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CANADIAN POLICE COMPUTER USAGE - AN HISTORICAL SURVEY, COMPARISONS & LESSONS

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Purpose of This Paper

If the conference on "Mapping and Other Applications of Computers to Canadian Police Work" is to achieve its stated purposes then it will be appropriate to spend some time becoming aware of the actual state of the application of the art in Canadian Police work. Hopefully this paper will be one way of closing the gap between the possible and the attainable in terms of actual police implementation of the subjects and concepts considered at this conference.

The following therefore are the primary objectives of the paper:

1. To ascertain in as economical a manner as possible the actual level of application in computer technology both individually and collectively among Canadian Police Forces excluding C.P.I.C. usage.

2. To obtain additonal data and draw appropriate conclusions likely to be a benefit to the technical liason committee (TLC) of the NRC/CACP should they elect to pursue the idea of further and continued work in this field.

There were two subsidiary objectives of the writer which should be explicit:

a) As Chairman of the technical committee on information systems for the Canadian Court Administrators Association which has a similar project underway to that which might be undertaken by the TLC, he has a considerable interest both in becoming aware of the actual state of affairs in the police component of the justice system; both for its own sake and for the reason of cross system implications. Court systems are nourished by police systems.

b) In the past ten years the writer has been actively involved in the development of police computer applications and has seen a number of myths and assumptions arise concerning these. The preparation of this paper has given an opportunity to examine some of these untested assumptions. The results in some cases were revealing.

Scope of the Paper

The paper concentrates upon Municipal Policing. Regional forces were deemed to fit in that category. Information was sought from provincial forces for comparative purposes but was excluded from calculations made. Likewise the R.C.M.P. as a Federal force, as a contract Provincial force, or as the operators of CPIC, were excluded although Mr. Ron Meyer, Deputy Director of CPIC was a very considerable help in giving an overview of CPIC development. On the otherhand, R.C.M.P. forces acting as contract municipal forces were included. The reasons were:
First The R.C.M.P. contribution to the development of police computer applications warrants a separate paper in itself and there are a number of excellent papers from members of the force being given at this conference.
Second and more important in terms of development, administration, and financing, the R.C.M.P. operate in an environment so different from that of municipal forces that comparisons become difficult if not meaningless except in the context of a contract municipal force.

An Opening Clarification

Whenever two Canadian Justice Systems people happen to meet their conversation soon turns to one or both of two standard themes. One is to regret the absence of the Canadian equivalent of the pot of gold called LEAA. The other is to deplore the actual level of Canadian technical performance. Both are inappropriate. Quite apart from what our U.S. friends could tell us about the use of LEAA funds, it is a fact of Canadian life that we spend more than twice LEAA's annual budget to aid underdeveloped countries. Whatever our personal views may be we have to live with fact of this national priority. Secondly, Canada has made contibutions to justice technology of which it may be justly proud: the CPIC system, the simulation models of court and correction systems as reported in the recent Rand study, and automated legal research are examples in point. Canada certainly has its share of triumphs to compensate for its shortcomings imagined or otherwise.

The Method Used

In February 1977 a questionnaire was sent to all municipal forces throughout the country likely to be using computers in police work other than for CPIC purposes. The term "Automated Data Processing" was used in the hopes of identifying applications which might not strictly speaking be regarded as computerized, e.g. unit record or mechanical devices. No such methods were disclosed by respondents. The questionnaire did not make a distinction to having access to a computer and using a computer - a very necessary distinction in the current state of technology - as it was felt likely to cause confusion to the non-technical mind. In any event information about both was desired. However only two such cases of access rather than use were disclosed both which involved motor vehicle files. However in the province of Ontario there is a likelihood of several other such applications through the PARIS system.

The Responses:

Eighty-two percent replies were received. Many showed a very positive interest in the topic plus a desire to be made aware of the outcome and further developments of this conference.

The results were that some form of computer usage (other than CPIC) was identified in municipal forces having 58.5% of the total municipal sworn police strength in the country. Allowing for returns promised but not yet received this should eventually reach about 63%.

Incorporating provincial responses into the data and again allowing for returns pending we have some computer usage other than CPIC in about 65% (on a strength basis) of all non-Federal policing.

The following sections now describe briefly the results obtained. In commenting hereon the author would acknowledge his tendency perhaps to draw upon experiences during a lengthy association with the Vancouver Police Department to illustrate the subject.

How Long Have Municipal Police Forces Being Using Computers?

Almost all Municipal usage commenced in the late 60's or early 70's. All but three respondents had their computer system operational in at least some form prior to the advent of CPIC. In other words while the CPIC has met very basic and important needs for modern police management it has not been such as to apparently develop local applications in other fields.

What Are The Applications of Municipal Forces?

Generally they are batch-oriented, aggregative after the fact housekeeping types of applications or ones which have a high visibility in terms of public involvement. For example; traffic ticket processing. Some analytic work was noticed as in call load recording and in dispatch analysis. However very limited UCR applications or related statistical uses were discovered.

