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Report on the Seminar on Access to Information

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REPORT OF THE SEMINAR

ON

ACCESS TO INFORMATION

HOW TO KNOW AND BE KNOWN

co-sponsored by

The Department of Communications

and

The Department of Regional and Economic Expansion

Carleton University

Ottawa

on

May 15 to 17, 1970

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Ottawa, 1971

This is a Report on the Seminar and does not necessarily represent the views of the Department or of the federal Government. No commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

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INTRODUCTION

How can telecommunications technology be used "to approach the ideal of the optimum amount of information being made available to the maximum number of individuals, groups and institutions?" What are the "economic and social benefits of doing so and the economic and social costs of failing to do so?"

These were the terms of reference of the Seminar on Access to Information held at Carleton University in Ottawa May 15 - 17, and co-sponsored by the Departments of Communications and Regional Economic Expansion, as part of the Telecommunications Environment Section of the Telecommission.

As the 90-odd participants soon found out -- and they included businessmen, engineers, computer scientists, social scientists, social workers, economists, lawyers and educators -- the terms of reference were a good deal broader than they appeared at first glance. The operative word was optimum, not maximum. Maximum information, some delegates warned, might bring more harm than good: social damage, in the case of minority cultures inundated by the values and images of the majority groups who control information systems; psychic damage, when an individual is subjected to an overwhelming barrage of information - packed messages.

The Seminar itself was organized around five panels: Technology, which covered all aspects of telecommunications from data processing and broadcasting to telephony; Social Aspects; Business Aspects; Information Overload, and Data Banks and the Public Interest.

Most panelists submitted position papers in advance. Each panel discussion was followed by a question period, and then the company divided into multi-disciplinary workshops. The Seminar closed with a plenary session where the report of each workshop was presented, and its recommendations discussed.

This report is divided into three chapters, the first of which presents an overall picture of the Seminar. Chapter Two contains a summary of the position papers, and Chapter Three records the conclusions of the meeting.

As in other seminars of the series, the nature of the topic provoked a confrontation between "technologists" and "humanists", with the sociologists as particularly vocal members of the latter group. Feelings reached the point where one distinguished scientist declared himself "sick and tired of being made to feel the villain for all the world's troubles." Businessmen also found themselves the target for criticism, to which they responded at times in exasperation, at times in anger.

And yet the confrontation appeared to take place less on ideological grounds than on those of intellectual style and approach. One group tended to ask: "What are the right answers?" The other: "What are the right questions?" The Seminar never found an effective balance between the two positions, but by identifying them, it did perhaps begin the painful process of developing a synthesis. After all, in both cases the operative word is <u>right</u>.

If few precise, orderly recommendations came out of the often heated discussions, they were not expected. The end result was what the organizers of the Seminar anticipated: a number of broad concepts for directing telecommunications technology in the interests of society, together with some specific suggestions on how government and industry might translate these ideas into action. It must be noted, too, that some proposals were so extravagant that one businessman was moved to comment: "If we remove all considerations of cost then of course technology can achieve anything you want it to." Even so, many people present would not have shared his confidence.

Chapter One

Alternatives to Anarchy

"The first thing which strikes me" declared Laval sociologist Jacques de Guise "is the anarchic nature of technological development. New inventions follow one another in geometric progression...[1] but their growth has almost never been planned or guided by human values or goals which were considered socially desirable."

Astonishingly few participants - considering the wide variety of their backgrounds and interests - challenged the thesis of de Guise's position paper. In his terms, technology responds to the "iron laws" of technical innovation and commercial profit - neither of which have much connection with human values or social goals. But how can society define these values with such precision that they may become clear-cut objectives for technological progress? What is really meant by such worthy generalizations as "equality" and "freedom" in the context of communications? Is access to information a want, a need or a right? And what are the minimum information needs within our society? These essential questions proved very hard, if not impossible, to answer.

But while participants wrestled with the problem of defining social goals, de Guise's basic contention received ample support from his fellow sociologists.

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1 cf. De Sola Price, Science Since Babylon, Yale University Press, 1961

"I am extremely concerned", said Thomas McPhail of Loyola University, "that technological needs have, by default, taken precedence over the quality and substance of human life".

Another sociologist, Benjamin Singer of the University of Western Ontario, argued that, "under the assumption that the market place responds to human needs rather than creating them, and that the technological process also fills needs in the most rational manner, we have made man fit into our communication technology rather than the other way around."

In most societies, said Singer, there are three types of communication channels: "inter-personal channels" involving direct man to man conversation; "inter-personal channels depending upon some form of technology", or man to man conversation by means of a machine such as the telephone; and "mass channels" in which the information flow is one way, and from machine to man.

"I would argue", said Singer, "that technology has engendered an overdevelopment of mass channels", which are the least satisfactory means of communication. And in particular, "the electronic media have generated problems of an individual and collective nature--pathologies--while contributing too little to the needs of individuals who exist in a state of very rapid social change."

Another phenomenon caused by unplanned technological growth was that of "information starvation", described by Diana Ironside of the Ontario Institute for Studies in Education: "While there is an information glut for some of us, a state of information starvation exists in our society for those with the least power".

This condition, said Miss Ironside, "appears as a phenomenon of critical dimensions to numbers of educators, community development workers, and other proponents of change in society. Libraries by and large are seen as middle-class institutions with an over-whelming bias toward the print medium.....Schools, government and community institutions, traditionally the purveyors of information, increasingly attend to unplugging their own strangled communications channels. The citizen's right to information has been eroded."

These speakers all argued that the incredible explosion of information technology over the past few decades has in fact brought very little improvement to the effective flow of relevant information through the political and social order. It has not improved the average citizen's access to information. Using the telephone as a case in point, Singer referred to a study conducted by his students in London, Ontario. It showed that "while, technically, the linkage of person to person was possible through the telephone, in a majority of cases they were not able to reach their objectives, usually significant officials in government, industry and community organizations."

Widening the Gap

In his opening remarks, the Seminar Chairman quoted the keynote speaker at an earlier Seminar as saying that "information technology, by its nature, reinforces the powerful"[1], and observed that this was in effect a challenge to the basic premise of the present Seminar: that access to information could be increased by proper use of telecommunications technology.

(1) Alan Westin of Columbia University, at the Seminar on "Telecommunications and Participation".

Several speakers gave examples of how telecommunications was in fact increasing social disparities, instead of reducing them. Jacques de Guise argued that while a telephone in Rimouski cost as much as a telephone in Montreal it was markedly less valuable, since the Montreal subscriber could make toll-free calls to at least 200 times as many subscribers as his counterpart in Rimouski. And the Montrealer is "connected to a network of more important subscribers." The same disparities exist said de Guise, in the case of television: "people in the hinterlands are paying directly (through taxes) or indirectly (through buying advertised goods) for broadcasts which they cannot receive".

A further aspect of inequality was raised by Duke Redbird. "The information flow", he said, "has an ethnic character which is not necessarily that of all who receive it". Information systems are dominated by the value-systems of the English and French-speaking middle class, although Indians and many other Canadians do not subscribe to them.

The social utility of television, that most pervasive of all telecommunication information systems, was questioned on at least two grounds. Singer observed that "it is a well-established cliche of mass society theorists that the mass media generate passivity or apathy", despite McLuhan's view that television generates participation. According to Singer, there is truth in both statements. But at present "we are in the middle of an information explosion which leads to an information overload in modern man; bombarded by ever-increasing rates of message transmission, he becomes fragmented and

disoriented. Nothing seems real or permanent, everything is transient .....Images, character, style, even his own identity are part of this sense of transience, breeding ever more insecurity."

Television-viewing may hamper active participation in another sense. As one workshop discussion noted, "television does provide an access channel to information, but by blocking out time which might have been otherwise spent on more productive uses, it could also be 'counter-informative'."

All these criticisms related largely to the unintended, accidental social consequences of information technology. But in a controlled situation, such as can be created in the business world, surely telecommunications can serve precisely defined needs. According to several businessmen at the Seminar, they could, but they often do not.

Mike Lucas of L&W Data Systems of Toronto remarked that many computerized information systems are build to suit the ideas of the designer of the system rather than the needs of the users--that is, they are technically-oriented rather than user-oriented. And he quoted a statement by one (unidentified) authority: "The information retrieval field has been plagued for many years by busy people spending large sums of money designing, or attempting to design, phantom systems for non-existent people in hypothetical situations with unknown needs."

"More information is being asked for by management than it can or knows how to use", said John Sealy of Sampson, Belair, Riddel, Stead, management consultants. "This demand is erroneously equated

with an improvement in the calibre of management...There is a lack in business of good yardsticks to measure performance, including the worth of information. Business is better at measuring costs than the value of information."

The Issue is Alternatives

As the Seminar progressed, it became evident that many criticisms were aimed, not at telecommunications technology but at the ways in which it had been applied. If some speakers criticized the failures of communications systems, others -- and indeed the critics themselves -- were excited by the opportunities which these same systems created.

