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AN APPLICATION

OF MANAGEMENT SERVICES

TO CRIMINAL JUSTICE

by Thomas H. Sheehan

Napoleon Bonaparte once said, "The contagion of crime is worse than the plague."

In the U. S., crime is a plague indeed and a problem of the greatest national urgency. Yet public, and even official, understanding of the subject is woefully lacking.

Many Americans, of course, prefer not to think about the problem. "What business is it of mine?" they reason. "It is the job of the police to understand and cope with the criminal. Don't bother me with the issue. I have my own business to look after."

Others, increasingly alarmed by reports of the rocketing crime rate, feel that it most certainly is their business. They articulate their concern in the form of searching and disquieting questions: "Why does crime exist? What kind of individual commits criminal acts? How much does crime cost society? Are we capable of reducing crime? If so, how can this be done? What methods are practical? What methods are more effective than others? How much should we invest in the crime reduction effort?"

These are the questions in need of answers. But in all too many instances, neither are police able to provide the information nor are judges, penologists, probation and parole officials.

From the President on down, there is a sharp awareness of the need to ask the right questions regarding crime, and to come up with the right answers. As a result, numerous committees have been formed and investigations initiated to study the problem. The efforts continue. Some studies are relatively helpful, others worthless. The more effective probes tend to study the situation in much the same way a systems analyst would use to investigate a manufacturing process or an accounting system.

What works against getting meaningful answers that might help in combating crime is that the

present network of American criminal justice was not conceived as an integrated whole. The system divides into a myriad of agencies -- prosecution, criminal court, probation, prison, parole -- each functioning independently in a way that does not necessarily relate to the whole. Under this setup, each agency is responsible to a different political structure. Villages, towns, counties, cities, states and the Federal Government each maintain separate criminal justice systems.

In many cases, the systems are archaic in concept. Origins of magistrate courts, for example, trial by jury, bail and appellate courts date back centuries, usually to English and European precedents. Provincial courts often stem from Colonial times. State courts were spawned in the post-Revolutionary period. Other components of the criminal justice system such as juvenile courts, probation, and psychiatric rehabilitation are more recent. But what the situation boils down to is a maze of functions, frequently unclear, sometimes overlapping, which makes the overall structure of American criminal justice difficult to define and even more difficult to upgrade.

Still, efforts are being made. And more than one agency has attempted to clarify the progress of criminal cases through the system. One such effort is outlined in Exhibit I below. (From "The Challenge of Crime in a Free Society," a report by the President's Commission in Law Enforcement and Administration of Justice.)

The varying line weights in Exhibit I suggest relative volumes. However, no nationally authoritative data exists to confirm or deny the suggested volumes associated with each part of the criminal justice model. Thus no one knows how to represent quantitatively the American criminal justice system. Neither does anyone know all the components of the system. Nor does anyone understand the significance should one or more of the components