Interestingly enough despite a seven to eight year span for the average installation there appeared to be very little progress between the initial applications and those currently installed. Questions were asked along the lines, What did you start with?; What do you have now?; What do you expect to have in the near future? A general conclusion was that the imaginative sophisticated approach apparent in the CPIC network did not appear to have been transfered to the day by day type of applications in use by the average municipal force. Little growth conceptually was seen likewise in plans for future uses. In most cases they were discreet applications addressing local needs. With very few exceptions integrated management or comprehensive analytic systems were not proposed. In the case of one or two large urban forces some excellent work appeared on the horizon.

Why Has There Been Such A Limited Growth?

Several reasons can be advanced for the fairly pedestrian state of local data processing. The following are the conclusions reached from the questionnaire although they may not in fact be the sum total of the reasons that could be advanced. Firstly, there is the matter of use and control of hardware and resources. With few exceptions hardware was in no way under police control. Apparently in most cases police forces were not able to influence the direction of municipal data applications. A very static set of relations appears to be the norm.

Secondly, a look at the budget available for municipal police data processing indicates that the limitation is equally because of the lack of resources budgeted by police departments for this purpose. The data obtained refers only to that contained in municipal police budgets and therefore must be read with caution because the majority of municipalities do not have a charge back system for individual using departments. Likewise time of serving policemen who would appear in the traditional line budget may not be included in police data processing costs.

Reading the following figures with this limitation in mind, the following dollar costs per sworn officer for reporting police forces were disclosed.

The highest was $340.00 per sworn officer. The lowest $13.00. The average was $208.00 or less than 1% of the annual cost of a policeman.

Excluding capital costs and development expenditure as reported by two large forces; the average would be reduced to $104.00 per sworn officer or somewhere less than 1% of the cost annually of a policeman.

Even if unrecorded costs double this amount or 1% is reflected as the annual expenditure on data processing, this compares very unfavourably with usual expenditures in government and industry of at least 3%. Figures supplied to me by Mr. R. K. Meyer suggest that for the average police force, given its highly labour intensive nature, to reflect the average expenditures in other branches of government, somewhere the order of 6 to 8% of a police budget would be the appropriate figure.

Against this should be compared the estimated operating costs of the CPIC system which would be in the order of say $300.00 per sworn member for all levels of policing Federal, Provincial and Municipal expenditures we are still faced with a considerably lower usage of resources than elsewhere.

Thirdly, the use of human and technical resources within departments is extremely low. On the basis of returns the equivalent of twelve full time police members and 94 civilian staff or 106 people in all were reported. These figures should be compared against an estimated 16,3500 sworn municipal policemen throughout the country and a civilian strength of 2,840. These figures may be modified to a small extent because of data entry functions performed at a central data processing pool within a municipality but do not significantly alter the percentage.

Fourthly, the technical resources available for computer systems development are extremely limited. Only fifty technical, that is systems analysis, programming, etc., positions were identified within municipal forces. While some usage of municipal based staff and some very limited use of outside consultants was reported it would appear that there is a distinct shortage of qualified technical persons available for both conceptual development and implementation duties.

The Reasons For The Limited Resources:

A number of reasons can be advanced from general knowledge of the municipal scene of police vis a vis municipal budgeting processes. Firstly, a police force would

argue strongly in comparison say with additional manpower, more radio equipment, vehicles, etc. There are some exceptions, one municipal force is known to have been extremely aggressive in the use of industrial engineering and methods study resources available from a central city pool. This however is very much of an exception. Other reasons are that municipal police agencies are not strongly represented on any planning group that is likely to exist within a municipality for determining its own priorities. Finally in terms of perceived needs by city administrators, money for the administration of justice has to compete with many other conflicting demands.

Training and Orientation:

The response generally revealed that training and orientation was limited strictly to immediate requirements and given only to those having direct involvement with the application concerned. For example, it was hard to determine whether general levels of NCO's had been given any orientation as to the power of the computer as a tool in law enforcement. An exception to the general rule would be the approach of the City of Vancouver in 1968 when as a first step towards its plans for the introduction of computer applications it conducted a week long training seminar at which every NCO of the rank of corporal and above plus all officers attended. Experts were brought in from all over the continent and temporary connections made to several then existing systems in order that a direct feel for the type of application which would occur some years ahead could be obtained by all decision makers in the force.

Likewise the training and orientation given to the executive of municipal police forces is extremely limited. Although a number of forces acknowledged the use of IBM equipment, for example;no reference was made to the attendance of any officers at the Law Enforcement Executive Programs conducted by that company for senior police administrators.

Planning:

Some questions were asked as to what plans existed for future development and it would be fair to say that formal planning in the accepted sense was not apparent in almost all cases reported. Three respondents indicated that much work had gone into the development of a long range strategy for meeting their informational needs through the use of computer facilities but these were by far the exception. In most cases it would be correct to describe statements as being hopes rather than plans.

The Nature of Planned Applications:

In general applications forseen by respondents tended to be an extension of those already in existence. That is after the fact, batch-oriented, aggregative collections of data about general police activities. The reasons for this may be ascribed to those which were given to the lack of resources available at the present time for police computer usage. In as much as few police forces were involved in the general planning of municipal computer facilities, nor did they receive anything like a reasonable share of budget resources for the purpose. It is appropriate to expect that they would not forsee any major change in the near future.