"The issue is alternatives, giving people a choice, a real choice instead of a mass media choice, of alternative ideas, opinions, information, from which they can choose." This statement came from David Hughes, organizer of a citizens' group, Town Talk, in Thunder Bay, Ontario, and the man responsible for introducing the word 'alternatives' to the Seminar. Like de Guise's concept of technological "anarchy", "alternatives" became a theme-word in discussions.

"The problem we face is the total lack of alternatives, in a one-industry, and for practical purposes one-media town", said Hughes. To create these alternatives, "we realize that the citizens must have unhindered, direct access to the media, especially to cable television." The cable system in Thunder Bay reaches 84 per cent of all households, he explained, and the citizens' group wanted unhindered use of one of the cable channels--for "a platform where

anything can happen." Among the things about to happen was Town Talk, a public affairs program. "We already have the Public Library budgeting for terminals for remote use as information centers.....they're going to set up cameras in the lounges; people would walk in and say their piece before the cameras; these would be recorded back at the program center and strung together as programs on different subjects." And the result: "People would literally create their own programmes. We don't know what will happen, but we'll have an environment that reflects reality, instead of reality filtered through the mass media."

People as programmers, instead of objects to be programmed at. This was the essence of the Thunder Bay project. Another way of extending information alternatives, this time by bringing the outside world to an isolated community, was described by Duane Starcher, Director of Educational Television at Memorial University, Newfoundland.

In a recent experiment, video tapes were mailed out to six small communities in rural Newfoundland and Labrador, so that adults could take a third-year university credit course on "The Psychology of Learning." After an attempted telephone hook-up between the students and the university failed because of technical difficulties, student questions were recorded on audio tape and sent to the university , where the professor's replies were taped, and mailed back in return.

"This was an interim solution--of course we'd like to offer live television courses--in a part of the country where interim solutions are the only kind of solutions we'll be able to afford for a long, long time." And it worked: the adult students in the outports passed the course with average marks as high as students taking the same course at the university. In the 1970-71 academic year, the program would be extended to 13 communities.

Broadcasting without Commercials

Broadcasting is one area of telecommunications where regional inequalities are most pronounced. The uneven spread of cable systems along border areas and into large cities tends to accentuate these inequalities, several participants argued. A possible solution was offered by Broadcaster Stuart Griffiths of Bushnell Communications Ltd., in the form of a coast-to-coast 25-channel cable system, able to provide an enormous range of programming alternatives. It could be financed entirely by subscription fees, of between $150-200 a year (compared to about $60 a year at present for cable-tv subscribers). "This represents our last chance to create a television system free of dependence upon advertising."

A national cable system, said Griffiths, would "have the effect of equalizing the broadcasting services offered to Canadians .....(and) would accelerate the development of additional Canadian programming production facilities and creative personnel." But while all this could happen in the immediate future, Griffiths observed:

"radical change is usually resisted by those subject to the change. The next decade of Canadian broadcasting will probably be no exception." Some present day broadcasters "still look at cable vision as competition--a parasite."

Griffiths' system would provide Canadians with far more programming than they now receive. But quantity does not necessarily imply variety--nor, therefore, alternatives. Several participants objected that a national cable network, despite its obvious advantages, would produce a proliferation of present-day, commercial TV programming. As one put it: "We'd see not just 'I love Lucy' but 'Lucy Loves Me' and 'Lucy and I'."

The real difficulty, as many at the Seminar saw it, lay less in the nature of the transmission system than in the character of those who owned and operated it. The commercial character of network television--and the CBC as much as the private network--came in for repeated criticism, until one participant declared "let's nationalize the CBC".

Software from Hardware

At this point the concept developed of separating ownership of the transmission system from ownership of the programs carried. According to broadcaster Stanley Burke: "We should be considering information systems as a public utility, not as a private monopoly." The public utility approach to communications hardware attracted the attention of several workshops. Participants were about evenly divided on whether communications systems should be operated by government or by

a well-regulated commercial undertaking.

The advantage of the public utility approach to broadcasting, according to its advocates, was that services could be extended across the country to all potential subscribers. Producers and programmers would have unrestricted access to the system, subject to their ability to pay the transmission costs.

For some participants, severing the chain of control between hardware and software still left too many links in place. One declared that programming would still be dominated by "the control-room priesthood", the traditional elite of directors, producers and script-writers. This criticism attracted considerable support, though one participant muttered, half-heard: "I have the uncomfortable feeling we're agreeing with Spiro Agnew."

Access therefore should be total. One of the most forceful advocates of this view was Stanley Burke, who declared that he was engaged in organizing a citizens' group which planned to secure free access to the cable television systems in Toronto (1) unencumbered by any control or censorship by the CATV operators. Yet both Burke, and David Hughes, found themselves in danger of being out-flanked. Some participants pointed out that, while the Thunder Bay and Toronto citizens' groups would undoubtedly turn out programs far more widely representative than those made available on commercial television, their productionswould still reflect the interests and value judgments of the groups themselves. In the end, broadcasting would still belong

(1) Organized, in August, 1970, as Intercom.

to that relatively small number of Canadians who were concerned enough to produce programs, and the great majority of people would continue to be uninvolved. In those circumstances, it seemed unlikely that unlimited access to communications systems would in fact lead to anarchy, or to Jacques de Guise's prediction that, with everyone a programmer, "the society of the future may not be McLuhan's 'tribal village' but 'a city of a thousand ghettos." Unlimited access was more likely to reinforce the powerful, as Westin said, since the ability to exploit knowledge varies widely, and not everyone possesses it.

Plainly, access does have limits - imposed by costs and by the scarcity of the necessary technology. And limits imply control, in some form. As one workshop put it, "who would decide what information should be collected, and how should it be used?"

The Individual in Control

The individual should make those choices, many at the Seminar believed. And they argued that the entire trend of information technology was to create instruments which, in the words of Michael Harrison of Southam Business Publications, "respond to the individual's need", and so leave control ultimately in his hands.

Although the mass media were resorting to such devices as radio 'hot-line' shows and newspaper 'Action Line' columns, Harrison maintained "these efforts at adaptation by existing media may be only palliatives in the face of the inescapable fact that no truly mass medium can respond to everyone's individual needs. 'Individualized'

media, like data banks, are "the new wave of media development." The user is able to enter into a dialogue--to share his experience via a common communication channel and to react to the information presented by the bank and have it react to him."

Several speakers saw enormous social benefits to be gained by the development of computerized data banks. "The growth of a series of data banks", said Diana Ironside, "containing data and information to serve high-priority needs of citizens and decision-makers, could alleviate 'information starvation' to a marked extent. What types of information should be accessible to the public freely? A partial list might include current and frequently updated information relating to availability and costs of a wide range of consumer goods, educational opportunities, job opportunities, housing and real estate data, counselling centers, health services, welfare services, federal, provincial and municipal government services."

Monique Ouellette of the Canadian Council on Urban and Regional Research described the Council's plans for establishing an information service on the widest possible range of urban matters, and Ottawa economist Gail Stewart stressed the need for a national consumer affairs data bank.

Several businessmen present argued that National information services should not be government run. Harrison argued that "the government has no place in the operation of the nation's media ...I also believe, however, that government should give support to research and development into information generation and transfer systems that could be supported economically with private means."

D.D. Lockhart of the Canadian Lumbermen's Association believed that "industry generally views with alarm the concept of some enormous data retrieval system. I think there is a reluctance on the part of industry to have too much government involvement in this."

"Ideally, information services should be provided at the same cost throughout the nation to minimize regional discrimination", said computer systems consultant Mike Lucas. "It is doubtful that an electronic data bank service will find many customers outside the heavily populated areas of the country", if these customers have to bear the full cost of communications. The solution might be "an electronic data transportation utility which can provide services throughout the nation at well-defined rates." It would appear that "some form of subsidy will be required."

Discussion frequently returned to the growing disparity in access to information between metropolitan and rural regions. One workshop said that, since "we subsidize transportation costs in order to equalize them, why can't we equalize communication costs?" The "urban mentality" of communication planners came in for criticism, and one workship debated whether communications preceded or succeeded development, "like a highway into an isolated region." But a member of the business panel said communication costs "are only a minor factor in industrial location, minor compared to transportation, labour availability, tax structure and so on."

Whatever the economics of equalizing communication costs, the social benefits, in terms of cutting isolation and increasing access to information, are obvious. In arguing for the development of low-cost national data banks and information systems, Ron Pomfret

of the Department of Industry, Trade and Commerce, declared that "no single development would be of greater benefit than the introduction of a flat rate for telephone calls, regardless of distance." The flat rate - much like the mails - would let individuals in remote areas query data banks at the same cost which applied to those living in large cities. The idea was picked up by a number of participants.

