TV AND PHONE LINE - CHALLENGE TO THE LIBRARY CATALOGUE

LA TELEVISION ET LA LIGNE TELEPHONIQUE: UN DEFI AU CATALOGUE DE LA BIBLIOTHEQUE

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ABSTRACT

The emerging economic climate is making it increasingly difficult for libraries to cope with the cataloguing of new acquisitions using the accustomed cataloguing methods. Indexing services have established effective user access to citation information. The emerging new technologies of bi-directional cable TV, Teledon, house computers and versatile and economical telecommunication foreshadow a trend towards generalized information access provided by information resource generators and brokers to users at home. Information involving books will be no exception.

The interpretive and discretionary nature of present day library cataloguing methods and the unit entry catalogue does not appear to be in line with the orientation of the new emerging services.

Some criteria are suggested towards alternative handling of bibliographic data within the total context of information services that can be expected to be carried by public access information facilities.

RESUME

Le nouveau climat économique rend de plus en plus difficile pour les bibliothèques le catalogage de leurs nouvelles acquisitions par les méthodes catalographiques traditionnelles. Les services d'indexation offrent à l'usager un accès efficace à l'information bibliographique. Les nouvelles technologies de cablodiffusion bi-directionnelle, Télidon, les ordinateurs de maison et des télécommunications de plus en plus sophistiquées et économiques laissent prévoir une tendance vers un accès généralisé de l'information à domicile par l'entremise de producteurs et de courtiers en information. L'information documentaire n'y fera pas exception.

La nature interprétive et discrétionnaire des méthodes catalographiques actuelles dans nos bibliothèques et l'entrée catalographique de base ne semblent pas appropriées à l'orientation des nouveaux services.

L'auteur propose quelques critères pour un traitement des données bibliographiques mieux adapté au contexte global des services

d'information qui seront vraisemblablement offerts par toutes ces nouvelles installations d'accès public à l'information.

TV AND THE PHONE LINE

The purpose of this paper is to focus attention on the urgent need to recognize far-reaching implications for the public in the current development of information service technology, and to urge action by this Association and all information-service professionals. As in similar previous instances, we are about to witness another case of a new technology being established, guided primarily by technological interests and commercial motives. I am referring to the current merging of the computer-processing, information-display, and communications technology to provide information services on a massive scale through teletext and videotex utilities and services.

The emerging Telidon, Prestel, Viewdata, Telematique and similar teletext and videotex systems signal the beginning of a new and dynamic service spectrum, merging the advantages of the specificity of the newspaper, the visual scannability of the TV, and the reciprocating communication of the telephone. This development is presently being spearheaded in Canada by the development of Telidon and the impending introduction of an "intelligent interface" terminal by the Bell Telephone Company and in US by several videotex systems, such as the low-cost GTE Telenet keyboard/CRT device featuring full ASCII character set and full support of videotex and other data-base applications as well as automatic establishing of communications.

The commodity carried or serviced by these utilities and facilities is information, and it is safe to assume that these services eventually will cover the entire spectrum of information from text to elaborate graphics, and from simple data to complex and interactively presented teaching and research information. Involved in this development will be public interests and proprietory interest, technical open-endedness and technical hedging, uniformly open and individualistically restrictive formalisms. As the first major services begin to jell, patterns will emerge and precedents will be set. If left to their own free development, incompatibility of formalisms, categorizations and definitions of the information carried by these services will develop, and with them emerge the familiar patterns of incompatibile services and frustrations to the users. Witness the incompatibility of library services, documentation services, indexing services, and information services, as they have developed during the last decade.

Given the nationwide corporate influence of this Association and our professional dedication to the best information service for our multifaceted society, today it is still possible to prevent our information-oriented objectives from falling victim to the least-resistance trend of technological development and the exclusive profit-oriented application. However, time is running out. There are two things that we ought to do now. One is to influence the formulation of

legislative and regulatory provisions in order to protect the universal addressability and formal compatibility of the information carried by information services from the domination of technological and economic interests alone. The other is to establish a generally acceptable data and indexing structure that should be imbedded in the required regulatory legislation. The impending impact of videotex technology is too pervasive and too great to be neglected and left to its own evolution.