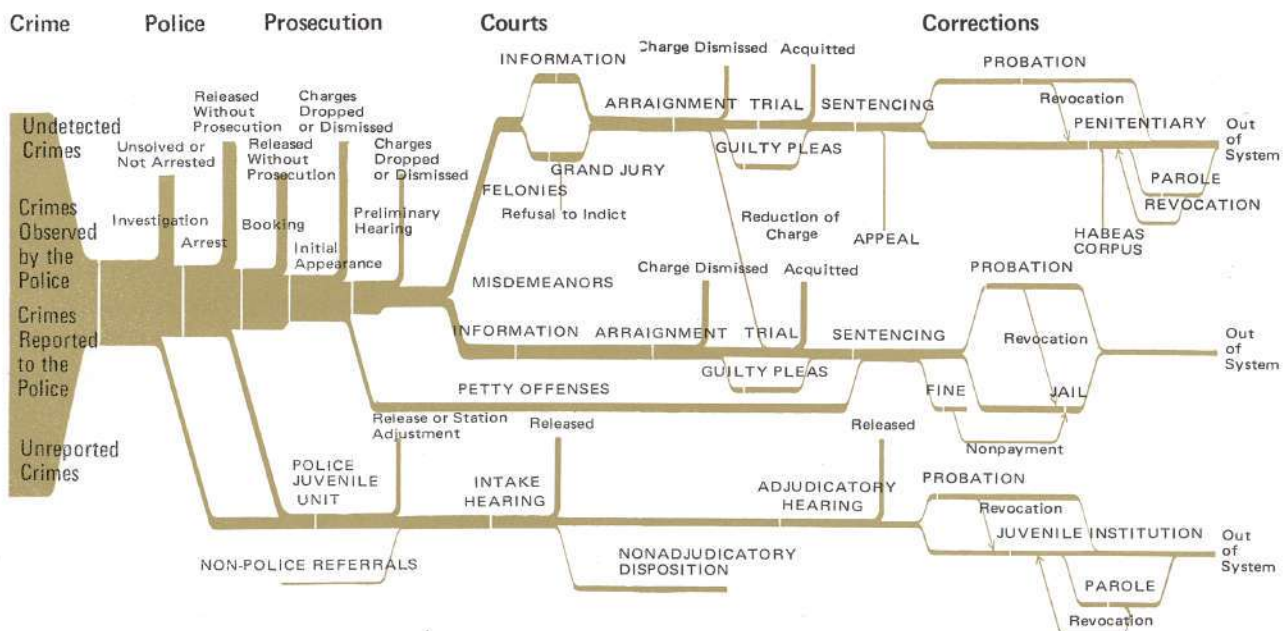


EXHIBIT I / MODEL OF THE AMERICAN CRIMINAL JUSTICE SYSTEM

IF: the teenage lawbreaker exhibits characteristics A,B, and C in the combinations in the right of the table,

CHARACTERISTICS

A	•	•		•	
B		•	•	•	
C				•	•

THEN: select a non-criminal buddy with the following set of tested personality attributes.

ATTRIBUTES

physical strength ethnic background	same different	same same	J	stronger Table 2	same same	weaker
health age range	handicapped - 2, 0	same 3,5	same 3,5	J 4,7	3,5	0,3
race educational attainment	different Table 3	different	same 2 yrs	same Table 2		J
economic level sex	opposite	J		same J		J

EXHIBIT II / BUDDY ASSIGNMENT DECISION TABLE

be missing. As a result, it becomes difficult if not impossible to accurately assess the merits of one proposal to reduce crime over an alternative proposal.

What, for example, would be the percentage of reduction in juvenile crime if all teenagers were required by law to attend daily classes on social responsibility? How effective would this measure be compared to an alternative proposal of assigning teenage law breakers in specified categories to a non-criminal "buddy" with a predetermined set of personality attributes?

Proponents for the classroom approach may well argue that this strategy would be the most effective way to tackle the problem. By the same token, "buddy" system advocates could present a very strong case in their own behalf. But which group is right? To which alternative could public funds be more efficiently applied? To get the answer, the benefits of each alternative would have to be scientifically documented. Then costs would have to be calculated and weighed against the gains. This is no simple procedure.

For one thing, both alternatives include a host of assumptions. The first alternative assumes that social responsibility could be defined and taught; that sufficient teachers could be made available; that adequate physical facilities exist or could be constructed. The second alternative assumes that "experts" would be able to predict the effect of personality attributes; that agreement could be reached regarding what it takes to qualify as an expert; that sufficient quantities of "buddies" would be available to make the program meaningful.

It takes far more than conjecture to satisfy these assumptions. One technique for coping with the problem is the decision table. Here is how a decision table geared to deal with the first two "buddy" system

assumptions might be designed. (See Exhibit 2 above).

J = Judgment factor to be used at time of "buddy" assignment.

Although the decision table concept may be applicable to the consideration of alternatives, as yet there exists no precise and consistent sociological data with which to construct such a table. Obviously, the two alternatives proposed are naive in approach and do not represent operational alternatives. But they do illustrate the complexities of the American criminal justice system, and give some small insight into what is involved in the development and consideration of alternative crime reduction strategies.

One byproduct of the independent operation of multi-level criminal justice agencies and the overlapping of jurisdictions is the generation of prodigious masses of criminal data. The output of one agency becomes the input of another. And so the mountain of paperwork increases. Often, during the shuffling of data, key facts are omitted, others are misinterpreted or erroneously transmitted. All of which results in needless duplication and a correspondingly high cost of operation.