Cost would probably decide the success of the Demand Medium proposed by Robert Russel of Orba Information. Russel foresaw his concept "fulfilling the individual's needs for truly personalized communication, offering him what he chooses, when he chooses, where he chooses: be it alpha-numeric (information retrieval) or analog (Demand Broadcasting)." A preliminary version of the latter - the Bell Canada - Ottawa Public School Board's Information Retrieval Television project - was demonstrated during the course of the Seminar. Such a system would give each individual the equivalent of a personal, but all encompassing, video library. When a particular film or program was selected, it would be promptly played back on his television screen.

Some insight into the costs of individual information systems was provided by Don Atkinson of Bell Canada. Providing service for each household in a community of 26,000 homes would cost between $25 million and $85 million a year, depending on the type of terminal installed.

A teletypewriter terminal able to receive data directly from a computer would cost $30 million a year; cathode ray terminals

in each home able to receive visual computer data (graphics, charts, etc.) would cost about $85 million a year; while a system of household terminals which comprised touch-tone telephones able to make basic inputs into a computer and receive recorded voice replies (for banking or shopping) would cost about $25 million a year. The annual charge to a subscriber would range from $1,000 to $2,600.

Clearly, the cost of such 'high technology' systems would severely limit their use -- except in the predicted affluence of the mature post-industrial society. Seminar participants realistically concentrated their attention upon information systems which were more imaginable, in technology and in cost.

The challenge here was to match available technology with actual needs. But - full circle once more - how to assess those needs?

Any attempt to establish clear-cut priorities for telecommunications development, it was recognized, ran into the twin difficulties of lack of information about society's needs for communication services, and lack of information about the impact of such services and systems upon society. Recommendations for coping with both these information-gaps are listed in detail in Chapter Three.

Chapter Two

THE ARGUMENTS

The Technology of Information

In the opening panel four speakers described what can be done with existing communications technology and what may be possible with future technology. In varying degrees, they indicated what they themselves would like to see done with that technology.

Stuart Griffiths, Bushnell TV. The trends in the technology of broadcasting seem to point "not to evolution but to revolution." And the catalyst of this revolution is cable television.

Cable television, Griffiths noted, now reached approximately one million Canadian homes. At the same time the demand for educational television was rapidly increasing and "present plans call for distribution of programs by UHF transmitters, practical enough in the cities but providing little service in the outlying parts of the country."

"It is likely that the expansion of cable and ETV must soon intersect", when main urban areas have been completely wired and cable has extended into relatively small communities. At this point the advantage of cable distribution over UHF transmission will become obvious. Requirements that ETV and other specialized services be carried on cable will have forced the general development of the 20-25 channel system as the standard.

"We may expect to see the 25 channel cable system in common use within the next five years," replacing the existing broadcasting

system. "We see present-day television and cablevision in an evolving situation where their present roles will give way to new and better relationships, and for this reason we consider conventional television and cablevision as much the same thing."

The evolution, from conventional broadcasting to cablecasting, would not be "orderly and logical." Nor would it happen uniformly across the country. "The medium-size and small communities will feel the effects first; big cities with large concentrations of viewers will enable conventional, advertiser-financed television to continue longer...Viewers in small communities, often with fewer other social facilities, will not be content to continue as second-class television viewers."

At present the three Canadian networks daily carry some 20-25 hours of original Canadian programming, exclusive of local programs. "The full development of a 25-channel cable system requires about 400 hours for each day's programming." Such a volume of programming would fragment audiences "into such small segments that advertiser financing is inadequate to the task. Some new basis of financing is necessary. We think the most likely is by subscription" -- paid by individual home-owners for the cable service.

The total cost of the 25-channel national system Griffiths estimated at $890 million a year, compared to the $550 million now spent on radio and television, both public and private. Assuming cable links to all 5.5 million Canadian homes able to receive signals, Griffiths calculated that the full costs of the system could be met

by a subscription fee of $150 - $200 a year. The need for the $135 million in advertising revenues now received by conventional broadcasters would be eliminated.

"Such a system could distribute both English and French programming nationally at little increase in cost, thus contributing to national unity. Such a system would accelerate the development of additional Canadian programming production facilities and creative personnel, thus contributing to our national identity. Such a system might be developed at somewhat less than double our present rate of broadcasting expenditure." But, as Griffiths was quoted as saying in Chapter One, the necessary changes may be resisted by those who would be affected.

Ron Pomfret, Department of Industry, Trade and Commerce

"My role in this Seminar is to present another side of the communication picture, by describing non-electronic means of communications and indicating how they can be employed in conjunction with electronics technology."

The two most obvious forms of non-electronic communication were the printed page--"Books and related items, reports, pamphlets, catalogues"--and copying machines which can reproduce printed sheets for about 1-2 cents a page.

Facsimile transmission over telephone wires costs about $3 a page. But recently there have been significant developments in miniaturization - microfilm; microform; and microfiche. At Laval University, microfilm technology has been coupled with a closed-circuit, information retrieval system. "As a result a faculty member

remote from the Documentation Center can telephone a request for information to the Documentation Centre, and examine the results of the information retrieval operation on a TV monitor."

The use of microfiche is steadily increasing. Microfiche readers are now available in the United States for $50, but cost $75 in Canada. "One wonders why a Canadian company cannot design and build a suitable microfiche reader for sale at less than $75." In the "Mini-Biblex" offered by the Quebec Bar Association, 323 legal volumes are reduced to two small drawers of microfiche, and as a result, "the small-town lawyer can now afford the legal resources of his big city confrère."

In the kind of information system foreseen by Pomfret, large amounts of information, like the complete contents of a book, will not be transmitted on demand to individual recipients via telephone or television. The user would buy either the book itself or a microfiche version. With a complete microfiche library in his home or office, he would use the telephone to initiate a search of a computerized index and identify relevant material in his library.

To establish such a system on a national basis, said Pomfret, three developments would be necessary:

(1) The widespread use of microforms and associated reader/printers.

(2) Replacement of the existing telephone by a unit which will also print out messages as a result of querying a computerized index to information.

(3) The elimination of long-distance charges for telephone calls between stations in Canada. "If information is to move freely across the country, and if regional disparities of various kinds are to be overcome, we must all be able to communicate economically with each other."

Hans J. von Baeyer, Acres Intertel. Two types of information should be distinguished. "Primary, being the original material itself, in the form of a publication or some identifiable topic or a listing of raw data; and Secondary, denoting the result of processing primary information in order to ease access to it." Examples of 'secondary' information would include abstracts, reviews and bibliographic listings.

"Once secondary information is available in machine readable form it can easily be stored and retrieved from computer memory devices, whereas the storage of primary information, because of its bulkiness, must still to a large extent rely on conventional storage and information retrieval mechanisms such as libraries."

"Since there is little cohesion between the existing centers of information, and since exchange of secondary (i.e. reference) information remains rudimentary, "users often had difficulty locating sources of material. What was needed was a series of information retrieval networks. "Such networking does NOT amount to the establishment of a centralized data bank, and it does NOT constitute a monolithic information source ....It requires only that the contents

of each individual collection be known, identified and listed on an associated regional computer facility, thereby forming, together with other regional facilities, a system from which at any location reference information can be obtained, leading eventually in hierarchical order to the answer for a specific request."

The details of such a system of networks, von Baeyer explained, could be found in Chapter 7 of Part II of the special study No. 8 on Science and Technical Information in Canada, published in 1969 by the Science Council of Canada.

"It is by no means implied that there should be sophisticated remote access consoles at every remote location in the country. Nor is it implied that everybody wanting to make an inquiry must be familiar with the coding and index principles of the network operation. Human interfaces and human interpretation of content and language of the inquiry will for a long time provide the most reliable method of accessing the network."

In some ways, von Baeyer said, his presentation was a post-factum rationalization, because several networks already existed between universities within certain regions. Provincial information systems are being planned and implemented in special fields such as education and health services, and the National Research Council has been developing its Technical Information Service.

Don Atkinson, Bell Canada. His paper concerned man-machine "interactive" information systems in which the user is separated from the storage location by either physical distance or time, and where a telecommunications link is used to bridge the gap.

The critical factor which determines the design and therefore the cost of any such system was "the need to know." "To consider retrieving a newspaper such as the Montreal Star from a data bank and reproducing it electronically in its original form seems very remote," because it is easily and quickly available by mail. "Generally speaking, telecommunications become important when time becomes a predominant and critical factor. This need tends to supplant other facets which would normally come into play, such as a very low cost for slow availability."

In any interactive telecommunications information system, total costs, which in turn must be related to the "utility value" of the proposed system, depend upon three principal variables: "(1) distance; (2) speed of display which is related to bandwidth, and (3) the resolution of the reproduction required."

For the benefit of those attending the Seminar, Atkinson estimated the probable costs of installing an interactive system in a hypothetical community of 26,000 households.

