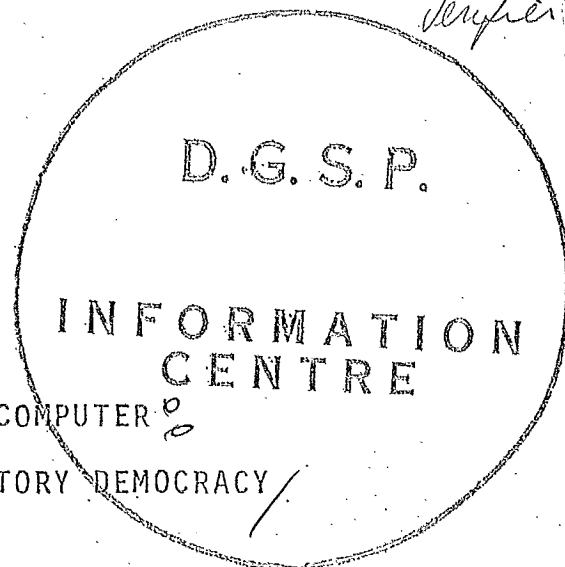
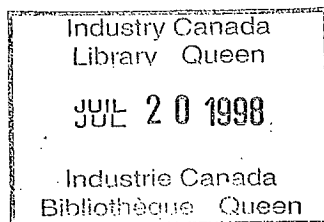


THE PEOPLE'S COMPUTER:
AN AID TO PARTICIPATORY
DEMOCRACY

John M. Carroll, Jean TAgué

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AN AID TO PARTICIPATORY DEMOCRACY

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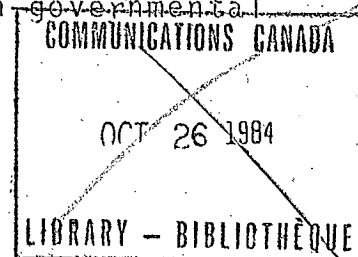
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ABSTRACT

This paper presents the view that the computer is becoming a repressive instrument in the hands of big governments and corporations. It stresses the need to provide the common man with easy access to computer facilities to even up the social, economic and political balance of power. It discusses problems involved in bringing computer power to the people, and describes preliminary steps taken in connection with a non-governmental municipal information service in London, Canada.



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INTRODUCTION

Throughout history, various items of technology have served as instruments to divide the human race into classes and enable one class to exert its will over others.

From the dawn of recorded history until World War I the saddle horse was such an instrument. The horse carried the tax collector, King's messenger, the mounted police.

The only egalitarian societies existed on the fringes of man's habitation where whole populations were born to the saddle and the fierce personal independence of Tartars, Cossacks, Bedouins, Gauchos, Plains Indians, and the Western cowboys has become legendary.

The hegemony of the horse was broken by the Model T Ford and its imitators that eventually conferred personal mobility upon anyone able to produce a small down payment.

Today the computer may be regarded by some as a repressive instrument which serves the cause of governments, corporations and large institutions.

The common man too often sees himself as billed by them, taxed, enumerated, administrated, manipulated, controlled -- creased, folded, spindled and mutilated.

The computer may make it easier for big countries to influence the destinies of small countries, for senior governments to control local governments, for large corporations to take over small companies.

We may well be experiencing the emergence of cybernetic imperialism.

To a government deeply committed to participatory democracy, this would be an undesirable synthesis. To make democracy fulfill its promise in a practical sense, it would seem to be necessary to restore the actual and the apparent balance of power; to make computer power available to the people at large.

In an era in which information is regarded as power, power to the people would necessarily include computer power.

As a first step, the average citizen would have to be placed in a position where he could cogently answer the question: "What have computers done for me lately?"

The key phrase here is "for me".

Unfortunately, today the average citizen could only answer the question: "What have computers done to me lately?"

COMPUTERS AND THE UNDERPRIVILEGED

Words like "welfare" and "unemployment" are emotion charged and tend to cause sharp political polarization. The "welfare state" is indeed politically polarizing; it divides the electorate into those who receive its benefits and those who pay for these benefits by increased taxes.

But human labour today is an expensive commodity. It is expensive both in terms of wages and in terms of human error and inherent limitations - in strength, perception, speed, response time, attention span, and ability to function in hostile environments. Industry and commerce are increasingly forced to automate to survive.

