INFORMATION NETWORKS IN CANADA
FOR THE ERA OF THE COMMUNICATION SATELLITE

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ABSTRACT

From 1965 to 1974 there has been a steady increase in
the amount of effort in Canada devoted to the creation
of specialized information networks and information
clearing houses and documentation centres. Some of the
main achievements are analysed and commented upon from
the point of view of changes taking place in communica-
tion policies in Canada. The need for planning which
will integrate separate activities is pointed out.
(De 1965 à 1974 il y a eu un accroissement d'effort au
Canada consacré à la création de reseaux d'information
spéciale et centres d'information et de documentation.
Les accomplissements essentiels sont analysés – et com-
mentés au point de vue des changements effectués dans la
politique sur la communication au Canada. Le besoin de
planification pour intégrer les activités séparées est
indiqué.)

The advantages of providing rapid communication possibilities
for the users of existing computer data bases that form a part of in-
formation systems available within Canada or abroad, is becoming of
more concern to this country's library and information planners. The
past 10 years have seen a vast increase in the number of such data
sources, both bibliographical and non-bibliographical, and we are now
at a point when more effort must be devoted in Canada to organizing and
developing the use of machine readable sources.

Canadian university librarians were told by Dr. Robert Downs in a
survey published by the Association of Universities and Colleges of Canada
in 1967 that they should not put great faith in telecommunications as a
means of meeting the immediate needs of library users (Downs, 1967), yet,
at the same instant, Canadian industry was developing methods of utili-
zing computer-stored records and exchanging production and sales infor-
mation from one end of the country to the other by broad-band data commu-
nication. This difference — between the goals of business and commerce,
and those of academic and research libraries — indicates to me something
of the lag in planning and adapting newer methods of communication to the
needs of information services in Canada.

The Report of the Special Study of the Science Council of Canada and the Canada Council on the role of Federal Government in support of research in Canadian universities recommended that the Federal Government ensure that the information transferral needs of Canadian research libraries be a part of the specifications for any national communication system which might be developed. The Report urged that the Federal Government reserve a number of prime channels in all broad band transmission systems developed in Canada in order to meet these needs. The Report pointed out that it was unlikely that communications systems would be developed solely for the needs of information transfer, but it would be very useful to use subsidized common carriers for this activity. (Science Council of Canada, 1969)

An example of a Canadian information system

Since April 1969, the National Science Library of Canada has been providing access to data bases of scientific and technical information in machine readable form and, recently, in co-ordination with other government departments, access to data bases in agriculture, geology, and the humanities and social sciences. In 1973 the library subscribed to more than a dozen services from the United States at a cost of approximately $130,000 a year and made the contents of these services available to approximately 1700 subscribers who represent a considerably larger group of individual users. Approximately one half of the users of these data bases are staff of federal government departments engaged in research in Ottawa and elsewhere in Canada. Over 100 of them are registered by the National Library, another 100 are co-ordinated by the Library Services of the Geological Survey of Canada, and a further 120 by staff members of the Department of Agriculture. The number of users in industry in Canada is about 175, and there are about one half the number of users in universities and colleges as there are in the federal and provincial government services. (National Science Library, 1973)

A Canadian on-line enquiry (CAN/OLE) project has now been initiated, with full implementation to be in early 1974. The project will be restricted to begin with to fifteen CAN/OLE centres accessing the following data bases: Biological Abstracts (1972 (1/2), 1973), Chemical Abstracts (1972 (1/2, 1973), Engineering Index (1970-73), Information Service in Physics, Electrotechnology, Computers and Control (INSPEC) (1970-73).

Applications to establish CAN/OLE centres have been received from more than half a dozen centres in Ottawa and at least that many in other parts of Canada. Centres in Calgary, Halifax, Toronto and Vancouver have expressed keen interest and may be added later.

Canadian Telecommunications Planning

Under the auspices of the United Nations, UNESCO, and the International Telecommunications Union, various reports have been prepared indicating that in many parts of the world broadcasting satellites for local reception will probably come into being in the period after 1975, whereas those for direct individual reception will not come into use until the period about 1980. (IBI, 1972)

Frequency allocations for satellite broadcasting purposes, including requirements for Canada, were decided by the World Administrative Radio Conference for Space Telecommunications which met in July 1971 and allocated frequency bands. The decisions of this meeting came into force in January 1973 and we already are beginning to see their application. Existing Canadian communication satellites supply the equivalent of four television channels, each one of which can carry 600—900 telephone or data circuits. Most of these data circuits are already allocated, but the capability exists in future Canadian satellites for expanded circuit capability.

At a time when more than $5,000,000 a year is being spent by a single group of health and mental health authorities in the U.S.A. on the development of world medical and biological information services, it is becoming readily apparent that it is more effective to store the output on a single computer base than to duplicate it.

The information services of the National Science Library are, to date, the only major Canadian efforts to provide for rapid access to specialized data for library and information centre users. Only a small amount of effort is being invested in attempting to develop additional services.

The Director-General of Research for the Ministry of State for Urban Affairs, Ottawa, has declared that the Federal government will look favourably on applications for funding for a national network linking existing and prospective information centres in the field of urban affairs. (Urban Research, 1973) This action follows a report by the Canadian Council on Urban and Regional Research published in 1972, which pointed out the fragmented state of urban information exchange in Canada, particularly concerning applications at the local level. It was pointed out in the report that the establishment of a national clearing house service would go a long way towards regularizing the distribution and availability of urban research information produced both in Canada and abroad. (Barcelo, 1971) An example of the way in which urban planning is already using machine readable information on a global scale is given by John Dakin in referring to a researcher in Cambridge, England, using a computer in Don Mills, Ontario. (Dakin, 1973)

In 1973, the Social Science Research Council and the Association of Universities and Colleges of Canada established a data clearing house for the social sciences in Ottawa with the aid of a grant of $100,000 from the Canada Council. The purpose of this clearing house is to register existing machine readable files of social science data produced in Canada in industry, government and universities, and then refer potential users directly to the holders of the data. (SSRCC, 1972) This process will be carried out in the Clearing House using machine readable methods of recording, coding and disseminating information concerning files. It can be appreciated that when all of the economic and social data available on machine readable files is recorded, a very complex and increasingly large store will need to be searched. It will become necessary for the Social Science Data Clearing House to consider telecommunication methods of transmission in order to meet the needs of its users.