The types of terminals Atkinson envisaged, and their potential cost to subscribers, were discussed in Chapter One. The probability curves plotted by Atkinson to arrive at these estimates are contained in Appendix B.(1)

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(1) Charts 2, 3, 4 calculate probable annual costs for the total system (i.e. Chart #2, teletypewriter system: minimum cost of $10 million, potential maximum of $50 million, 50% probability of average cost of $30 million. Charts 5, 6, 7, 8, 9, calculate probable annual charges per subscriber. Costs of the total system and of the transmission component alone are plotted separately for each of the systems.

The Sociology of Access

Almost all the information systems discussed by the opening panel came with price tags of millions of dollars. By contrast, the mood of the second panel was captured by Duane Starcher when he said: "I'm talking about thousands of dollars, not mega-bucks and mega-systems with beautiful critical-path flow charts." In fact the sub-title of Starcher's paper was: What to do Outside the Wired City.

Duane Starcher, Memorial University of Newfoundland. His paper described an experiment in offering off-campus credit courses to adults living in small communities, up to 800 air miles away from the university.

"The tools of the system are common enough--television receivers, videotape recorders, long-distance conference telephone, texts and other printed materials normal to any university offering," said Starcher.

"What is uncommon is the particular application of these combined tools to a purely rural extension of the university's credit courses."

Traditional approaches to education television could not be considered, Starcher explained. Newfoundland could not afford the kind of UHF educational network being planned by Ontario, and the CRTC's directive that all cable operators must reserve one channel for ETV was meaningless since there are no cable systems in Newfoundland.

A start toward filling the gap, in adult education, had been made by correspondence courses. "But more was needed than

scattered enrolment in correspondence courses--a method was needed that would actively encourage participation, not only in university courses but group participation on a regular and frequent basis."

The decision was therefore taken to organize a 25-week video-tape credit course. Six communities, each equipped with a District Vocational School, were selected for the experiment: Port-aux-Basques, Stephenville, Labrador City, Lewisporte, Clarenville, Burin. (Labrador City had no Vocational School and a high school was used instead). All the 33 programs for the course, "The Psychology of Learning", were prepared at the University's ETV Center. Each distant community was equipped with a video monitor-receiver to playback the tapes, which were distributed by mail.

To provide direct inter-action between the professor and the 224 students, arrangements were made to link each community to each other and to the university by conference telephone calls. But the technical standards of the connection were almost always poor, sometimes non-existent, and "the tensions caused by these uncertainties inhibited the students...In practice it proved impossible." In the end, audio tapes were exchanged between students and professor, as described in Chapter One.

Electronic communication was supported by printed background material and texts. "In total, it could not be said that the students were deprived of necessary material by distance from the Memorial library."

At the end of the experiment, students in the outports passed the course with marks as high as those of on-campus students -

who had the extra advantage of having taken an introductory psychology course. As a result of this success, the 1970-71 program was extended to 13 communities from the original six and to three credit courses (two in Education) from the original one. The ultimate target is six courses going to 25 remote communities.

"It is clear", Starcher said, "that the method of distribution here described is a stop-gap measure particularly suited to the present needs of Newfoundland." But the techniques for turning the "tools of the mass media into an economical device for reaching small, specific, remote populations" can be used elsewhere in Canada, and particularly in the North.

"Clearly, the means to move information constitutes a national resource. Although education is held to be a provincial responsibility, educated persons...are themselves a national resource unbounded by provincial jurisdictions...Education needs access to the information circuitry of the nation more than it requires access to any other national resource."

Jacques de Guise, Laval University. Regional disparities in access to information tend to be increased by telecommunications technology. The unequal access available via the telephone, for example, has already been described in Chapter One.

"It is not so much a question of under-development as a question of backwardness in relation to a competing large city." This backwardness may well increase "because modern technological developments must respond to the needs of profitability" and therefore they favour the ever-increasing urban agglomerations.

"Far be it for me to suggest that the telephone, or Bell-Canada, should be solely responsible for the development or under-development of a region. The telephone is only one factor among many."

De Guise's second example, television, has already been mentioned in Chapter One. "A television set does not sell for less in Rimouski than in Montreal, even though in Montreal the quantity of television services available is four times higher (without taking account of cable television or of American stations)."

Those who live in small communities far from large metropolitan centers are often starved for entertainment. "As compensation one would expect that, in all logic, they would be able to receive more television programs than others; in fact the evidence is that quite the reverse takes place." Cultural and ethnic minorities in urban areas suffer from similar inequalities. "Never, it seems, has it occurred to us that television station licences in large cities should contain a clause making provision of service to unprofitable groups obligatory."

De Guise's theory about the 'anarchic nature' of technological development was mentioned early in Chapter One, together with his belief in the predominance of economic profit over human values. "This confusion between technological innovation and social progress, or between economic growth and social development", explains the increasing inequalities between peoples or between classes of people. Technology must be harnessed to serve our values and our ideals. "At present we are paying insane sums to acquire technology; we are paying an even more enormous sum to adapt the population to these new technologies."

As De Guise saw it, any case of technological development, such as the installation of telephones, involved three factors: technical, economic and social - by which he meant the benefits derived from reducing inequalities in telephone service. "Whenever the attempt is made to coordinate these three objectives, it is the social fact that will be sacrificed." It should be possible, he argued, "to concentrate research on techniques which would permit the economic interconnection of distant regions with large centers; but the anarchic character of technological development concentrates research on the video-phone." As a result, technology not only fails to diminish regional inequalities, but it increases them.

And yet, De Guise found valid reasons for optimism in some of the new opportunities provided by telecommunications systems. "The first consequence will be an expansion of the social horizons of the citizen of the future...In the same way as man can now control, build and modify his physical environment, he will be able to do the same for his mental universe." One 'science-fiction' possibility was that "after having been tradition-oriented, inner-directed and other-directed, man will become computer-oriented." Culture will be in a state of perpetual transformation, resulting in either "homogeonization as a consequence of increasing dependence upon authority" or "a plethora of micro-cultures more or less separated from one another."

Godwin Chu, University of Victoria. (Mr. Chu was unable to attend the Seminar, but his paper was distributed to participants. His place on the panel was taken by David Hughes).

"If we want people to assume new social roles which they are hitherto unaccustomed to, can we increase this likelihood by increasing their access to such information as will be necessary for playing their new roles?"

Information according to Chu is "any stimulus which a person perceives in his environment, and which is taken into account in his responding to that aspect of his environment." That stimulus could be anything from a traffic light to an item in the morning newspaper.

In the 'pyramid'-shaped structure of society, the great majority of people have relatively little information. Only a very few people at the top of the pyramid have a great deal. "Such an uneven distribution is both inevitable and not necessarily undesirable, as long as it does not hamper the adequate playing of the various social roles." The more complex a person's social role, the more information he will require. In terms of motivating an individual to assume a new social role, "media information performs the catalytic function." In society to-day, "media information is of such importance as almost to have the status of a prerequisite."

T. Joseph Scanlon, Carleton University.

Encounter, held in February 1970, was an attempt "to get the citizens of the metropolitan area of Halifax concerned about their own community." Twelve experts on all aspects of urban problems came to Halifax for a week to toss out ideas, listen to opinions and engage in open debate with residents about local issues. Encounter attracted increasingly large audiences - up to 1,200 at one session - and significant interaction developed with the various media covering the meetings.

"The decision (by the local media) to treat the whole Encounter process as a major event meant that each Encounter was given media treatment and that, in this way, a number of community groups not used to getting access to radio, television or print, found what they had to say was treated with respect."

Radio provided spot news coverage, public affairs programs and hot-line shows. "While radio conveyed excitement, drama--and involvement," massive television coverage made the 12 members of the Encounter team into public personalities. "This had the useful effect of making it easier for individuals to talk to panel members after Encounter sessions because they felt they knew them."

The local daily newspaper "took a severe anti-Encounter line" both in its editorials and its cartoons. At the suggestion of the Encounter group, citizens wrote to the paper expressing their opinions about its editorial views. "Although letters to the editor in Halifax rarely run to more than four or five on any topic, Encounter provoked more than 100 letters, all but a handful against the paper's editorial policy." Quite a different line was taken by an independent bi-weekly, the Fourth Estate, "which has been running its own private encounter with the Nova Scotia establishment (and which) emerged during Encounter week as a significant force in the community."

Scanlon concluded that "print, though a new kind of print, is still as important as ever."

Data Banks and the Public Interest

The coming medium, according to many at the Seminar, is the computerized information system. Four speakers discussed different

aspects of data banks and their relation to the public interest. Michael Lucas, the only member of the panel on Business Aspects of Access to Information to prepare an advance position paper, also discussed data banks. His paper is included at the end of this section.

Diana Ironside, Ontario Institute for Studies in Education. The development of data banks raises two sets of questions.

The first set is technical. "Such challenging problems as developing information management software, statistical packages, and appropriate user-oriented languages, are the job of our computer scientists."