When industry and commerce automate, there is a net loss of employment opportunity. It is an exercise in equivocation to say "people are released from repetitive demeaning tasks" because society has yet to answer the question: "Released to do what?"

Until a more acceptable alternative is discovered, we have to accept the fact of the welfare state and assume its costs as a tax. we pay for the higher wages and the plethora of modern conveniences we enjoy as by-products of industrial and commercial automation.

Today's post-industrial society is a complex and, for many individuals, a frighteningly hostile environment. People require help to cope with its challenges. Some people, despite all the

help we can give them, will, for any one of many reasons, never become able to cope with its challenges. The latter must, for reasons of basic humanity, be provided with a decent standard of living. The definition of what constitutes a decent standard of living has to be defined in the political arena.

Helping people is the mission of the Human Services Delivery Systems. It is a big job and it seems destined to become bigger with time. It is altogether logical and, in a very real sense, just, that the computer, which has done so much to fashion the fabric of our post-industrial society, should play a leading role in making the human services delivery system work.

The human services delivery system is hideously complex; its dimensions are too large to be appreciated by most observers; and each year it consumes a greater portion of the income of most Western nations.

There is little meaningful dialogue among the deliverers of human services, the recipients of these services, and the public at large. Moreover, within human service agencies breakdown of communication is frequent among professional personnel administrators, volunteer workers, and concerned citizens.

It should not be surprising, therefore, that the overall human services delivery system is ponderous, slow to react, and grossly inefficient.

Short of a fundamental restructuring of the whole system, which, in most jurisdictions, is outside the realm of political feasibility, the best approach at this time seems to be attacking the problem of intercommunication . . . For 5,000 years we have waited for men of good will to start talking to each other, with what appears to be increasingly unsatisfactory results.

Perhaps they can begin to do so through the intermediary of the peoples' computer.

In the context of human services delivery, assistance to both the helpers, the needy, and the public is urgently required to:

- Create awareness of human needs, human problems, and gaps in the existing human service delivery system.
- Co-ordinate the activities of existing services to improve the quality of human services rendered, promote joint-case co-ordination, increase the accessibility to human services of those who require them, decentralize the delivery of human services, and foster a multi-disciplinary neighbourhood-centered approach.
- Plan and order the priorities with which human service delivery problems are attacked concentrating upon deficiencies, unmet needs, and the need for greater accessibility.

- Furnish computational and informational support to research workers, planners and protesters, policy makers and critics.

Central to success of any movement aimed at improving the delivery of human services, is an information system that makes available facts regarding the services, programmes, and activities of helping services. This information is needed by individuals whose problems make them potential clients for human services, and also by workers in various human service delivery roles so they can better co-ordinate their activities, and by the public at large to recruit volunteer workers and promote a more sympathetic climate of opinion regarding human services delivery.

HUMAN RESOURCES INFORMATION SYSTEM

Like everything else, implementation of the Peoples Computing Network is too large an undertaking to be done at one time. It is the old question of ordering priorities. In this context, the Human Resources Information System (HURIS corresponding to the Greek εὑρεσκω I discover) appears to be the most promising implementation in terms of payoff, because it will:

- (a) be highly visible.
- (b) provide urgently needed assistance in an area which currently accounts for the bulk of government spending
- (c) utilize existing instruments and schemes which have already proved successful in other ways.

HURIS would have four functions:

- (a) Referral
- (b) Production of summary reports
- (c) Conduct of longitudinal studies
- (d) Support of research activity

Referral

The heart of the referral subsystem will be a computer stored bank of information regarding human resources. It will contain information about human service agencies and associations, programmes, and activities. It will also identify those individuals who should be approached: those responsible for case intake, those responsible for decision-making with regard to appeals and administrative matters, those who actually do the work, and those who actually wield the power.

Information would be entered into this data-base on-line and in real-time (that is, as received by the individual entering it). It may be received in agency publications, memoranda, briefs from various groups, and letters from service agencies. But if the service is to be useful, it must be supplemented by a great deal of street wisdom that will discriminate between concerned individuals and stuffed shirts, (that is: between functionaries who truly have the welfare of the people in their hearts, and those who are puffed up with their own importance).

Requests for referral may be expected to come from friends, neighbours and family of persons requiring help; professional and volunteer workers; other agencies to whom the individual has applied, and the individual himself.

Eventually, they may come from consoles at neighbourhood centres. The most frequent medium for contact will likely be the telephone.

