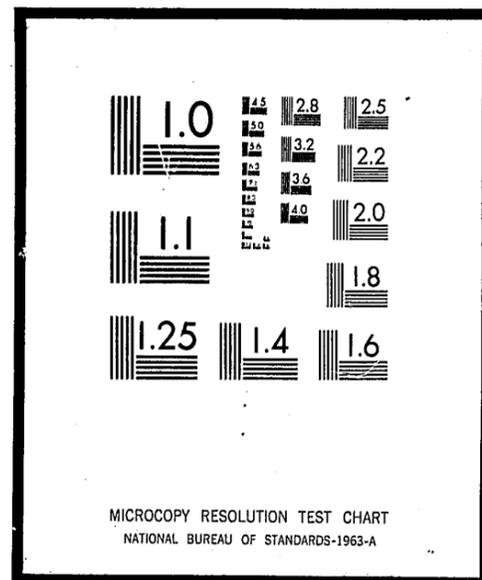


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CANJUS Project

IMPLEMENTATION OF A
SYSTEMS APPROACH
TO THE
CANADIAN CRIMINAL JUSTICE SYSTEM

by

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R. Gordon Cassidy
John F. Townesend

ABSTRACT

Although there has been general agreement in the research community of the need for new methodologies for information retrieval and presentation of the information to decision-makers, there has been a surprising lack of implementation of such methodologies in government. The present paper describes an on-going project within the Canadian criminal justice system for the development of a systems planning model, intended for use by planners, administrators, and line decision-makers. The model is intended to assist in estimating quantitatively the impact of proposed future changes to the system (both legislative and programmatic), and to serve as a better monitoring device for making accurate assessments about present activities in the Canadian criminal justice system. The success of implementation of this model is perhaps unique since it has not only been accepted as an additional planning tool, but also has obtained a large amount of government support for further development and extension of its possible uses within the federal bureaucracy.

DISCLAIMER

The views expressed are those of the authors and do not necessarily represent those of the Ministry of the Solicitor General.

Before describing the introduction of the systems model and the application of a systems planning methodology to the Canadian criminal justice system, it would be useful to outline the present structure of the administration of justice in Canada and some pertinent facts about the criminal justice process itself.

At the present time in Canada, the administration of justice is divided among the three levels of government - municipal, provincial and federal. The local or municipal government maintains many of the local police forces, plus local lock-ups or jails. In some cases, there is a small local subsidy towards some of the local court houses, but this is the exception rather than the rule. The provincial governments administer the total court system in Canada except for the Supreme Court of Canada, the Federal Court and the Territorial Courts whose jurisdiction and size are much more limited.

There is a single Canadian Criminal Code, which is a federal statute. This Code is enforced principally by local and provincial police and prosecutors. Other federal laws are enforced by the national police force, the Royal Canadian Mounted Police. Prosecution under

these laws will either be by a member of the R.C.M. Police, or by a special prosecutor appointed for this purpose by the federal Department of Justice. In addition, a significant proportion of R.C.M. Police officers are under contract to provincial or municipal governments to enforce the Criminal Code, provincial statutes and municipal by-laws. (This is true in all the provinces of Canada except Quebec and Ontario.)

Correctional services are similarly divided between federal and provincial governments. Probation officers are officers of the courts, so that probation, therefore, is a wholly provincial program. Generally, the federal penitentiary system provides custody for persons convicted under federal law and who received terms of two years or more, while provincial correctional institutions accommodate offenders serving terms of less than two years, awarded under federal, provincial or municipal legislation. The National Parole Board exercises jurisdiction with regard to sentences imposed under federal statutes, although some authority is delegated by statute to certain provinces in relation to special types of sentences (particularly in British Columbia and Ontario). Consideration is being given to broadening the provincial involvement in parole to give them jurisdiction over those offenders in provincial institutions sentenced for offences against federal statutes.

The Juvenile Delinquents Act in Canada is also a federal statute administered by the provinces. There are also provincial statutes that pertain to juvenile justice. Juvenile probation is, therefore, either a provincial or municipal responsibility and, generally, juvenile custodial facilities are operated by the provinces, usually in conjunction with their child welfare programs.

Figure 1 shows how the different levels of government jointly manage Canada's criminal justice system.