The second set is social. "We must be concerned about who monitors the decisions about the integrity of the information collected, the actual data base environment, the provision and type of access modes, the centralization and control of sensitive files, the linking of a series of machine-readable data bases into larger and more comprehensive data banks, and other similar issues which have a potentially powerful impact on the quality of the social environment. What types of information should be banked in the public interest? How do we capture the relevant information? How do we ensure accuracy and integrity of output? How should information be organized to provide the kind of output needed by our citizens? How do we uncover errors in the system? How do we guarantee protection for the individual's own file and prevent invasion of his privacy? How do we assure the user of anonymity of use? How do we structure the system so that it is continually sensitive to the values and priorities of the people it serves?

"The citizen's right to information has been eroded by a variety of factors, including the explosion of information, lack of adequate systems for the storage and retrieval of pertinent and relevant information, and the inability of the political and bureaucratic systems to develop effective strategies ... to solve the crisis."

As recorded in Chapter One, Miss Ironside suggested that the situation could be markedly improved by developing a series of public data banks, offering a wide variety of free services which have already been described. At the same time "we will be required also to provide appropriate public access to the increasing number of professional and special purpose data banks being developed now with public funds" such as the Canadian Data Bank at the Dominion Bureau of Statistics, and various municipal urban data and information systems. "The access route may be a telephone, a TV screen, or a building in the middle of a town--what really matters is whether the 'terminal' is linked to a body of organized, accurate and relevant data." Inter-connection between data banks would be a further requirement, along with standardization of systems design, language and data base structure.

"Could public libraries be the interface between the general public and the public and private data banks?" They could package information derived from data banks for the specific use of individuals in their community public libraries. If libraries don't assume such a role a "plethora of information centers in the community, sponsored by a variety of agencies, all with a mandate to provide "information and advice", may develop and plunge us all into chaos."

Miss Ironside said it was vital to ensure that the information in a data bank was accurate. "A greater danger may reside, however, in the idea of standardization so desirable in data banks". A bank might be used to identify someone "according to a set of specifications. This suggests that people will not be considered as individuals; that people can be measured; that people can be described in standard terms. People become objects in such a system; they cannot be consulted." And she quoted the words of one information systems authority: "The most efficient system for people is that which enhances their humanness."(1)

Michael Harrison, Southam Business Publications Ltd.

"The current star of the individualized media firmament is the on-line interactive system...Some experimental systems have proved that... joining many individuals with access to a common data base can speed the process of agreeing on a component design, a legal draft, or whatever is or will be the subject matter of discussion."

"Demand media" and "interactive media" are challenging and eroding the traditional dominance of the mass media, which despite their various efforts, cannot really meet individual needs.

But 'individualized' media, like data banks, present their own problems. Sometimes users are not sufficiently knowledgeable to exploit the full potential of the system. Demand media will have to develop by trial and error. And in the meantime, there are some crucial issues to settle: "Who will control such banks? Who will provide the information in them?"

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(1) M.E. Maron, "Large scale data banks: will people be treated as machines?" Special libraries, 60: 1 (Jan. 1969), pp. 3 - 9.

The government has made the mass media "subject to the general laws of copyright, slander, obscenity, public health." It has also created crown corporations in the fields of broadcasting and film production. Should the government also become actively involved with the new media, and operate information banks? In Harrison's view, it shouldn't.

Harrison stated his personal beliefs concerning the development of data banks and information transfer systems:

1. The gathering of information should be unencumbered, indeed encouraged.
2. The provider of information has a proprietary right to it.
3. There is a fundamental distinction between information content and the communications media which disseminate it.
4. Gatherers and disseminators of information apply subjective judgment over content and form. Therefore no exclusivity should be given either to mass or individualized media.
5. Users should have freedom of choice among media.

Lyman Richardson, T-Scan Ltd. There are two kinds of information systems: Open Systems "for which there is no readily discernible feedback", such as books and broadcasting; and Closed Systems, "where the receiver of information is in a position to interact with the sender, within the same time domain." The latter includes person-to-person, person-to-machine and machine-to-machine types of systems.

Factors which would determine the design of any national data bank include: Response; Reliability; Manageability; Expansibility and Cost. The volume of information to be stored, and the speed at which it was to be accessed, were other key factors. "A National Data Bank could very well make use of less conventional storage media, such as a photographic store, which is reputedly capable of storing a million binary bits of information per square inch of surface area. This would be useful for large volume reference type information which is seldom changing. The more volatile information could then be maintained in conventional media."

Communications system design would involve trade-offs between the importance of the data and the cost of using it. "For example, a line printer could be located in the Post Office and queries accepted by telephone." Simple operations could be administered through the use of conventional teletype equipment in TWX service, although an Arts Center might wish to use a cathode ray type agent set.

Monique Ouellette, Canadian Council on Urban and Regional Research. Information is increasingly "an essential element of urban management." It is also expensive, and probably "the cost of urban information will increase to several millions of dollars a year. This takes account only of information effectively obtained: it is impossible to evaluate the costs of poor decisions taken because the information which could have rectified it came too late, or not at all, to the competent authorities; beyond doubt, if one could calculate it, the costs would be exorbitant."

Several information services, in such fields as transportation, education and construction, already exist. But each is a separate project. Easier access to the various sources is needed, and better coordination.

The Canadian Council on Urban and Regional Research was planning an information service which would help users "to obtain all the pertinent information they needed, in a minimum of time and with a minimum of effort." To this end, the Council was studying both the needs for urban information and its sources. The new service would be "more than a data bank. It would be difficult to conceive of a data bank containing all the information necessary for the many and varied disciplines." Rather, the object was to link existing networks and other less organized but equally useful sources.

Michael J. Lucas, L & W Data Systems. "Information is the lifeblood of the business world." But the current "information explosion" has reached the point where "we have passed the saturation point in an individual's ability to read and absorb the flood of information. In order to stay informed an individual needs to dedicate a disproportionate amount of his working day to information gathering and reading."

Computerized information systems can help, but not all of them function satisfactorily. Many are technically-oriented rather than user-oriented, as described in Chapter One. Potential users of a data bank must assess the value of the service on two grounds: "The amount of existing costs which the data bank service will displace and the value of additional service which the service can provide. Both factors are hard to define, and "several market analyses in the field of information storage and retrieval have shown that the assessment of the value of a data bank is based mostly on individual attitudes rather than on economic facts."

Lucas's views on the need to provide information services at a standard cost throughout Canada were detailed in Chapter One, along with his suggestion for an electronic data transportation utility.

Information Overload

Data banks and video demand systems, coupled with multiple-channel cable networks, promise Canadians more information than was ever accessible before. Yet it is conceivable that the end result may be an unfortunate condition known as "information overload."

Thomas McPhail, Department of Communication Arts, Loyola College. "Even today, we can talk about information overload in the sense that there is a wealth of printed material, visual material, and sound sources that can, with relative ease, confound the average individual." There is a very real chance that humans will be unable to cope with the ever-increasing output of our multiplying communications systems. "We may unknowingly be pushing human society (and by we I mean educators as well as IBM, Xerox and National Cash Register), to a general state of pathology or neurosis."

Can people easily adapt to the ever-increasing rate of change generated by the communications industry? Is there an optimum or a maximum degree of change which human systems can endure? Nobody knows, and "we do not really have research tools or measurement scales that are conveniently designed for a thorough investigation of these fundamental areas."

One consequence of information overload, said McPhail, is that people may become so totally overwhelmed by their awareness of problems - such as campus unrest, military misappropriations, environmental pollution

and drug addiction - that they may "turn to some type of demagogue", offering "very simplistic slogans that provide people with an easy way out." This yearning for over-simplification was termed the "Reader's Digest" Syndrome by McPhail.

There is another danger in increasing a person's knowledge of his society, because information raises his expectations about solutions to current problems. "Though we have quickened the pace by which problems are transmitted, we have failed in a corresponding fashion to quicken the solution, or the decision-making machinery."

McPhail questioned the current pre-occupation with innovations in the communications field, such as computers, satellites and laser. "Although at first they appear to offer man great benefits, one really wonders whether, considering the economic expense, society would not be better off allocating its resources elsewhere. For example, in transportation, in housing, or to fight poverty."

As shown in Chapter One, McPhail protested that technology has taken precedence over human needs. "I think the Government can and should take the initiative to correct the situation by sponsoring and encouraging research, in unison with the communications industries, to see exactly what we are doing to the quality of life."

John Dudley, School of Human Communication Disorders, McGill University. "The human develops skills, or is prewired to develop skills, which allow him to generate and receive messages. Once these skills are developed it would appear that human communication is limitless," and therefore an individual should have "limitless access to messages." But is this really the case?

A common, but not very well understood, condition occurs when two or more messages of differing cognitive value arrive simultaneously. One or more of these messages is suppressed, and "there is some evidence that it makes no difference what the message contains, or if the message is true or false."