The whole point of the referral service is that the citizen wishing information will not be referred from one functionary to another; he will get his answer with only one telephone call. If there is a runaround, the referral service will get it and not the person seeking help. Furthermore, contact with inept agency workers and other frustrating experiences will constitute another source of input to the data bank, one that could be used to plan agency budgets and evaluate the efficiency of agency personnel.

Follow-up entries will originate as the result of the referral service contacting agencies to which people have been referred to determine what was done about the case, and contacting the individual to determine his level of satisfaction. In making these contacts, the referral service will act not in the role of an advocate, but as a fact gatherer and the facts of unmet needs, clients perceiving themselves to be unfairly treated, and inter-agency buckpassing (the practice of one agency foisting its responsibilities onto another) will speak for themselves when statistically analyzed.

Summary Reports

The reporting function would consist of compiling information gathered by the referral service in the course of its referral and fact-gathering activities. Those reports would:

- (a) provide a measure of agency activity in terms of referrals, intake, and appeals
- (b) measure agency effectiveness by feedback from recipients and additional information-seeking activity on the part of clients
- (c) determine relative accessibility of various human services
- (d) disclose deficiencies in existing human services
- (e) reveal unmet human needs
- (f) assist in ordering priorities in human services delivery planning according to (i) special groups (aged, youth, newcomers, etc.), (ii) areas within the region served, (iii) relative urgency of various problems handled, and (iv) relative magnitudes of the various types of problems.
- (g) summary reports will, of course, provide HURIS with a basis for self-evaluation.

Longitudinal Studies

Existence of the HURIS referral data bank will permit long-term follow-up of cases. It is expected that these studies will:

- (a) promote joint-case co-ordination by the various human service agencies
- (b) determine the actualization of human services
- (c) determine the quality of help and its long-term effects
- (d) permit greater insight into the origin and development of human problems, their inter-relationship, and the effects of human service intervention at various phases of problem development.

Research Activity

In addition to the referral data bank HURIS will also operate a Social Planning Information Bank. Inputs will consist of:

- (a) the periodic summary reports produced by the Referral Service
- (b) applicable statistical data of a local nature
- (c) applicable statistical data extracted from the national census
- (d) information produced by municipal or regional planning groups (City Planning Maps)

- (e) information produced by educational administrators (Board of Education Planning Maps)
- (f) results of ad hoc surveys
- (g) contents of local land-use data banks not already covered in (d) and (e)

IMPLEMENTATION

Our immediate objective was to implement a subset of HURIS in a defined local area to determine requirements for hardware, software, systems planning, and training of human intermediaries. Two principal vehicles were created:

- . An interactive computer-based community information system
- . A method for capturing and analyzing data regarding information sought by clients.

COMMUNITY INFORMATION NETWORK

Our computer-based community information network is now operating in London, Canada (population: 233,000).

Its data base is disk resident within the PDP-10/50 computer at the University of Western Ontario. This computer had previously been configured to optimize its time-sharing capabilities.

Three remote terminals are connected by direct telephone lines to the computer.

1. A cathode-ray-tube display terminal is installed at Information London.

Information London is an agency that furnishes information and assistance to persons requiring human services of all kinds.

Requests from clients are received principally by telephone although clients sometimes write or call in person.

The staff consists of three to five workers some of whom are volunteers.

The telephone are answered continually during the five-day business week.

The agency is financed on a year-to-year bases by grants from United Community Services, the municipal government, and the federal government. The provincial government assists with some logistic support.

Information is acquired by the agency from a variety of sources. These include newspaper clippings, pamphlets, handbills, agency memoranda, letters, directories, and, perhaps most importantly, personal contacts by the staff.

The agency's data bank has existed historically as manual card files, a large bulletin board, notes, and, to a considerable extent, the memory of the staff.

2. A cathode-ray-tube terminal is installed in the Humanities Reference Section of the London Public Library and Art Museum. The Library is considering making a parallel installation of a terminal that will provide hard copy.
3. A cathode-ray-tube terminal is installed in the main office of the Visitors' and Convention Bureau of Greater London. This will be replaced by a terminal which produces hard copy.

The Visitors' and Convention Bureau is a municipal agency that provides information to tourists. It serves principally a walk-in clientele at its main office in downtown London and three sub-offices at each of the major highway approaches to the city.

Occasional or dial-up users of the system include:

- . Bell Telephone of Canada
- . School of Library and Information Science, UWO
- . Computer Science Department, UWO.