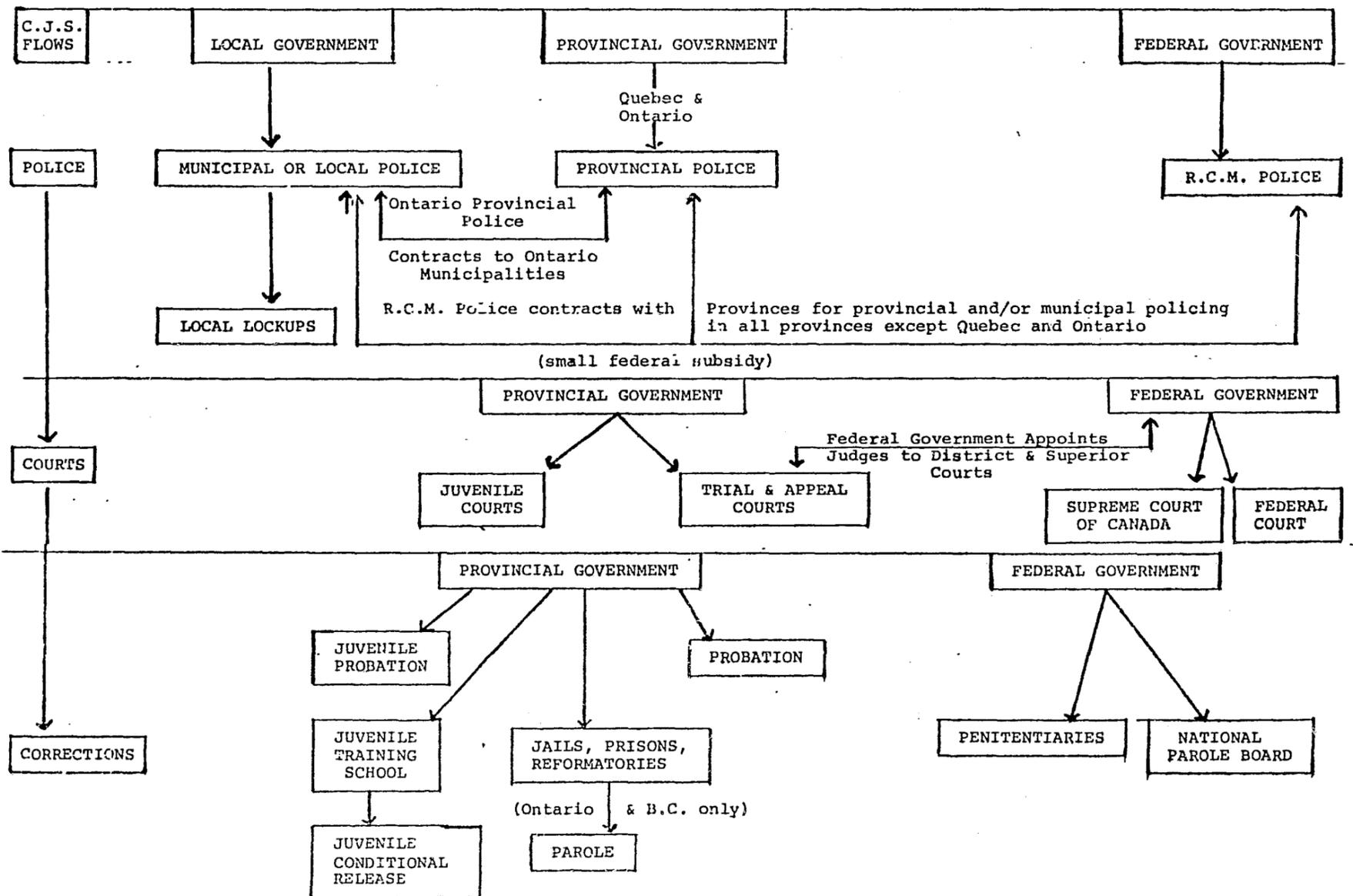
Orthogonal to the normal subsystem partition of police, courts, and corrections, there is the division between the levels of government (local, provincial and federal).

As can be seen, the administration of justice, as well as the system itself, is fragmented into many components, administered by different agencies located in different physical locations, as well as having different objectives. Naturally, such fragmentation does not encourage a cohesive management of the system and, particularly, a cohesive introduction of changes to that system.