Repetition also dulls the capacity to discriminate. "A message which on first presentation is unacceptable becomes neutral after many presentations."

If a medium, like television, "involves two or more modalities...we would expect the visual stimuli to take precedence over the audio signal",...because there appears to be "a hierarchy of access." But in fact the audio and visual components of multi-modal media are usually complimentary rather than competing. The two messages interact to increase the total impact of the message. "If the two messages are incompatible they nonetheless interact to produce false information. This is often seen in advertising."

"Under normal conditions the human mechanism can accept any information made available. With slight changes in the verbal mechanism, access is limited to the most redundant messages in the environment. A highly sophisticated mechanism becomes a group of disjointed systems. The accessible becomes inaccessible. Thus, we can view accessibility as unlimited, but vulnerable."

Benjamin D. Singer, Department of Sociology, University of Western Ontario. Singer's explanation of the three kinds of information channels within society was given in Chapter One. He believed that "there is a communication imbalance - a cultural lag, to use an early sociological term--which is characterized by a functional oversupply of one-way channels."

Also mentioned in Chapter One was Singer's concern about the social impact of that omnipresent one-way channel - television - which is contributing to the state of information overload. Singer was apprehensive that "the development of media technology may outstrip the culture's ability to create significant or desirable messages for it to carry. When we lose control of our media, we lose control of our culture."

At the same time, the multiplicity of mass media channels created by cable systems did not lead "to diversity and thus freedom of choice." More channels could simply mean more of the same.

Telecommunications can create interpersonal channels. But, as in the case of the telephone, they do not necessarily provide access to "information that is relevant to the individual." He cited the difficulties of getting information over the phone from institutions such as OHSIP, the Ontario hospital insurance scheme.

Perhaps, said Singer, the phone company "could serve as a communication ombudsman by operating feedback offices to accept and forward messages in order to increase the meaningful use of the phone for all segments of the populace. This would be especially valuable in establishing linkages for the deprived, minority groups."

Unfortunately, he continued, "the demands of the market place, as perceived by those in charge of our communication channels, have created a techno-market hegemony which does not really take account of human needs."

The first step toward a more rational use of communications technology, said Singer, "would be to inventory the information needs of people located throughout our social system... How do the poor cope?

What information is available to them through mass channels? How do they--when compared with professional classes--use the personal media?"

Education in the use of information channels must begin in elementary school.

In sum, we should "take a more critical view of our systems of communication-mass and interpersonal--for their relevance and redundance" and our aim should be "to make it possible for all segments of our population to gain their objectives by coping as individuals."

Chapter Three

CONCLUSIONS

A three-day multi-disciplinary Seminar called to discuss a topic as broad as Access to Information (The Need to Know), is plainly an inappropriate instrument for drafting precise policy recommendations. Participants were advised that they were there "to define the right answers and to suggest ways in which the right answers could be achieved, rather than to recommend precise answers."

Some of the recommendations secured general, though not unanimous, acceptance. Others were proposed by one or two workshops, and some by a few individuals. In approximate order moving from general to particular, the conclusions of the Seminar were:

1. Access to Information is, or should be a right of citizenship.

Some participants doubted that access to information was a right, or that, even if it was, whether it could ever be given practical application. A substantial majority, however, believed that in our information-abundant society, access to information should be raised to the level of other fundamental rights such as freedom of speech, or freedom of assembly. As one workshop put it: "Every citizen should have a Right of Access to Information, resulting in a corresponding Right to be Heard, and in both official languages."

2. The ultimate responsibility for ensuring access to information rests with Government.

Business men attending the Seminar were the main opponents of this generally accepted proposal, although others made plain their

mistrust of "the almost inevitable bureaucratization of anything the Government puts its hands to." Among proponents of an activist role for Government, one workshop stated: "We are getting to the stage where communications is becoming just as important as electricity... indeed, communications is the Government."

3. Government should consider developing a national communications policy comparable to national economic policy or national welfare policy.

Participants noted that while a well-defined national broadcasting policy exists, there is no equivalent national communications policy. One workshop called for "a clearly-expressed set of national (communications) priorities", which, "once agreed upon by the majority and endorsed by all levels of government, would result in the development of the telecommunications industry according to more socially-meaningful lines."

While there was wide disagreement on the subject of government-operated data banks, many participants expressed concern about the present lack of ground-rules for information storage and retrieval. One workshop report said "explicit rules governing personal data were felt to be essential", and continued: "What is now urgently needed are safeguards, rules and overall policy governing all aspects of the content, use and users of social and technological data banks."

4. A key element of any national communications policy would be the provision of a minimum level of services to all citizens, no matter where they live.

Regional (and socio-economic) disparities in access to information seized the attention of participants throughout the Seminar.

A general concern was summarized by one individual's view: "Toronto is getting touchtone phones and video-phones while many Newfoundlanders don't have any phones at all." But participants did not succeed in defining an acceptable minimum level of service, or what was meant by one workshop's suggestion for "a basic, one-way communications grid serving all areas."

5. Steps should be taken to equalize communications costs throughout Canada, or at any rate to reduce the inequalities.

One workshop declared that "the government has to take steps to make sure that the people get service at rates on a par throughout the country." Equalized data transmission costs would enable proposed national data banks to serve the community at large, and not just those already advantaged. Several participants and one workshop advocated a national flat rate telephone charge, irrespective of distance.

6. Telecommunications hardware should be separated from software.

A substantial number of participants called for a separation of medium from message, that is, ownership of broadcasting or data transmission and distribution facilities from ownership of the material carried.

"The essential communication services should be prime targets for public utility regulation", one workshop declared. But another reported "no agreement as to who should eventually own and control the physical means of communication."

In the end the question of ownership - public, private or mixed - was left open.

7. To ensure the freest possible flow of information from producer to receiver, controls or censors should be removed, wherever possible.

One suggested way of freeing the broadcasting flow was to establish a national cable network, financed entirely by subscription fees, and therefore independent of the restraints imposed by advertisers. This proposal won general support, in part because a multiple-channel system offered a way of enlarging the small group of directors, producers, scriptwriters and commentators responsible for the bulk of current programming.

One workshop recommended the creation of a national system "with as many as 25 video channels, or equivalent in voice and data transmission...(It) should be multiple-access and multiple-use and compatible with a demand system...(it) should further be one which reflects and forms national and regional interests, in a social and economic sense."

8. If access to information is made a right of citizenship, the public will have to be taught to use information systems.

As the ability to use information becomes more and more a determinant of life styles, it is increasingly important for people to have the necessary understanding. One workshop estimated that "not more than 10 per cent of the population has the knowledge and skills necessary to acquire access to existing information systems."

9. If Government is to impose social constraints on the development of information technology it will need to know far more about the effects of that technology than it now does. One solution might be a communications research center or institute.

The proposal for a center or institute received general support at the final plenary session. The most specific description given of such an institution was contained in one workshop report: "It would study and evaluate information in the content of its environment and give advice to government. The proposal envisioned two branches of the institute--pure and applied research--although it would be result-oriented. It would have degree-granting privileges and a rotating staff". Another specific proposal was for a national center to study new communication technologies such as EVR.

10. With or without a research center, steps should be taken to develop an information service for government, industry and universities on communications technology and environmental research.

This proposal was made from the floor, at the last session and received general support without discussion.

11. Those responsible for developing national communications systems must determine the information needs, actual and latent, of the various publics.

Such an undertaking is by no means easy since, as one workshop observed: "the people who are deprived of access to information are exactly the people who can't communicate their need for more." A specific proposal was that "The Department of Communications should be sending Task Forces out to these deprived areas to get first-hand information."

At the last session, a proposal for a "national teach-in" to determine communications needs received a mixed reception. Canadians in all walks of life would be asked their opinions, it was suggested, and their views aired across the country to elicit other opinions.

Several participants pointed out that the cost would be prohibitive. Others felt that nevertheless it constituted the kind of creative use of telecommunications that had to be tried. As one supporter put it: "I favour the idea. Quite possibly it won't work, but I'm in favour of the attempt anyway." And another said: "The new communications environment is creating the new Canada. We'd better find out what kind of Canada Canadians want."

On that positive note, the Seminar ended.