Thus, as citizens, we pose the searching question: Where is the way out of the labyrinth? What positive, efficient, result-getting steps can be taken to upgrade the search, collection, retrieval, assembly and dissemination of criminal justice information?

The need to present decisive answers to these questions was never more urgent. This urgency was stressed in the Report of the President's Commission on Crime in the District of Columbia:

"Nearly every agency involved in law enforcement and the administration of justice

is impaired by lack of facts pertinent to daily operations and long-range planning. Information is either non-existent, incomplete, unassembled, or incompatible at every stage of the criminal process -- from offense to arrest, trial, conviction, sentencing, incarceration, release, and aftercare."

If data is not available at the local level, who is collecting, or planning to collect the data? And when it is collected, what will be done with it?

Several States are searching for answers. California, Colorado, Georgia, Kansas, Massachusetts, Michigan, New Jersey, New York, Pennsylvania and Washington are among them. Alameda County in California, the city of St. Louis, the Washington, D. C. Planning Commission, and the New England State Police Administrators' Conference have already taken positive steps to improve their data handling and dissemination.

New York State in particular has taken significant strides forward. Its experience is well worth reviewing.

NYSIIS

In 1965, the New York State Identification and Intelligence System (NYSIIS) was established to provide improved data for the more than 3600 criminal justice agencies in the State. The four principal goals of NYSIIS are:

1. to set up a state-wide criminal justice data bank
2. to improve the accuracy and completeness of the data on file
3. to respond rapidly and efficiently to inquiries from all criminal justice agencies regarding persons with a criminal history on file in New York State
4. to aid in the speedier and more thorough processing of accused and convicted persons

NYSIIS provides positive identification of an individual based on fingerprints; probable identification based on name, personal description and other identifying data; and responds to inquiries with a summary case history (SCH), photographs and other information.

The need for NYSIIS was underscored by the November, 1957 Apalachin, New York meeting of more than 100 crime overlords. The frustrations of sorting, assembling and retrieving data on these arch criminals triggered Governor Nelson A. Rockefeller's authorization in May, 1963 of the initial study project. In 1965, a statute established NYSIIS as an agency within the Executive Department

of New York State. Its purpose: "To assist in the improvement of the administration of criminal justice by developing and establishing a computer-based information sharing system."

TRBS at NYSIIS

NYSIIS started with a study group of five State employees. In less than a year it swelled to agency status. Demands on the small State group were considerable. In August, 1965, Touche, Ross, Bailey & Smart was asked to supplement the efforts of the State staff. The initial task of the TRBS Management Services group was to aid NYSIIS in making a study of alternative methods of converting historical data from manually processed to machine processable form. The value of the systems approach became apparent early in the endeavor. The key elements of this approach are worth repeating.

Key No. 1 -- The importance of defining objectives and clarifying terms at the outset of the study.

Key No. 2 -- The need to establish project control procedures right from the start.

Key No. 3 -- The need to conceptualize, develop costs, explore and evaluate alternatives.

Key No. 4 -- The importance of hard work and depth probing. This includes attention to detail and a need for project leaders and analysts alike to understand the system under study as a whole as well as being able to spell out computer specifications at the data element level.

Key No. 5 -- The need to measure results against explicitly stated objectives.

Key No. 6 -- The importance of pinpointing potential uses for such quantitative techniques as sampling, queuing theory and network analysis -- coupled with the importance of remaining objective about their applicability.

Of prime importance, experience proves, is the need to remain flexible, particularly during the analysis process. Opinions and conclusions reached too early encourage rigidity and discourage the imaginative approach. In the end it leads to costly system modifications, frustration and disappointment. All of these keys played a vital role in achieving the objectives of the NYSIIS data conversion study on schedule, within budget, and with maximum efficiency.

A prime purpose of the data conversion study was to analyze the type of data required to satisfy the information needs of NYSIIS, its user agencies, and the New York State criminal justice system. The output of the study was a report supporting NYSIIS' fiscal 1966 budget request with cost estimates for converting data.