It is our intention to invite the leading users, gatherers, and creators of community information to become part of the network.

We have begun discussions with

- . London Free Press (the local newspaper which has TV and radio outlets)
- . Information Canada - Canada's federal information agency.

To demonstrate the potential of our computer information network, we installed a display terminal at the UWO booth at the Canadian Computer Show in Toronto last fall and showed that we could answer visitors' questions about London by querying our data base by long-distance telephone.

The Data Base consists of three main parts:

- . Master Resource File
- . Ephemeral Files
- . Annotation File

The Master Resource File contains approximately 5,000 records. Each record consists of four fields

- . Amplified name of the resource agency
- . Street address
- . Telephone number
- . Descriptive code

The amplified name of the resource agency consists of its full legal name, common name, acronym (eg ARF for Alcoholism and Drug Addiction Research Foundation), and a descriptor (eg J.J. Smith - LAWYER).

The descriptive code consists of four digits:

- . 1st digit - affiliation (eg municipal)
- . 2nd digit - primary service category (eg health care)
- . 3rd digit - secondary service category (eg clinic)
- . 4th digit - tertiary service category (eg venereal disease)

The Master Resource File was compiled from the following sources of information:

Allocated Members, London and District Dental Society

Clubs, Organizations, Groups, etc. in London, Ontario (C of C)

Community Directory (Information London/London Public Library)

Community Groups by Planning District

Community Leaders' Catalogue

Directory of Ethnic Organizations in London, Ontario (S of S)

Directory of Program Resources (London Public Library)

Extracts from Files (Information London)

London Chamber of Commerce Industrial Directory

London Drama Council Newsletter

London Inter-Church Council Church Directory

London Legal Directory

London on the banks of the Thames (V e CB)

London Telephone Directory

Province of Ontario Community Services Directory

Senior Citizens' Groups of London

United Community Services Funded Agencies

Ephemeral Files are created by the users of the computer network by use of the CREATE operation in our retrieval programme and the text editing facilities of the PDP computer system.

The Visitors' Bureau has created several files which collectively answer the questions most frequently asked by tourists among which are:

- .. Directions to and details about points of historical and cultural interest
- .. Hours of operation and admission prices of places of amusement or recreation

- . Availability of facilities for conventions and meetings

Information London has created files containing information about:

- . Eligibility criteria at child day-care centres
- . Camps and day camps for children
- . Location of polling places, names of candidates and deputy returning officers for elections.

The Public Library has created files containing information about:

- . Cultural activities at branch libraries
- . New acquisitions of books and periodicals
- . Newly formed clubs and citizens' groups.

We think of our ephemeral files as a community-wide electronic bulletin board.

Annotation File. The annotation file is made up of one-line comments expanding upon information in the master file. For example: the master resource file entry: "Joe's Restaurant" might be linked to the annotation: "Italian food, prices start at \$3.00".

It would be technically feasible to link complaints about pollution violations and consumer dissatisfaction to the master file entries of the offending companies and organizations.

Data Base Management. These operations have to do with creating and updating the Data Base.

The programmes were written in COBOL and run on a CYBER 73-14 computer, which is much faster than the PDP-10/50.

There are three distinct procedures:

- . Create the Master Resource File from a manually prepared punched card file

- . Print hard-copy directories of which there are three kinds:

- (a) Directory of human resources indexed by affiliation of the agency:

- 0 = unspecified

- 1 = municipal

- 2 = provincial

- 3 = federal

- 4 = quasi-public

- 5 = service and voluntary organizations

- 6 = associations

- 7 = private business

- 8 = resource centres

(b) Directory of human resources indexed by primary service category:

- 0 = unspecified
- 1 = basic income maintenance
- 2 = other human services
- 3 = legal and protective services
- 4 = health care
- 5 = education
- 6 = recreation and travel
- 7 = employment
- 8 = public affairs
- 9 = community affairs

(c) Directory of human resources indexed by keywords in the amplified title (KWIC index).

- . Print mailing labels to send out periodic questionnaires revalidating the master file entries.
- . Update the master file by:
 - (a) correcting inaccurate information
 - (b) deleting duplicate or irrelevant entries
 - (c) adding new entries

Information Retrieval. These programmes were written in FORTRAN for the PDP-10/50. They have to do with retrieving information from the master file, managing ephemeral files, and managing the annotation file. They run in real-time from the remote terminals.