APPENDIX "A"

Seminar Chairman: R. Gwyn, Department of Communications

Plenary Session Chairman: Antonin Boisvert,
Radio-Quebec

Panelists:

1. Technology Panel

Gilles Bergeron, Department of Communications (Chairman)
D.M. Atkinson, Bell Canada *
R.E. Pomfret, Department of Industry, Trade and Commerce*
Hans von Baeyer, Acres Intertel Ltd. *
Stuart Griffiths, Bushnell Communications Ltd. *

2. Data Banks and the Public Interest Panel

Jacques Brazeau, University of Montreal (Chairman)
Diana Ironside, Ontario Institute for Studies in Education
Michael Harrison, Southam Press *
Lyman Richardson, T-Scan Ltd. *
Monique Ouellette, Canadian Council on Urban and Regional Research

3. Social Panel

Gaetan Daoust, University of Montreal (Chairman)
Duane Starcher, Memorial University *
Jacques de Guise, Laval University *
David Hughes, Thunder Bay, Ontario.
Godwin Chu, University of Victoria, B. C. *
Joe Scanlon, Carleton University *

4. Information Overload Panel

Antonin Boisvert, Radio-Quebec (Chairman)
John Dudley, Royal Victoria Hospital *
Tom McPhail, Loyola College *
Benjamin Singer, University of Western Ontario *

5. Business Panel

André Det, Power Corporation (Chairman)
D.D. Lockhart, Canadian Lumbermen's Association
John Sealy, Samson, Belair, Riddell, Stead Inc.
Mike Lucas, L&W Data Systems Ltd. *

* Position papers available on request.

WORKSHOP CHAIRMEN:

G. Bergeron, D. Hilton, F. Howard,
DeM. Marchand, Department of Communications
I. Midgley, Department of Regional Economic Expansion
Glen Milne, Carleton University

SEMINAR OBJECTIVES

"The purpose of the seminar, taking special account of regional disparities, would be to:

1. consider the ways by which telecommunications technology, systems, concepts and institutions can be developed and applied so as to approach the ideal of the optimum amount of information being made available to the maximum number of individuals, groups and institutions;

2. assess the costs and benefits (economic, social) of providing such information, and the costs (economic, social) of failing to do so.

Technology Panel

To discuss prepared papers; emphasis of panel discussion should be on economic costs of a spectrum of possible national information systems, i.e. voice, data, etc.

Business Panel

To assess the costs and benefits to business firms of access to information through effective transmission systems. (Emphasis of this discussion should be on the costs and benefits to firms located, or intending to locate, in under-privileged regions of the country)

Data Banks and the Public Interest Panel

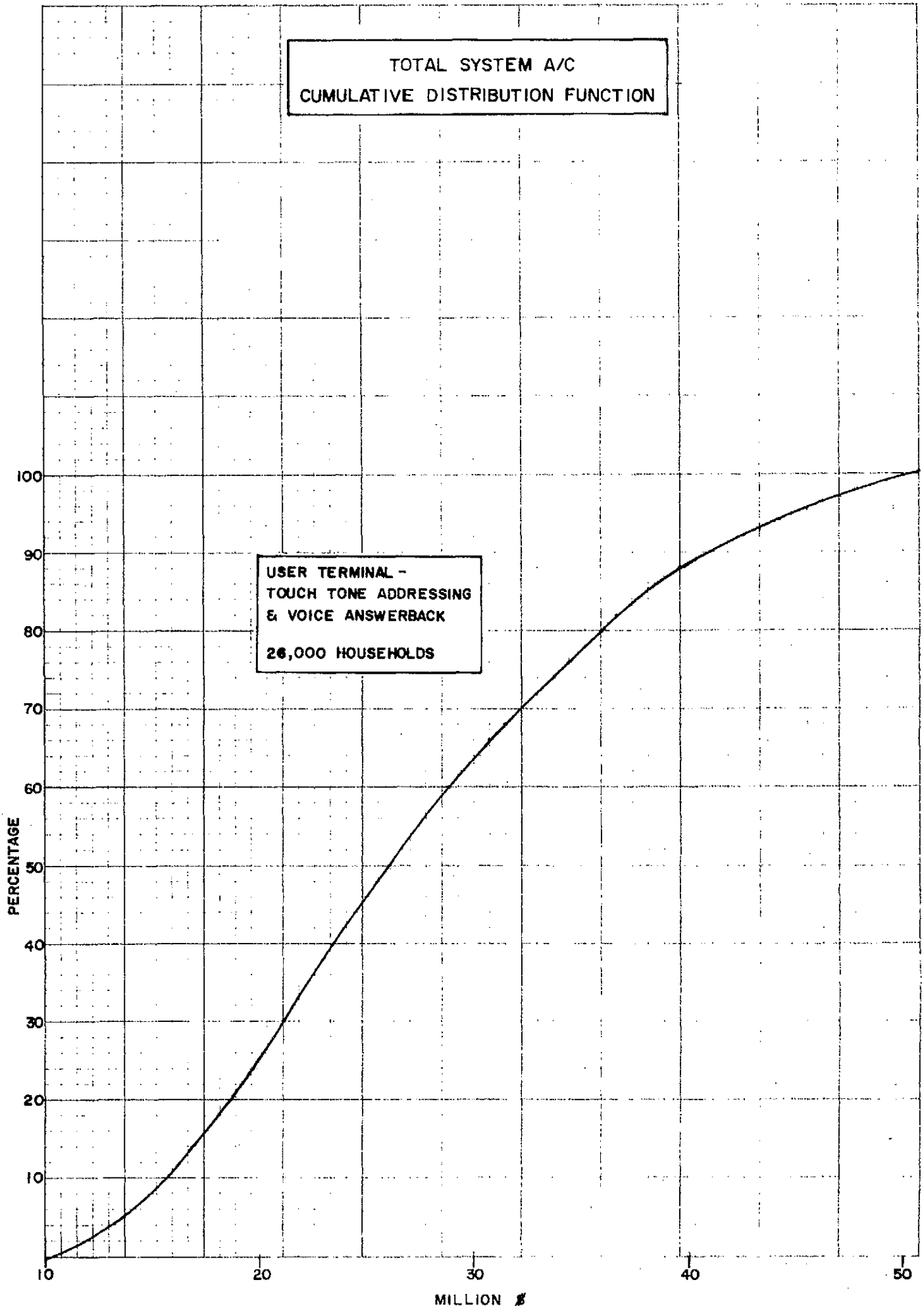
To discuss ways to determine priorities, in terms of public interest, for the development of data banks, by what means and through what institutional arrangements that would ensure maximum access to such banks.

Information Overload Panel

To discuss the neuro-physiological and social effects of an overload of information to individuals and groups.

Social Panel

To discuss costs and social benefits of access to information by individuals or groups in underdeveloped areas (i.e. the poor, youth, linguistic and ethnic minorities)."



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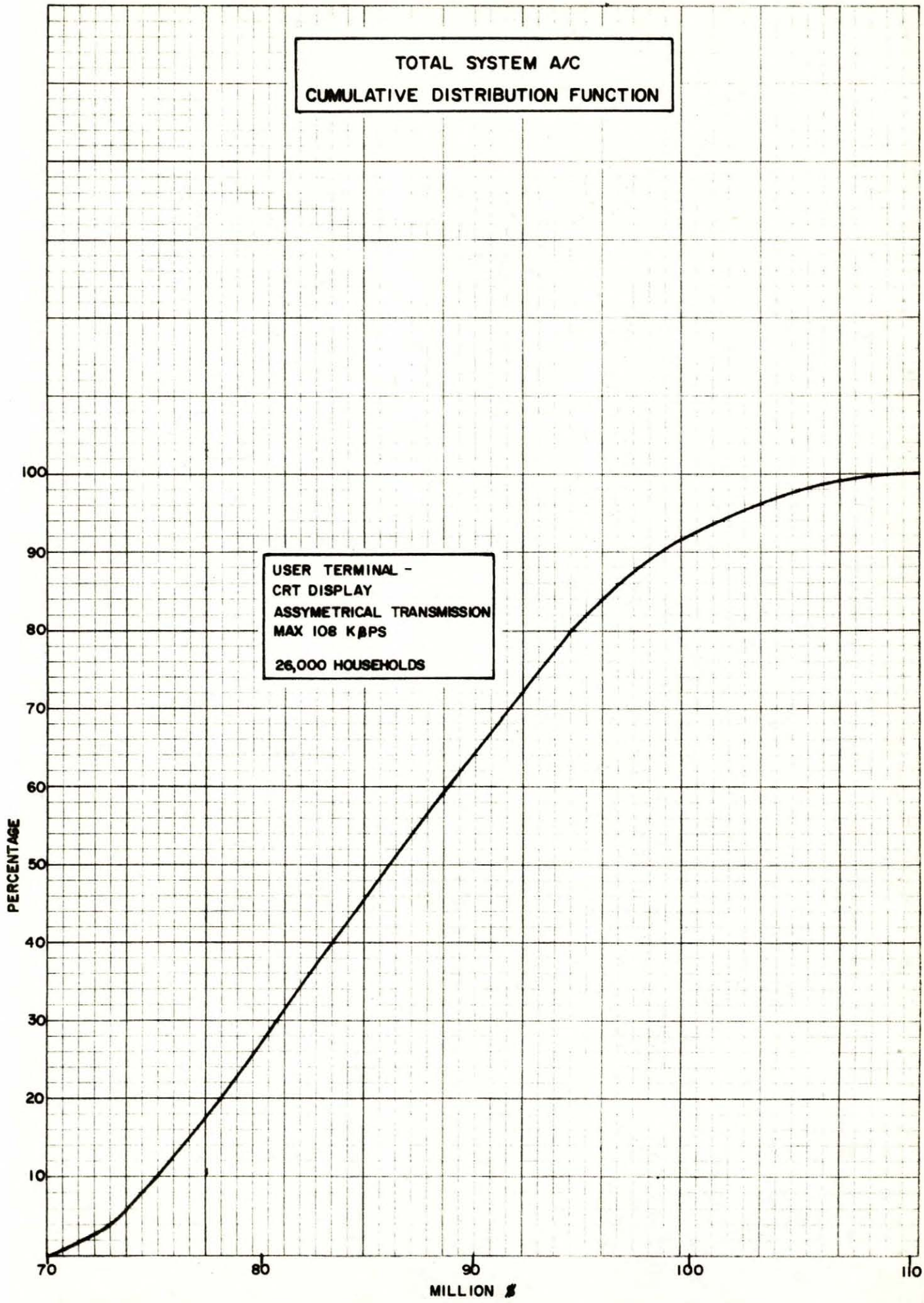