Technological innovations tend to blaze their own trail of consequences, overtaking and often completely submerging the original objective of the innovation. The result is not only the emergence of an incrementally more useful technique for carrying out the intended tasks, but often this technique finds other new uses, some of which may be much more consequential, even revolutionary, than those which prompted the innovative technique. The innovative substitute for the horse-drawn carriage not only brought in its wake an immensely more powerful mode of transportation, but it also gave rise to a very much different mode of living and economic structure. Henry Ford hardly could have conceived the now crucially vital network of superhighways, to say nothing of the emergence of the suburban lifestyle with its shopping plazas and commuting, which in turn have brought about a radically different urban structure. The catalyst at the original turning point in this chain of developments was the comparatively very light and powerful internal-combustion engine.

The sillicon chip, housing complex and logically controllable electronic pathways, has begun its progressively pervasive catalytic role in many fields of application, perhaps most notably and irrevocably in the communications media. The modest analogue 'one way' carrier wire of voice communication is spreading out fast as a bidirectional network of digital superhighways, complete with its service stations. The television screen is beginning to extend its original role as terminal converter of broadcast signals, and is finding new and newer incarnations as an entrance and exit gate for the digital communications network. The traffic lights of this new communications system are managed by the sillicon chip in the form of memory boards, logic tables, data stores, processors, or many another form still called by the old fashioned name 'computer'.

An impressive fallout from this catalytic action has already solidified into routinely applied electronic technology around us. Many uses of this technology already indicate far reaching consequences. It is not only surprising but also unnerving and even scary that the electronic storage, inputting and outputting, electronic computation and communication capabilities of the new hybrid technology parallel so closely our own human facilities for remembering, listening, talking and

querying, logically analyzing and synthesizing, and our own nerve system for impulse transmission. Let us note these parallels. In both cases the common object is information oriented activity, and an impressive amount of it is beginning to be technologically manipulated.

Alvin Toffler, the author of Future Shock and his recent book The Third Wave (Toffler, 1980) sees the emergence of our information oriented technological development as a counterbalancing result of the disintegration of the present social development cycle which arose from the industrial revolution 300 years ago. Without necessarily subscribing to Toffler's thesis of an impending re-orientation of the social and economic world order, we must recognise that the rapid spreading of tele-communication of information and the growth of facilities atuned to home based information handling activities is quite pronounced.

In the technology involved in these activities we see readily available and affordable devices for electronic storage of information. Magnetic tape, especially in its economical cassette format, now used for sound recording, digital computer data recording and video recording, and the video disc with its high storage capacity, increasing affordability and potential for random access, have become accessible household items much as sound-storage media did in the preceding decades. In the area of input and output devices (i.e. connectors to the human sensory system) functionally ingenious devices are appearing on the market faster than they can be assessed. Many of these devices are priced low enough to be economical household items. Control of computation and the data processing function has benefited most from the Silicon Valley ingenuity and massive scale production of electronic microcomponents. Reasonable home-variety processors cost now less than many high quality home audio components. And finally, Ma Bell has already given us at an almost reasonable price an efficient communications network that allows our information handling gadgetry to chat comfortably with its likes over the phone line. All that is needed now in order to have our own private and affordable information access facility is the selection of the right components (or integrated devices) and host data bases to dial up. The centralized mode of information access, presently used by the Telidon system, is not the only access approach emerging now.

Today almost everybody has a telephone, and just about everybody has a TV. And that is enough for addressing and receiving the available information. Expansion to add further optional capabilities of local input, graphics handling, processing, and storage can be accomplished with modest additional investment. Thus it is now relatively easy and inexpensive to assemble and information access system, and the

potential of this availability has far reaching implications for information access on large scale.

Moveover since the general public interested in information service may find the component approach too complex, integrated devices and services are also becoming readily available. The projected 1982 price of the Telidon converter unit is about $300. The emerging videotex service vendors, packaging together the devices and their information services, appear to be confident of the widespread appeal of these services. The international Videotex 81 Conference in Toronto last week demonstrated impressively the Canadian Telidon system as well as the new videotex services offered by information service providers. Some of these will likely function as videotex utilities in the near future. The pattern of this development is so familiar.