Before describing the actual implementation of the systems approach we will describe what this approach entailed and the modelling methodology which was used. In

FIGURE 1

ADMINISTRATION OF JUSTICE IN CANADA*



* EXCLUDES TERRITORIAL GOVERNMENTS OF YUKON AND NORTHWEST TERRITORIES

the third section, we describe the implementation of this systems approach in the federal component of the administration of justice in Canada. This is followed in the last section by some conclusions and the intended future effort for the implementation of this approach; particularly within the Ministry of the Solicitor General, which includes the R.C.M. Police, Canadian Penitentiary Service and National Parole Board.

II SYSTEMS APPROACH

By a systems approach we mean a description which attempts to quantitatively characterize the criminal justice process by the following information:

- (a) flows of persons through the system;
- (b) resources applied to the different stages in the system;
- (c) costs of these resources per unit flow in the system;
- (d) workloads applied to the units of flows (eg., judge hours required to try a person accused of Breaking and Entering); and,
- (e) the resource constraints within the system.

The basic methodology or model which was used, was that of JUSSIM, an interactive computer simulation of the Criminal Justice System developed by A. Blumstein (see references (3) and (4)). The reader is referred to reference (4) for a complete description of that model and its capabilities, both in terms of the quantitative description it offers and its interactive capability.

The quantitative description of the Canadian criminal justice system for 1970-1971 (excluding Alberta and Quebec because of different recording systems - see Statistics Canada Reports for more detail) was used to describe it in terms of the flows, costs, and workloads (outlined above) at present used in the eight provinces.

A description of the system is shown in Figure II. The resources applied to this system and their respective workloads are shown in Table I. Table II shows the different crime categories for which flows were obtained in the system.

In describing the justice system there are several points which should be made about the data which were used in the initial model. Although reports from Statistics Canada provide quite comprehensive data, there are many problems involved in obtaining compatible data for a description of the system at a national level. The reports which were used to generate the flows in the system were the Statistics Canada judicial reports of 1970 and 1971 (references (14) - (21)), plus some specially generated tables from Statistics Canada raw data.

The reports which were used to generate the systems description clearly were not specifically oriented towards this type of analysis. For this reason, it was

TABLE I
APPLICATION OF RESOURCES

| Workload Number | Name | Unit of Time | Resource | Stage Applied to |
|-----------------|---------------------------------|--------------|--------------------------|-------------------------------------|
| 1 | Police Report | Hour | Police | 1 |
| 2 | Police Arrest | Hour | Police | 2 |
| 3 | Magistrate: Initial Appearance | Day | Magistrate Court | 5 |
| 4 | Magistrate: Preliminary Inquiry | Day | Magistrate Court | 6 |
| 5 | Magistrate: Trial | Day | Magistrate Court | 7, 11, 12 |
| 6 | Judge: Bench Trial | Day | County Court | 9 |
| 7 | Judge: Jury Trial | Day | County Court | 10 |
| 8 | Superior Court: Appeal | Day | Superior Court | 8 |
| 9 | Superior Court: Appeal | Day | Superior Court | 15, 17, 30, 32 |
| 10 | Penitentiary | Year | Penitentiary | 19 |
| 11 | Prison | Year | Prison | 20 |
| 12 | Jail | Year | Jail | 33 |
| 13 | Parole Preparation | Case | Parole Preparation | 22 |
| 14 | Parole | Case | Parole | 24, 25 |
| 15 | Mandatory Supervision | Case | Parole | 21 |
| 16 | Probation Preparation | Case | Probation Preparation | Susp. Sent. Prob.* |
| 17 | Probation | Case | Probation | Susp. Sent. Prob.* |
| 18 | Juvenile Court | Day | Juvenile Court | 34 |
| 19 | Juvenile Probation | Case | Juvenile Probation | Probation |
| 20 | Juvenile Training School | Year | Juvenile Training School | Indef. Detention Training School |

* Suspended sentence probation summary and indictable.

TABLE II

CRIME TYPES

The crime types presently used for the Canadian Criminal Justice System Model -

1. Murder
2. Attempted Murder
3. Manslaughter
4. Rape
5. Other sexual offences
6. Wounding
7. Assaults (not indecent)
8. Robbery
9. Breaking and Entering
10. Theft of Motor Vehicle
11. Theft
12. Have Stolen Goods
13. Frauds
14. Prostitution
15. Gaming and Betting
16. Offensive Weapons
17. Other Criminal Code Offences
18. Narcotics Control Act
19. Federal Statutes
20. Provincial Statutes
21. Municipal By-Laws

necessary to make several assumptions in order to obtain a quantitative description of the criminal justice system. The specific assumptions as well as the problems which are inherent in the present set of statistical reports published by Statistics Canada are described in detail in references (7) and (8). For example, definitions of the crime type categories in the Statistics Canada reports are not all compatible between the police, court, and corrections sub-systems.