An early evidence of the possibility of an organized Canadian interlibrary telecommunication network was the demonstration sponsored by the Canadian Library Week Council, Ottawa, in 1966, which stimulated the acquisition of Canadian National – Canadian Pacific Telex equipment by over 25 libraries in that year. There are now over 340 Telex connected libraries in Canada, and what is needed now is a fully fledged demonstration of the utility of a national computer—based communication information system in order to awaken library and information services to the realities of to-day's information technology.

Only by such a successful demonstration will it be possible to overcome the considerable lag on the part of Canadian libraries and information services in utilizing more appropriate methods for inter-library interconnection than either present use of Telex, or almost non—existent computer—based information interchange. The Senate Special Committee on Science Policy has pointed out that an efficient information network in Canada is an indispensable tool for the formulation of a coherent and realistic science policy. The Commission emphasized that the reports that had been prepared for the Science Council and the Science Secretariat in 1969 and 1970 had strongly urged that there should be a more effective use of the existing information technology in order to serve Canadian users and the development of a more comprehensive infor-mation system in our country. (Senate, 1972)

Results of recent studies

For the past decade, we have been progressing in Canada by sporadic and piecemeal investigations into the possibilities of a coherent national library network. These efforts unfortunately have weakened the willingness of subject specialists and individual groups of users to join forces in any joint approach to the use of communi-cation resources. This matter was touched upon most recently in the report to the Commission on Post Secondary Education in Ontario, prepared by a member of the Canadian information industry. (K.P.M., 1972) This study considered the characteristics of academic and university libraries in that Province, their operating objectives and methods and recommended that any changes caused by library automation be beneficial to the user, and cost effective. The study pointed out that within the Province at that time there was an estimated annual expenditure of $3,000,000 on library automation and that Ontario was spending more than any other Province in this field.

It was considered in the study that automation systems could be developed which would link together not just the library services of Ontario but also other Canadian, North American and world libraries.

The study reported a dearth of practical action. Although a number of individual enquiries had been carried out, these were con-sidered to be mainly theoretical and had failed to produce practical action programmes. It was urged that systematic development of the one or two exceptions, that had resulted in practical achievement, should be strengthened.

It was considered that there was considerable duplication of automation development. Such services as a bibliographical data base at the University of Toronto, a data circulating control system at the University of Guelph, the SDI service at the National Science Library and an acquisition system at the College Bibliocentre in Toronto were taken as examples of noteworthy projects, but it was considered that efforts were being concentrated on duplicating rather than complementing these developments.

Included in the proposals of the study were those for more highly developed internal organization plans within libraries so that they could develop systems that would respond to the needs of their uses. It was felt that co-ordination was most urgently required. The utilization of the existing experience was felt to be a major requirement, instead of each library independently re-inventing functions for document retrieval, selective dissemination of information, automated acquisition, etc.

A major proposal dealt with the need for joint Federal and Provincial action. It was felt that additional Federal assistance should be forthcoming to libraries in all Provinces, particularly if they were to be utilized by all segments of the country.

While the above study was criticized by the library and information science profession in Ontario as lacking in thoroughness, it did raise certain basic points which are still relevant today.

Situation in public and special libraries

In the large municipal public libraries which serve more than thirty of the major urban centres of Canada, little or no automation activity of information services is recorded. Although public libraries are spending over $100,000,000 a year in the provision of services and the organization of materials, they lack any research activities for automation of information and resources and none undertake any programme of selective dissemination of information using computer-based data.

With regard to the specialized libraries in government departments, or industrial firms or commercial establishments in all parts of Canada, although several hundred such libraries and information centres exist, there are no co-ordinated schemes of machine readable access to link resources of these libraries being prepared at the present time, with the exception of those included in the scheme of the National Science Library.

I hope I have said enough to convince readers that we must prepare more effective measures than have been done up to the present for utilizing machine readable information sources in Canada.

A contribution to this which the Canadian Library Association hopes to make in June of this year is the holding of a national conference with its theme "Planning Library and Information Systems and Networks in Canada." The Canadian Library Association consists of five national "type of activity" or "type of library" associations, namely:

Canadian Association of College and University Libraries (CACUL)
Canadian Association of Special Libraries and Information Services (CASLIS)
Canadian Association of Public Libraries (CAPL)
Canadian School Library Association (CSLA)
Canadian Library Trustees' Association (CLTA)

Need for Comprehensive Planning

It can be seen by this account of efforts in the past ten years in the development of information services and systems in Canada that there has been the greatest difficulty in securing effective methods of co-ordinating planning which is done at the centre of our national organi-zational structures, and the planning which is done on a regional, provincial or local level. The planning taking place away from the centre has been characterized by very important initiatives and has achieved some significant local results. However, there has been an almost total inability to integrate it with activities in other areas in the country. This would appear to be one of the main requirements for the future.

In 1974, the lesson of the need for joint and consolidated planning for a library and information network system now has been learned. With the leading role now being assumed by the Federal Government in the develop-ment of library and information systems in Canada, I think that we have learned our lesson. On the other hand, we can take another ten years still attempting to adjust our thinking to the age of the satellite communication that now has arrived.

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