The basic structure of these information services involves three principal elements: the medium of communication, the communication facilities, and the message substance. The communication facilities, aside from their technological sophistication, effective power and apparent simplicity, are the relatively easiest component to assess. The message substance, although apparently universal in its range potential, encompasses a variety of segments of the information spectrum, covering among others the fields of business and public information, education and entertainment. The purview and scope of our own traditional activities as information specialists constitutes only a small part of this spectrum. As responsible professionals we cannot afford to leave the disposition of the entire information spectrum to technical and economic interests alone, and to a likely isolation of traditional information and library services from the total information service.

The third and for us the most complex element is the videotex medium itself. It has three crucially important aspects, each of which can affect radically the character, accessibility and use of this new high potential mass medium. These are the technical, the economic and the data structure aspects of the videotex medium.

The technical aspect of videotex is shaped primarily by the technological development. It reflects the glamour of its capabilities, it offers the promise of new services, but it also possesses a dynamism which may determine the direction of its own development for its own purposes if left to itself. The economic aspect is the critical dimension that will determine the widespread accessibility and use of the new medium or may relegate it to limited and specialized uses only. It is our express concern that the technical and economic considerations do not out-balance the third and critical aspect, the data structure and data indexing as these encompass the conceptual, logical and

procedural formalisms for the inputting and outputting, the processing and transmission of the message substance.

For the general data structure and for indexing schematics of the videotex medium, I suggest, we carry a co-responsibility together with those who determine the technological development and those who will integrate this new medium in the socio-economic pattern of our society. Our responsibility here is to assure that the resulting data structure of the emerging services do retain the compatibility and the universality of access which we unfortunately failed to safequard in the development of computerized indexing services and library catalogue development a decade ago, while concentrating exclusively on library and indexing services separately.

The extent of accessibility to information depends largely on the breadth of its potential distribution. Therefore data definitions, formats and packaging which facilitate universally available access to a variety of information stores, and which allow ready processing of the obtained information in the home systems environment, play a crucial role in the practicality of guaranteeing maximal availability of access for the widest possible public at an affordable cost.

The core requirement for such universal accessibility is a generally accepted and readily understood way of data enumeration and citation that is easily usable by public, and that can cover all types of information, ranging form a simple enumeration of facts and entities to a more formalized citation of newspaper, magazine or other media information, to books referred to in isolation or in organized collections in libraries, and to static or moving image presentation. So far, no part of this information spectrum has been conceptually and structurally organized for automated processing in an integrated information environment. In whatever has been accomplished, most of the attention and effort has been devoted to three isolated information sectors and in a mutually incompatible way.

These three sectors are the definitions of factual quantitative or time-table data by banks, airlines, etc., the bibliographic definition and format for the use of book cataloguing (MARC), and a variety of citation definitions and formats in use by the various indexing services as offered to selected groups of public through specially trained intermediaries. We should also recall that these citation definitions and formats have evolved in a competitive and mutually exclusive profit oriented environment, while the bibliographic definition and format are the result of a design predicated on maximal inclusiveness, cataloguing universality, and the cataloguing process as conceived in the pre-automation era.

It is clear that neither of the definitions and formats for these three isolated segments of the information spectrum can serve as a common denominator across the whole information spectrum that will be covered by the new home and office oriented information services. From the point of view of the receiving audience, data structures with their content definitions and formats will need to be common and universal, be the message content a hockey game, a restaurant menu, a threatre billboard, a newspaper or magazine referral, an indexed literary or scientific item, or a list of books in the library.

The unifying focus of this expectation of users is universality, simplicity, and common accessibility of the information content; not the medium in which the information is carried, nor the type and character of this information. The provider of information service, and likewise the carrier, will also expect a measure of universality and simplicity, albeit moderated by some restriction to protect legitimate vested interests.

The public and the individual home user (with emphasis on the individual) as well as the information service provider - be it the telephone utilities or special purpose information vendors - should be assured a certain universal level of definition and structure for the information they will receive or provide. General accessibility and compatibility of the information services in their full diversity across the whole information service spectrum are fundamental to the public expectation and entitlement, similar to the way general accessibility and compatibility is provided for radio or television broadcasting and broadcast reception. The establishment of a universal basic data structure is very urgent right now, when the first information-service data bases are being formed and when Canadian Telidon technology is about to play a most pervasive and influential part in determining the character of North-American information services.