The cost and workload information has been, and is continuing to be, collected from specific agency and government reports at all levels of government.

This gives a brief overview of the systems description itself. A much more complete description is given in reference (8).

III

IMPLEMENTATION OF THE SYSTEMS APPROACH

The environment, at least within those agencies administering the Canadian criminal justice system at a federal level, was very ready for a systemic approach. This may have been, in part, because of the lack of any really comprehensive summary of present activities within that system. The period with which we are concerned is slightly over a year, from July of 1972 until December, 1973. We will first give a general description of this process of implementation and then attempt to abstract it to assess its more general implications.

During the first month there were several initial discussions with the Research and Consultation elements of the Ministry of the Solicitor General and it was understood that the Ministry would be undergoing a substantial reorganization. Several discussions were held the following month with the Judicial Division of Statistics Canada. Out of these discussions it became clear that -

- a. the last complete set of relevant Canadian statistics, including all provinces, was for 1967 Statistics and the next one could be expected for 1974 or 1975;

- b. many of the statistical reporting forms for the collection of criminal justice statistics (specifically police, court, penitentiary, parole, and juvenile statistics), were being changed simultaneously;
- c. reliability checks of the reported figures were infrequent although some of the statistical systems were perceived to have a high reliability and others were thought to have low reliability.

These factors confirmed that there were major problems in obtaining a quantitative description of the criminal justice system in Canada and that it would be difficult to know where to start to assist in further developing the statistical monitoring system which was within the mandate of Statistics Canada. During the last quarter of 1972 G. Cassidy succeeded in generating a report from 1967 Statistics Canada data entitled, "A Preliminary Analysis of the Canadian Criminal Justice System as a Public Service System", (see reference (7)) on one crime type for the federal system and for the Province of Quebec. The cost and manpower data (except for the police subsystem) was not readily available and was not an integral part of the Judicial Division system for monitoring the criminal justice system in Canada.

The report simply served to outline the process whereby perhaps a more complete systems description of the Canadian criminal justice system could be obtained. It also described the future possible data sources which were distributed throughout different geographical locations in Canada and different levels of government.

In January of 1973, there were some discussions with the federal Law Reform Commission, particularly with Dr. Hans Mohr, one of the Commissioners of the Law Reform Commission, about the systems approach to the Canadian criminal justice system and the problems of obtaining any information (particularly quantitative) on that system. There were also further discussions with the Ministry of the Solicitor General, in particular with the Assistant Deputy Solicitor General for Research and Systems Development. It became clear that there was a real need for obtaining a quantitative, organized and regular description of the Canadian criminal justice system. Such an organized systematic description of the criminal justice system, updated on a regular basis, would provide the user with a capability for more relevant and timely quantitative analysis of that system.

During the following months the JUSSIM program developed by Blumstein, Belkin and Glass at Carnegie Mellon University (see reference (4)) was mounted on a computer

system at the Ministry of State for Urban Affairs. The demonstration system, which is part of the JUSSIM package, was used to give a demonstration to the Ministry of the Solicitor General.

During this whole period there were continuing discussions with the staffs in the Judicial Division of Statistics Canada and the Ministry of the Solicitor General, as well as with senior level management in these departments. At that point it became clear that the need which had been expressed for the organized description of the Canadian criminal justice system was such that both departments were quite willing to consider that development within their own area, if it could not be done elsewhere. During this same period, discussions were held with the Deputy Attorney General of Nova Scotia. It became clear that the co-operation of the provinces in obtaining the federal statistics left a lot to be desired, since the provinces had received minimal feedback from the federal judicial statistical system with the exception of the reports which were published from two to three years after the data had been collected. Discussions were then conducted with the Correction Ministry and Ministry of the Attorney General, Province of Ontario. These agencies were trying to develop research areas by developing management information systems incorporating a detailed system description of the justice systems within the provinces.

