978)

The majority of bibliographic utilities in the 1970's were highly centralized and typically were configured as star networks. Before long the disadvantages of these monolithic structures, including bottlenecks in the system, costs of adhering to bibliographic standards (Cooke, 1977), governance problems, and loss of autonomy, became apparent.

The issue became one of maintaining the service benefits realized from the availability of a large union file without imposing the penalties of a monolithic centralized system. Advances in technology pointed to the solution -- distributed networks.

In a distributed network those functions which require a large file but typically have a low transaction rate, for example, maintaining cataloguing source files, would still be performed centrally. However, other functions which have a high transaction rate and do not require access to source files, i.e., acquisitions, circulation, or public access, would be performed locally on mini-computers. (Cooke, 1977; Beckman, 1978)

While a distributed network will undoubtedly lessen the pressure for libraries to conform to rigid bibliographic standards, a new standards problem has become evident. Minimal bibliographic and coding standards will still be required but more important are standardized protocols for computer-to-computer communications.

A protocol can be defined as "a set of communication conventions, including data formats and procedures which allow two or more network entities to communicate with each other." (Buchinski and Islam, 1980) Once protocols have been established and computer-to-computer communication is available on a widespread basis, a nationwide distributed bibliographic network may become a reality.

THE 1980's: THE EMERGING NATIONWIDE BIBLIOGRAPHIC NETWORK

The first recommendation of the 1976 Canadian Union Catalogue Task Group states:

> "That the Government of Canada, working through its established agencies the National Library of Canada and the Canada Institute for Scientific and Technical Information, and in cooperation with the provincial and territorial governments and libraries and with any other governments, organizations and institutions responsible for maintaining libraries, assume responsibility for planning, implementing and operating a Canadian Library Network, the objectives of which would be, on behalf of all residents of the country, to equalize opportunity for access to the contents of libraries in all provinces and territories, and to make possible the cost-effective use of total Canadian library resources." (Canadian Union Catalogue Task Group, 1976)

This is a lofty ideal but, at least in the United States, the advisability of a nationwide network has not received universal acceptance. One dissenting voice is De Gennaro, who states that "a national network embracing all libraries and providing all types of services is neither a realistic expectation nor a desirable goal". (De Gennaro, 1979) Such a network has also been characterized as a "patrician extravagance ... a fevered, psychedelic vision whose patterns communicate meaning only to an anointed few". (Malinconico, 1980)

Despite the controversy which surrounds the question of a nationwide bibliographic network, studies are being conducted in both Canada and the United States to determine the most cost-effective means for its creation. These studies are concentrating on distributed networks which link existing automated systems and utilities.

A recent study on the linking of the bibliographic utilities in the United States investigated three alternatives:

- direct tape delivery via mail of records requested in native mode,
- online/native mode via dedicated line, and
- online/translation mode via dedicated line.

In the end, the investigators recommended that "work should begin immediately to connect the host computers used by OCLC, RLG, WLN, and the Library of Congress. The goal of the linking project should be to implement an online "translation mode" link of bibliographic and authority files by the end of 1984". (Smalley et

al., 1980) if this project proceeds, there will be a nationwide network which can provide the benefits of a union catalogue but without the disadvantages associated with a single monolithic catalogue.

In Canada the Bibliographic Interest Group, consisting of CISTI, Carleton University, Université de Québec, University of Waterloo, University of Guelph and National Library of Canada, is participating in the iNet trial. The group will be undertaking several projects which are designed to demonstrate the effectiveness of new telecommunications technology in providing access to collections. If this project is successful, it will usher in the era of computer-to-computer communications for libraries and the death of the traditional union catalogue.

CONCLUSION

By the mid-1980's it appears that computer-to-computer linking will be available to libraries. This capability will allow libraries to search each others' files to request items for interlibrary loan or to transfer a cataloguing source record from another library's file into a local file. It may even be possible for libraries, such as the University of Saskatchewan, to discontinue the maintenance of a MARC file. If the National Library's MARC files can be cost-effectively searched and records can be transferred into a local cataloguing file, why should a library maintain its own source files? National and regional union catalogues will not be required since, as mini and micro-computers become less expensive, most libraries will be automated. Regional networks linking existing library systems will become even more prevalent, and eventually every library will be a member of at least one network.

Technology is on the verge of making a truly distributed network a reality, if we can only solve the political-jurisdictional issues associated with true cooperation and sharing in an open environment. We can then concentrate our efforts on the new, innovative services which users who grew up with micro-computers will be demanding. The challenges of technology for libraries have only just begun!

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