What we need is an appropriate standard data structure along with a scheme of index levels, and consistency of presentation and citation of information items, oriented to currently prevailing technology of input, processing, communication and display. This standard should accommodate a self-explanatory system of data structuring, maximally economical in its simplicity, and directly oriented to the principal approaches to inquiry by the public. Such a standard should ensure compatibility between information components and information units carried by various information services. This is a fundamentally important requirement and should be assured by regulation on a national level, so that the emergence of information monopolies can be prevented.

Common definitions, common basic parameters and format should apply to all information carried by services, to ensure basic compatibility and exchangeability between various information bases, so that basic processing by simple home-based information processors can be performed.

A very important role in the standard structure should be assigned to topical subject orientation, both in easily handled classes and in widely understood terminology. The logic of this structure should assume no more than general public knowledge of our physical and conceptual world, and consistency of indexing levels should be preserved.

An equally essential aspect of this basic and universal information-item structure should be its ability to accommodate progressive expansion; expansion of definitions, parameters and formats and expansion of the topical subject orientation. This potential of upward specialization anchored in basic universality should facilitate selective depth of information services attuned to specialized interests and varied affordability, while at the same time giving the public open and affordable access to the general levels of information service.

If we believe that open access to information - with some special qualifications, of course - is one of our civic rights, then we need to take some essential steps now to assure it to ourselves and to the next generations. To permit segmentation of access by special or dominating interests - be they technical, economic, or conceptual - would lead to special conditions and prerequisites being applied, which in turn will result in restricted ability and affordability of information access for our society. We should learn from our recent errors in the sixties when at the time of the emergence of indexing systems and the MARC catalogue record structure, we found ourselves unprepared and without basic guidelines. With a mandated universality and compatibility for the basic structure of information indexing and information cataloguing, we could then have prevented the presently prevailing incompatibility between automated cataloguing systems and indexing systems. It is important to recognize that this incompatibility is fundamentally conceptual and not technical or technological by nature. For the public information service of the future to accept (even possible) conceptual incompatibility between various information services and utilities would amount to accepting segmentation of information service, and with it an implicit restriction of information through pricing and complication of access. Knowledge is power, and it is our responsibility to see that this power is democratically shared.

Free accessibility to information does depend largely on the universality of the medium that conveys it and ready access to the diverse services which carry it. We know that the extent

of our access to the information we obtain through reading is limited by the alphabets we know and the languages we read. Our access to broadcast information is dependent on the universality of the receiving apparatus that we have available. It is essential to the survival of our culture that the future trading medium of the information on which this culture thrives should remain maximally accessible. A most important pre-condition to this accessibility is the universality of the conceptual structure of the medium carrying the information service, so that the potential for segregation and restriction of access to parts of the whole information service spectrum, motivated by exclusive interest or gain, is prevented in the interests of the society. Our society is fortunate in having open and affordable access to the telephone service, and the radio and television broadcast. Our access to future public information services should be equally open and affordable, and we owe it to our democratic principles that we assure it, obtain it and retain it.

REFERENCE

TOFFLER, Alvin. The Third Wave. New York, Morrow, 1980. 544p.

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INFORMATION SPECTRUM

INDEXES

LOGICALLY STRUCTURED

STANDARDIZED

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SOUND	TEXT	MOTION
SPEECH TRANSCRIPTION	DATA STATEMENTS	MOTION PRESENTATION
SOUND PRESENTATION	FACT CITATIONS	ANIMATION
	TEXT SEGMENTS	
	TEXT	
	TEXT ABSTRACTS	
	LITERATURE CITATIONS	GRAPHIC
	CITATION FILES & SERVICES	INVENTORIES
	BIBLIOGRAPHIC RECORDS	LISTS
	BIBL, REC, FILES & MARC SERVICES	TABLES
		DIAGRAMMES
		GRAPHIC PRESENTATIONS
		DESIGNS

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INFORMATION SYSTEM STRUCTURE

ELEMENTS	ASPECTS	DATA BASES
MESSAGE SUBSTANCE	IDENTIFICATION/DESCRIPTION SUBJECTS INDEXING	
COMMUNICATIONS FACILITIES		
VIDEOTEX MEDIUM	TECHNICAL ECONOMIC DATA STRUCTURE	DEFINITIONS FORMATS TOPICAL/SUBJECTS INDEXING LEVELS