The collection of the initial data sets on all crime types within the Canadian criminal justice system, particularly the flows, was begun during the month of March and discussions were held with the National Parole Board on their statistical reports and how they might be incorporated in the systems description.

In April, 1973, the "Aims and Purposes" Committee of the Law Reform Commission held a special session on a systems approach to the criminal justice system. Robert Hann, from the University of Toronto, Center of Criminology, led a discussion with a project he had completed on the court system in the City of Toronto. This discussion was organized by Dr. Hans Mohr, of the Law Reform Commission, and served to bring together many of the departments involved in the administration of justice in Canada, including the Justice Department, Treasury Board, the Department of National Health and Welfare, Ministry of the Solicitor General, Department of Urban Affairs, and other agencies either directly or peripherally interested in the Canadian criminal justice system. One result of this meeting was that the Interdepartmental Committee of Judicial Statistics, consisting of Mr. L. Rowebottom, Assistant Chief Statistician of Canada; Dr. Hans Mohr, Federal Law Reform Commissioner; Mr. J. LaForest, Assistant Deputy Attorney General; Mr. Bernard Hofley,

Assistant Deputy Solicitor General, met once more and formed a Working Committee including G. Cassidy, chaired by Dr. Hans Mohr, Commissioner of the Law Reform Commission, on judicial statistics.

The Working Committee was to work throughout May, June, and July and bring a report back to the Interdepartmental Committee at the end of July on judicial statistics and the process by which they could be improved in Canada. At the same time, Statistics Canada assisted in developing the systems description by contributing extra tables needed (derived from the raw data of the 1970 Judicial Statistics).

During the month of May, the Treasury Board Planning Branch saw a high priority in obtaining a basic model for the analysis of expenditures within the criminal justice system to aid in planning cost allocations in the system. There followed considerable interaction between the Treasury Board and the authors for the purpose of possibly using the JUSSIM model as a basis for that cost study within Treasury Board.

During May, the Working Committee met for the first time and began its analysis of judicial statistics in Canada as specified by the Interdepartmental Committee on Judicial Statistics. During this period, the flows between

the various stages of the criminal justice system were further described and more information was gathered from Statistics Canada and other sources.

By this time, there were three alternatives open for continuing the development of the systems model - within the Ministry of the Solicitor General; within the Judicial Division in Statistics Canada; or within Systems Dimensions Limited Institute in Toronto. In addition, and most importantly, during June, a set of records was identified dating back to 1876 on the criminal justice system in Canada. These Statistics Canada records contained some very valuable information on the criminal justice system during the last one hundred years ^{1/}.

In July, the Working Committee on Judicial Statistics finished its report, "Towards a Justification of Justice", in a preliminary draft form and submitted to to the Assistant Deputy Ministers comprising the Interdepartmental Committee. It was agreed that the cost and workload information for the systems description would be jointly gathered by Statistics Canada, the Ministry of the Solicitor General, and

1/ In early 1974, through consultation between Statistics Canada and the Ministry of the Solicitor General, much of this data was translated into machine readable form.

Treasury Board. The preliminary description of flows for seventeen different crime types within the criminal justice system in Canada (of approximately 25 stages) was finished and the data set mounted on the computer. The Information Systems document (reference (8)) was generated and described the ways in which the flows have been generated from Statistics Canada Judicial Information and the means by which the statistics could be differently aggregated or collected by Statistics Canada to further facilitate such systems description in the future.

During September, the Statistics Division of the Ministry of the Solicitor General arranged for joint development of the simulation model between the Ministry of the Solicitor General and Treasury Board. The commitment of approximately six people full time (including senior level professionals) to the model represented a significant increase in resource commitment, which to that point had been one senior professional and one summer student.

During October, "A Preliminary Description of The Criminal Justice System", reference (9), was written giving the flows within the Canadian criminal justice system, some Canadian cost and workload information supplemented by information from the United States and elsewhere where Canadian data was unavailable. After G. Cassidy accepted the

position of Director of Statistics in the Ministry of the Solicitor General, initial work was begun organizing the Statistics Division of the Ministry to continue the systems description which had been started.