. Search. This operation is based upon a combination of digits from the descriptive code or combinations of strings from the amplified title joined with the Boolean operators: AND, OR, NOT, NAND, or NOR.

. Display. This operation permits the user to read the ephemeral file corresponding to a specified record in the master file. Each master file record is uniquely identified by a number made up of its descriptive code and a computer-assigned four digit sequence number.

. Create. This operation encompasses a set of commands which enable a user to manage ephemeral files over which he has been granted authority. The integrity of the ephemeral files is ensured by hedging these operations with a system of special passwords.

The set of commands comprising the CREATE operation are:

- (a) LOCATE: enables the user to obtain his allocated file
- (b) STORE: enables the user to create a file by typing in a natural way at his remote terminal
- (c) CLEAR: permits the user to erase existing material in the file
- (d) SUPERCEDE: enables the user to create new information to replace that erased from his file

- (e) RELEASE: permits a user to relinquish an ephemeral file when he no longer has a need for it.

Creating an ephemeral file is no more difficult than putting out an internal memo announcing an upcoming event or a new or expanded service.

CAPTURE AND ANALYSIS OF QUESTIONS

When a client requests help from Information London, certain data are recorded on mark-sense cards which we process monthly to produce several statistical cross tabulations of the types of service rendered and inquiries received.

This information can be stored and added to each month.

Data regarding cases handled was formerly collected on forms and in format developed by Ontario Provincial Social and Community Services during a research project which studied the operations of this and similar centres. The forms were sent to Queen's Park, keypunched by the Provincial Government and processed by computer to create a 25-page summary monthly report.

This service was discontinued in December 1972 after the Province finished its study.

We wrote a computer programme to process the case records produced by Information London. We had their handwritten case slips keypunched and produced the same cross-tabulation of case data that had formerly been produced by the Government of Ontario. We did this for five months - January to May 1973.

Working with the Director of Information London, we revised the data collection format to overcome some deficiencies in the scheme devised by the Government of Ontario that became evident in actual use. We devised a mark-sense card format for collecting the data to replace the handwritten case slips. The new format was put into use in June 1973.

The data collection format permits characterizing a case by: age of client, area of city; problem dimensions including urgency, complexity, whether the problem involves physical handicap, language difficulty or criminal involvement; whether the client belongs to a minority group or is a welfare recipient ; whether or not the social service the client requires is available and whether the client has any complaint regarding the level of service; and the steps taken to solve the problem including identification of the agency or class of agency to which it was referred.

FUTURE PLANS

The rest of our implementation plan will take advantage of the fact that by this time there now exist two computer-based data banks: a community-wide structured inventory of human service resources having some 5,000 entries (Master Resource File) and a structured data bank of human problems growing at the rate of some 1,500 cases a month.

Some future tasks will involve:

- . The monthly reduction of individual case data to pertinent summary statistics for long-term storage.
- . Providing Information London with the facility to make retrospective coordinate searches of its case data bank to answer its needs for summary statistical information of an operational nature between delivery of periodic cross-tabulations, and to obtain data encompassing several reporting periods.
- . Implementing a computer based question-answering system utilizing a matrix of problems versus solutions.
- . Developing special terminal display units to be installed at one or more Neighbourhood Resource Centres where clients can be served on a walk-in and self-help basis.

It is noteworthy that the problem of whether clients can communicate more freely with a machine or a human intermediary is a subject for research. One can hypothesize situations in which the machine would be preferred as well as situations in which human communication is essential. The question is doubtless situation-dependent, but is not sufficiently well understood.

Also in the research area is the problem of designing access facilities of a visual, tactile, or oral nature to enable unsophisticated or illiterate individuals to communicate effectively with a computer resource.

One can project the networking concept upward from the local level. A single system such as we have described would scarcely tax a dedicated time-shared computer, so possibly a single computer could serve several cities and facilitate interchange of information among them.

On the national level, a handful of regional computers would suffice to fulfill the total need for community information service and, of course, these could be linked for interchange of information on a national level.

SUMMARY

Our Community Information Network, while aiding in the work of local human service agencies, initiates the systematic study and incremental build-up of a project having long-range national significance. I visualize HURIS as:

- (a) a nationwide social early-warning system
- (b) a means for co-ordinating the delivery of human services that will tend to reduce regional disparity, and
- (c) a control that will prevent overlapping and redundant expense in an area that for some citizens' likes is already too costly.