One goal of NYSIIS was to provide

rapid access capability to historical data already on hand in the State's Division of Identification (DCI). * This readily available source included information on approximately 3.5 million persons, of whom one-and-three-quarter-million were known to be criminals. A primary task in planning the data conversion effort was to define the file to be converted. This meant identifying the various types of data, exploring, reviewing and deciding upon feasible conversion alternatives.

Here is where the systems approach became important. To determine the optimum conversion alternative, certain fundamental questions were posed by TRBS analysts:

- What are the operational definitions of a criminal and a recidivist? (A recidivist is a "repeater" who meets the following criteria: he must be under 55 years old, and if arrested only once that arrest must have occurred within ten years; if arrested two or more times, at least one of these arrests must have occurred within twenty years.) These definitions need not, and at NYSIIS did not, conform to the legal or dictionary definitions.
- Would the cost of converting all criminal records in the files be commensurate with benefits to be derived?
- If not, which records should be converted and how could they best be identified?
- What data elements** should be converted?
- Which document types provide consistent and accurate data?
- How much of the required information is missing or unavailable in existing records? What steps will be needed to obtain this information?

* DCI was an organizational unit within the Department of Correction. When absorbed by NYSIIS it subsequently became known as the Bureau of Identification (BI) via a statutory enactment in April, 1966.

**A data element is the most basic grouping of characters, or unit of data that one wishes to reference. It is sometimes called a "field" in computer terminology. Care must be used in defining data elements. NAME, for example (person's full name) is not a data element if one wishes to address those characters within NAME that refer to first name only.

- What practical error level can be tolerated? How will this error level be measured?
- What are the conversion requirements in terms of manpower, money and time?

While operational definitions of a criminal and recidivist were being obtained, identification of the data elements to be converted was begun. The identification process was based on a statistical sample of the manually processed summary case history folder file, name index file, and fingerprint file***. The sample provided the quantitative measures needed to compute estimates of:

- The number of recidivist case history folders on file
- The composition of recidivist case history folders by document types and volumes of documents they contained
- The amount of missing information
- The attributes of recidivists.

The sample revealed other interesting problems as well. For example, the average number of documents per recidivist case history folder was ten. But some folders contained as many as 192 documents; others contained none. The average number of fingerprint arrest cards per recidivist case folder was three. But some histories reported as many as 75 arrests. One person, arrested 8 times, showed seven different cities as his place of birth and an age discrepancy of 21 years. Another person with 12 arrests was recorded ten times as a male, twice as a female.

This will provide some insight into the degree of frustration involved in the findings. Despite this, the sample was extremely useful in developing routine conversion procedures. At the same time, it suggested different methods of handling exceptions in situations such as those outlined above. Finally, the statistical sample provided a laboratory for making time and motion studies and in estimating the amount of work involved to locate each data element, for coding or transcribing the data element, and for applying edit rules.

Another major task was that of describing the total work content in the conversion process. This was a highly detailed operation. It consisted of breaking down conversion activities into logically grouped categories. Specific recidivist case history folders had to be removed from the files, documents selected and microfilmed, data keystroked, and original

***The summary case history folder file represents one-and-a-quarter million persons who have two or more documents on file at NYSIIS. The name index file contains five-and-one-half-million names and name variants such as: nickname, alias. The fingerprint file contains three-and-one-half million master fingerprint cards, one for each person on file.

material returned to the files. The time and motion estimates were used in conjunction with standard hourly rates to estimate costs for each activity as well as total costs for each conversion alternative.

In analyzing the proposed conversion alternatives, TRBS came to the conclusion that a substantial number of the one-and-a-quarter-million summary case history folders on file were not likely to be of much value. This bulk represented non-recidivists as spelled out in the operational definition (persons who had not committed a second offense in a great many years, or people beyond the 55-year age limit). The assumption was thus made, based on statistical findings, that the non-recidivist was unlikely to commit other crimes in the future. Selection procedures were consequently geared to segregate non-recidivists prior to conversion, reducing costs considerably.