By the end of 1973, eight reports were produced on a quantitative systemic description of the Canadian Criminal Justice System. The total reports produced now included:

- a. Preliminary Analysis of the Canadian Criminal Justice System as a Public Service System, (reference (7));
- b. Information Systems Report on the Canadian Criminal Justice System, (reference (8));
- c. Preliminary Description of the Canadian Criminal Justice System, October, 1973, (reference (9));
- d. A Preliminary Description of the Canadian Criminal Justice System, December, 1973;
- e. Use of the CANJUS Model for Planning and Evaluation in the Canadian Criminal Justice System, December, 1973;
- f. Data Incompatibilities for Penitentiary Admissions and Parole Violations, December, 1973;

- g. Information Systems Report on the Canadian Criminal Justice System's Costs: Problems and Recommendations, December, 1973;
- h. Prediction of Penitentiary Population, December, 1973;
- i. Information Systems Report on Workloads in the Canadian Criminal Justice System: Problems and Recommendations, December, 1973;
- j. CANJUS Input Identity System, December, 1973;
- k. Parole and Expenditures and Workloads in Canada, December, 1973.

IV

IMPACT OF THE SYSTEMS APPROACH

The reader has been led through a series of events from July, 1972 to the end of 1973, which impacted quite heavily on the administration of justice, particularly upon the Ministry of the Solicitor General. These events are described in tabular form in Figure III.

An abstraction of the events in Figure III might describe the process of implementation as passing through the following steps:

1. Initial information feasibility study and preliminary data collection;
2. Explanation of model development with senior executives in all federal departments directly concerned with the administration of justice;
3. a. Initial development of model within Ministry of State for Urban Affairs using one senior professional part time and a summer student as well as special data from Statistics Canada Information;
b. Participation on federal interdepartmental committees for mutual education of authors and executives as well as planning for future model development;

FIGURE III

| <u>Time</u> | <u>Report</u> | <u>Activity</u> |
|--------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1970-1972 | | Development by Blumstein of general JUSSIM interactive simulation model for C.J.S. |
| Aug. 1972 - Dec. 1972 | | Informal feasibility study by Cassidy on Implementation of JUSSIM at a Federal level in Canada. |
| | #1 | Preliminary Analysis of the Canadian Criminal Justice System as a Public Service System - Working Paper, Ministry of State for Urban Affairs, Government of Canada |
| Jan. 1973 - May 1973 | | Discussions on the development of JUSSIM in CANADA at a Federal level with executives in Law Reform Commission, Ministry of Solicitor General, Statistics Canada, Treasury Board, Justice Department |
| May 1973 | | Formation of Mohr Interdepartmental Committee on Judicial Statistics |
| | | Development of CANJUS (Canadian JUSSIM) began in Urban Affairs |

FIGURE III
continued

| <u>Time</u> | <u>Report</u> | <u>Activity</u> |
|----------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| August 1973 | | Release of Mohr Report on Canadian Justice Statistics - "Towards a Justification of Justice" Continuing Development of CANJUS under joint steering of Agencies above |
| | #2 Information Systems Report on Canadian Criminal Justice System | |
| September 1973 | | Major development of model moved to Ministry of Solicitor General Treasury Board allocates 3 persons full-time to model development Interdepartmental Committee on Judicial Statistics becomes Steering Committee |
| October 1973 | #3 Preliminary Description of the Canadian Criminal Justice System - Working Paper, Ministry of the Solicitor General | |
| December 1973 | | Further documentation produced on Canadian CANJUS and new major developments proposed and preliminary approval given for 1974 |

4. Move of model to Policy, Planning body directly associated with line agencies administering the C.C.J.S. and thus increased resource allocation to development;
5. Development of further interdepartmental participation in model;
6. Production of first phase CANJUS documentation and planning instituted for future phases.

We will try briefly to summarize here some of the events which occurred in the federal government during this period which relates directly to the implementation of this systems approach. First, Statistics Canada has begun to change its forms in co-ordination with the provinces and with the objective of obtaining information which is compatible between subsystems and to describe what is happening within the criminal justice system of particular interest to the federal agencies.

Secondly, the Ministry of the Solicitor General - reorganized in April, 1973 - has set up a Research and Systems Development Branch under the direction of Mr. Bernard Hofley, comprised of four divisions: Research, Statistics, Management Information, and Library. The Statistics Division under Cassidy has assumed leadership in further developing the

systems models and in beginning other quantitative analyses of crime in Canada.