The Use of Computers For Mapping and Other Techniques:

A series of eight questions endeavoured to obtain as much information as possible as would be of interest to this conference on the use of computing in management science and related applications. In almost all cases there is no activity to report upon. Even in the municipalities which were known to have engaged in programs with the National Research Council these programs were not reported by the municipal forces and upon enquiring in one case I was told that this was deemed to be a National Research project not a local police one. On the other hand questionnaires were generally answered by the police officer responsible for records, communications, etc. and in certain known examples though the planning and research agency within a police department has engaged in some applications of interest to this conference these were not reported upon. However these constitute a minority.

In the case of mapping the only reported application was that of the City of Vancouver which in 1971 for some time produced maps giving the distribution of groups of crimes throughout the city. These maps utilized the then equipment of the city an IBM/360 model 30 with 64K; hardly an adequate facility for any sophisticated work. In consequence the maps were not of a great benefit because the data had to be highly centralized and the time lag between the events upon which they reported and the distribution of the maps was too long for an operationally oriented police officer. Perhaps more important in retrospect would be the fact that insufficient explanation of the use to which such maps could be put was given. For these reasons the experiment terminated after approximately six months. In another application in the city however a single dramatic use of mapping was highly successful and serves to illustrate a use to which it can be put. In as much as mapping is dealing with aggregates in a spatial

relationship it is necessary to remind oneself that mapping deals not so much with the response of police to requests for service or dealing with current situations but rather with the steps that it can take in preventing events from occuring. The following description of its use in a juvenile study will illustrate this point.

The information available as to where an event occurs is often of considerable benefit in looking for evidence that will lead to its solution. The best example being that frequently of stolen automobiles where the place a vehicle is recovered from is likely to give an indication of the residence of the person who stole the vehicle in the first place. Using this concept the City of Vancouver proceeded over a twelve month period to plot the location of the residences of juveniles who committed offences and lived within the City of Vancouver. (Note: not where the offences occured but where the offenders came from). The City of Vancouver's geographic based system enabled easily the determination of a co-ordinate reference for every known address in the City. It soon became apparent that there were a series of areas from which juvenile offenders apparently congregated or were domiciled. In certain cases these were readily identified as group homes, etc. It could be argued that all that had been done was to give in another form what was already well known to any experienced policeman. This of course is often one of the strengths of computer mapping; it does give formal confirmation of conventional wisdom and enables an independant collection of the data to confirm or disprove what experience and intuition has led the police officer to believe.

This plotting of the locations of groups of offenders led to an analysis of the offenders themselves and their known associates. Using sociogram and similar sociometric techniques it was possible to come up with diagrams illustrating the relationship of juveniles one to another and therefrom leadership patterns to be identified. In short some twelve key juveniles were identified as being the leaders of groups or themselves the perpetrators of a substantial proportion of juvenile crime within the City of Vancouver.

In terms of simulation no applications were reported upon other than those of the City of Vancouver which has embarked upon several discreet models for beat allocation, vehicle replacement and manpower deployment projects. Again it must be stressed that there may have been other applications used by planning and research groups within police departments which were not reported. One continuing application is that of the City of Vancouver's traffic analysis.

For over ten years all traffic accidents have been plotted on the City's geographic base files with many benefits. One important one has been the fact that consistency of data and agreement between municipal engineering traffic branches has been obtained. Equally the systems design achieved substantial economies in related systems and procedures.

What Would You Like To Have?

Questions were put to respondents asking them in the absence of budget or other restraints to indicate the applications of their preference. Almost all of them indicated a need to have indexing retrieval systems which would enable speedy recovery of information at a level below that which is currently entered on the CPIC network. Two provinces namely Ontario and B.C. have active projects in this area, but the need was felt in almost all areas of the country. Interestingly enough these needs do not seem to be in keeping with those which are perceived by certain Federal agencies who are sponsoring national projects.

Cooperative Efforts:

It was asked if respondents could visualize cooperative efforts to produce systems of broad application which would enable repetitive work to be eliminated and in almost all cases the answer was that such concepts were strongly supported.

Training and Development:

All forces expressed great desire for further training and development not only of line members but of executives and the use of the Canadian Police College in its executive development courses was mentioned. Doubtless there are other means of meeting these needs as well which do not involve travel to a centre location.

Conclusion:

The conclusions of the study, final details of which will be reported to CACP, are as follows:

1. There appear to be many fruitful areas for further development on behalf of CACP, NRC and others in a presently limited field of application.

2. That the application of standards for levels of systems would be a stimulating and very necessary program. Under a grant from the

Donner Foundation certain studies in standards for various parts of the Criminal Justice System presently underway it is not known however whether in the police area any consideration is being given to appropriate standards for technical levels of information systems.

3. It would appear that policing systems are operating entirely in a vacuum. The fact that they generate data which is of use to respondents in many other parts of the justice system has not been considered and the relationship of police computer usage and information generated therefrom as being of benefit to courts, corrections, prosecutors, etc. is worthy of considerable study.

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