Suppose, however, that the future actions of non-recidivists contradicted the general assumption. Provisions were made to convert and reactivate such files should the summary case history folders be required to satisfy the rapid response goal of NYSIIS to meet the criminal justice information needs of user agencies.

The final task of the data conversion study was to evaluate the proposed alternative conversion plans and to recommend the one that was best. Evaluation of alternatives was based on the following criteria: the ability to satisfy data base requirements, the cost of conversion, the implications of scheduling the required clerical staffs, and the projected effectiveness of practical control measures.

The data conversion system ultimately recommended estimated that approximately 500,000 summary case histories out of a population of one-and-a-quarter million would optimize the ratio of cost to benefits derived.

In November, 1965, NYSIIS invited TRBS back to implement the data conversion study recommendations. A joint NYSIIS-TRBS data conversion implementation team was designated. The team's new major tasks included:

- Planning the data conversion design, development and implementation effort using network analysis and a CPM computer program.
- Preparing the EDP programming specifications.
- Performing a non-criminal data conversion study similar in scope to the initial data conversion study which considered only criminal data.
- Writing clerical data conversion procedures.
- Preparing a data conversion master schedule.
- Designing and monitoring a pilot study operation

of the clerical procedures.

- Verifying the results of the statistical sample performed in the data conversion study.
- Establishing a statistical acceptance sampling procedure on vendor performed keystrokes.
- Training of the clerical staff and monitoring of the overall data conversion operation during the initial start-up effort.

In October, 1966, the application of Management Services Techniques was expanded. At that time TRBS joined the NYSIIS staff in designing an On-going system. This On-going system serves as the basis for accomplishing the four previously stated goals of NYSIIS.

In addition to the major tasks already discussed, the expanded scope of work included:

- Definition of the On-going system capabilities. This definition included a series of milestones against which progress can be measured.
- Identification of present departmental workload.
- Definition of the existing manual system and the proposed EDP system including present and anticipated costs.
- Analysis of future data communication needs for fast response information sharing.
- Preparation of flow charts, clerical procedures, EDP functional specifications, control procedures, and work station layouts.
- Documentation of the system design effort including: System Design Manual (s), System Design Change Notices, and System Description.
- Analysis of fingerprint classification procedures and performance of a controlled statistical experiment to estimate filing and searching error rates.
- Analysis of the feasibility of using microfilm to record storage, transaction control and system backup.
- Preparation of a training program.
- Development of project reporting and management techniques.
- Assistance in the preparation of budgets and schedules and their subsequent re-planning as required.
- Analysis of machine readable data files to determine missing, incomplete or unusable data elements.
- Estimation of costs to collect missing or unusable data elements.
- Development of decision rules to format-converted data into the On-going system.
- Specification of error correction EDP programs, clerical control procedures.

Although the list of completed NYSIIS tasks grows longer each day, considerable work remains to be done. Impressive strides are being made,

not solely through application of the systems approach, but equally through the dedicated efforts of highly qualified people from several organizations who are pooling their knowledge and enthusiasm in the achievement of a common goal.

As yet New York State is a long way from solving its harrowing and complex crime problems. But a basic building block in the solutions, the ingredients of an improved data bank, are gradually being fitted into place.

IN CONCLUSION

Like NYSIIS, the national criminal justice system in America can be analyzed using the systems approach. Thus the same advantages inherent in the NYSIIS effort would apply to the national picture as well. One objective in designing an information system, for example, is to balance the value of information generated against the cost of supplying it.

Determining the value of data is essentially a management decision. In a criminal justice system, this comes under the province of police, court, prison, parole and probation administrators. By the same token, the cost of information is governed by technical considerations of systems design dictated by volume of data handled, response time, selectivity of response, accuracy and reliability.

The systems approach stresses the development of alternatives in order to achieve the best balance between value and cost. Yet the concept alone is no panacea. The systems approach requires competent personnel to apply its discipline effectively. At the same time the discipline of the systems approach permits competent personnel to ask the questions that need asking, to evaluate the answers and, if necessary, to rephrase the questions without losing sight of the objectives.

In criminal justice this is a must if we, as Americans, are to make significant progress in the reduction of crime.