Thirdly, the federal Law Reform Commission has led a Working Committee on Judicial Statistics and recommended an additional expenditure on federal legal statistics, of approximately one million dollars annually. It noted that this expenditure is simply one of changeover from the present method of collecting statistics, which in some cases is redundant and incomplete, to one which will coherently collect statistics for all users by using the same or similar data formats in Canada ^{2/}.

Several documents were produced on a systems description of the Canadian criminal justice system. This has included references (7) to (9) as well as those described in the previous section.

The JUSSIM model is being used and developed jointly by Treasury Board, Statistics Canada, and the Ministry of the Solicitor General. Naturally, the numbers used are

2/ Expenditures on criminal justice by various levels of government in Canada were estimated by the Committee at one to two billion dollars. This is compared to an annual budget for federal statistics of approximately one million dollars and budgets in the provinces varying from no money to marginal amounts (this has changed in the last two or three years with respect to the provinces, since Quebec and Alberta are instituting their own statistical systems and Ontario is pursuing similar objectives).

expected values rather than reflecting the total distribution of different costs and different flows in different regions in Canada. This is being changed to make a more detailed description for each of the provinces which were included in the federal aggregate description. The flows themselves were generated from the Statistics Canada reports described earlier, the costs and workloads information has been derived from a number of sources, including Hann's reports (see reference (12)), as well as reports done in the United States on workloads and costs in different subsystems of that criminal justice system. As one might expect, the costs vary between urban and non-urban areas and a detailed examination of these costs in the future should provide a great deal of insight as to the different methods of criminal justice administration in rural and urban areas.

It is intended, after additional cost, workload and manpower information are obtained for the aggregate criminal justice system, to develop greater specificity on the provincial components of the total system, and to further develop the model itself by describing expenditures by different levels of government (and possibly incorporating behavioural relationships in the model). It will then be possible to analyze the difference in flows of persons through the criminal justice system of different regions in

Canada and, particularly, to examine the different costs, workloads and other regional differences identified by this systemic description.

Although the basic systems description has taken approximately ten to fifteen man-months to develop for the aggregate federal criminal justice system it is expected to take at least another twelve to twenty-four months to derive it for each of the provinces of Canada.

There is of course much more to be done in the model development itself but developing the systems description to date includes:

1. educating in quantitative planning and system interactions of the line agencies and CANJUS project team;
2. assisting in general policy planning at a macro level (including program forecasts);
3. helping in developing a better information system for monitoring the Canadian criminal justice system;
4. assisting in the co-ordination of information and statistics at a federal level (this is now being expanded to the provincial levels as well); and,
5. serving as the basis for more indepth analysis of crime and crime control in Canada including causal analyses.

We have already seen preliminary impacts in all these areas.

As the description of the Canadian criminal justice system becomes more detailed, it will have more to contribute to the user ^{3/}. It should, however, be emphasized that the main value is not simply in the end product of the model description; rather, it is also in the process of development and the use of it both from an education standpoint and in terms of generating documents like the management information systems report (see reference (8)) which will help in further identifying needs for statistical information on crime and crime control in Canada. By encouraging line personnel as well as planners to use the model for planning and evaluation, it should substantially increase the co-operation of this planning. By the planning itself, it should reduce the number of crises and increase the social benefit of the criminal justice system in the future.

3/ For more detail on the use of the model see CANJUS Report #2, December, 1973.

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- (20) (g) "Training Schools", No. 85-208, 1970.
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LIST OF REPORTS

STATISTICS DIVISION

CANJUS PROJECT

Working Papers

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| 1/73 | Organization of the Statistics Division Volume I | |
| 2/73 | A Preliminary Description of the Canadian Criminal Justice System Volume I | |
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| 4/73 | A Preliminary Description of the Canadian Criminal Justice System Volume II | #1 |
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| 6/73 | Data Incompatibilities for Penitentiary Admissions and Parole Violations | #3 |
| 7/73 | Information Systems Report on Canadian Criminal Justice System Costs: Problems and Recommendations | #4 |

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| 9/73 | Information Systems Report on Workloads in the Canadian Criminal Justice System: Problems, Recommendations and Directions for Future Development | #6 |
| 10/73 | The CANJUS Input Identity System | #7 |
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| <hr/> | | |
| 1/74 | Prediction of Penitentiary Population Volume II | #9 |
| 2/74 | An Overview of Criminal Statistics Canada Volume I | #10 |
| 3/74 | Implementation of a Systems Approach to the Canadian Criminal Justice System | |

END