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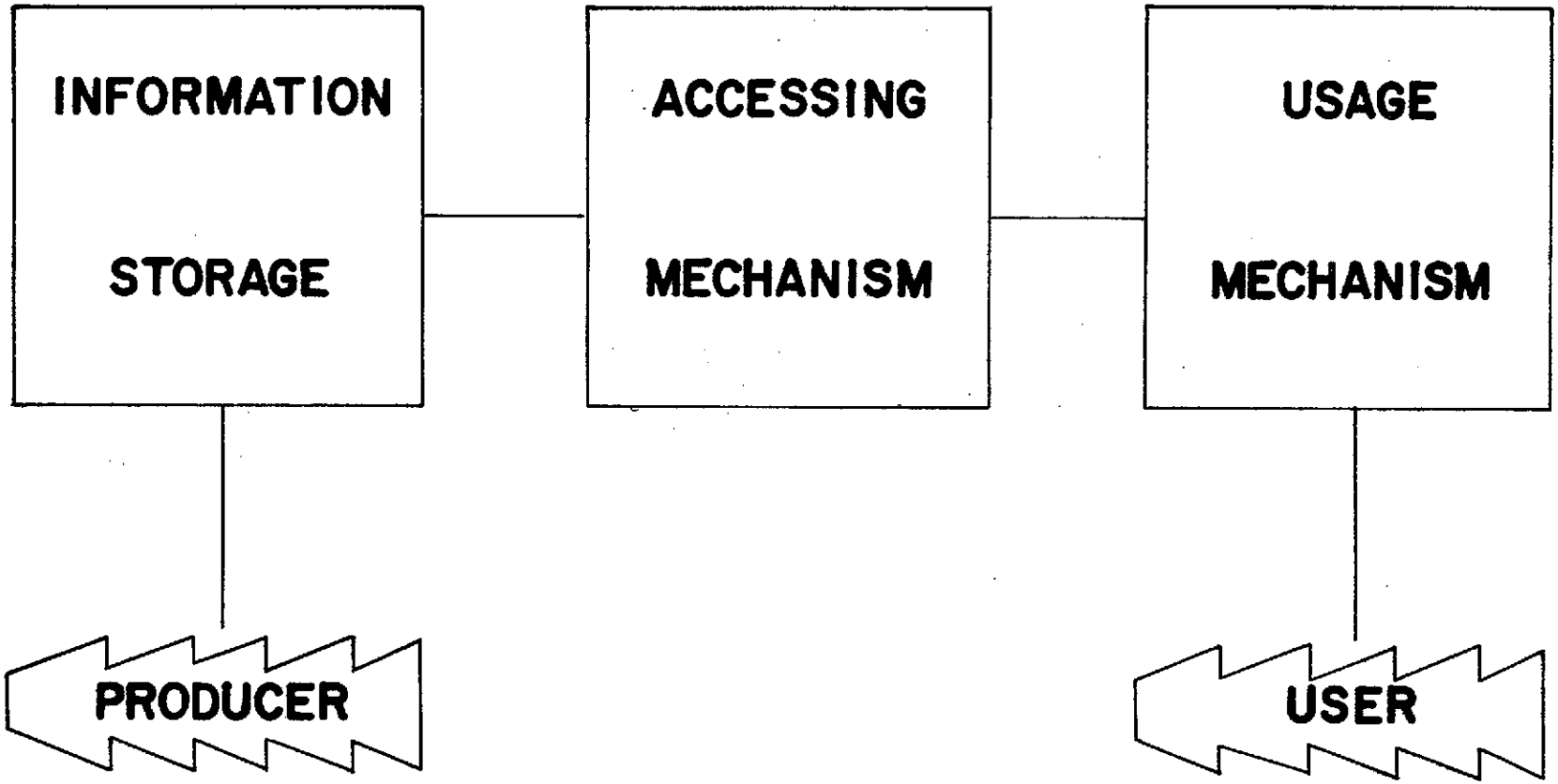
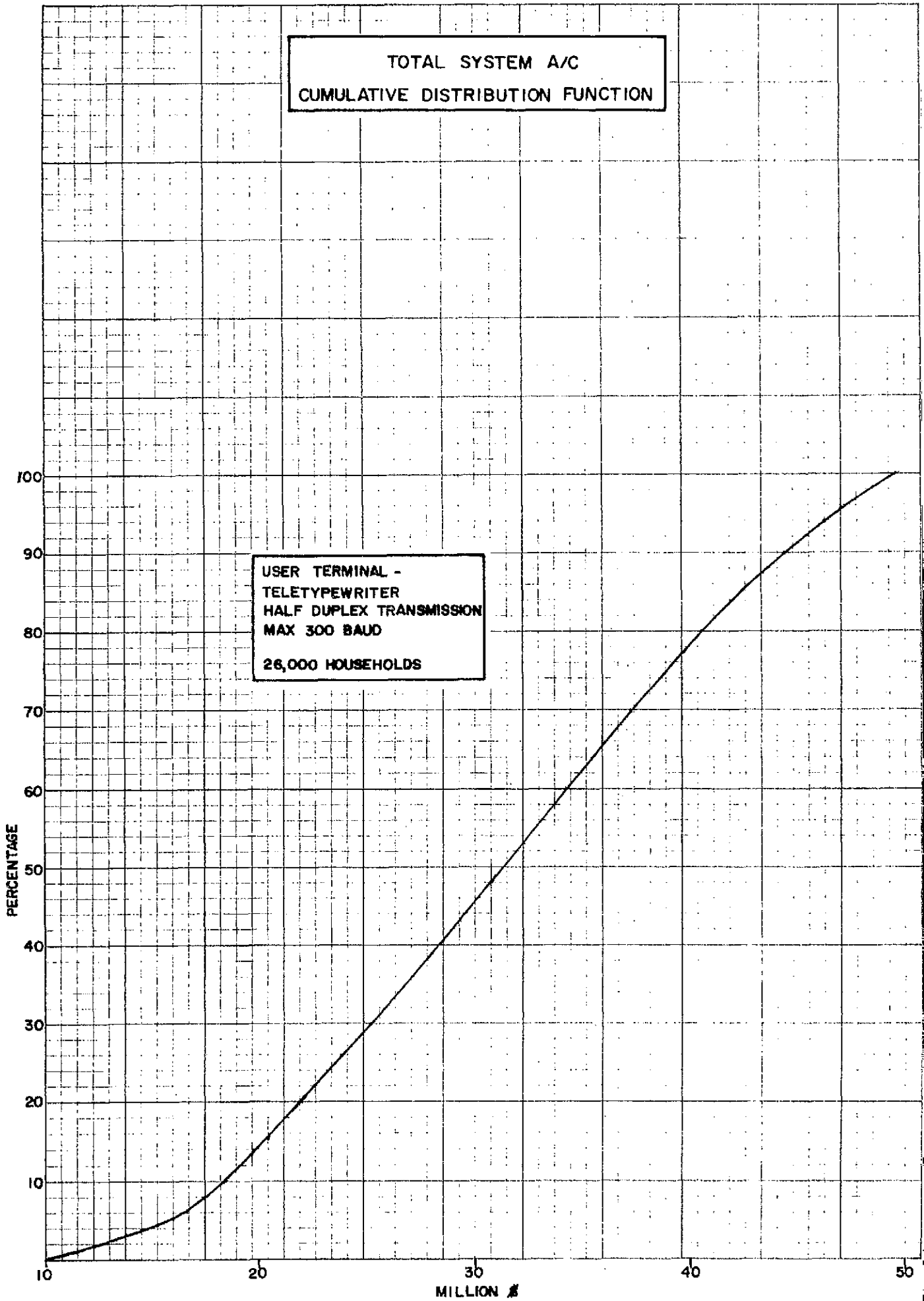
KEUFFEL & ESSER CO.

"INFORMATION ACCESS" SYSTEM





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