

UIC John Marshall Journal of Information Technology & Privacy Law

Volume 4
Issue 2 *Computer/Law Journal - Fall 1983*

Article 2

Fall 1983

Legal Decision Making by Computer: An Experiment with Sentencing, 4 *Computer L.J.* 243 (1983)

Richard V. de Mulder

Helen M. Gubby

Follow this and additional works at: <https://repository.law.uic.edu/jitpl>



Part of the [Computer Law Commons](#), [Internet Law Commons](#), [Privacy Law Commons](#), and the [Science and Technology Law Commons](#)

Recommended Citation

Richard V. de Mulder & Helen M. Gubby, *Legal Decision Making by Computer: An Experiment with Sentencing*, 4 *Computer L.J.* 243 (1983)

<https://repository.law.uic.edu/jitpl/vol4/iss2/2>

This Article is brought to you for free and open access by UIC Law Open Access Repository. It has been accepted for inclusion in UIC John Marshall Journal of Information Technology & Privacy Law by an authorized administrator of UIC Law Open Access Repository. For more information, please contact repository@jmls.edu.

LEGAL DECISION MAKING BY COMPUTER: AN EXPERIMENT WITH SENTENCING

by RICHARD V. DE MULDER AND HELEN M. GUBBY*

CONTENTS

I. AUTOMATION AND THE LAW	244
A. THE EXPERIMENT	245
B. CONTENTS OF THIS ARTICLE	245
II. DESCRIPTION OF THE SYSTEM	246
A. GENERAL IDEA OF THE SYSTEM.....	246
B. SEARCH FOR THE NEXT ITEM	247
C. EXPRESSING CONDITIONS BY MEANS OF CONTROL LINES	249
D. HOW THE DECISION PROCESS IS RECORDED.....	250
E. SOME OTHER FEATURES	250
III. THE PROGRAM.....	250
A. THE STARTING PROCEDURE	251
B. SEARCHING THE FILE FOR THE NEXT ITEM	251
C. PRINTING THE ITEM ON THE SCREEN.....	251
D. SELECTING THE RIGHT SORT OF ITEM	251
E. FINDING THE NUMBER OF THE NEXT ITEM	253
F. ABORT PROCEDURE	253
G. END PROCEDURE.....	253
H. RESET PROCEDURE	253
I. HELP PROCEDURE.....	253
J. ASSORTED SUBROUTINES.....	254
IV. THE SENTENCING MODEL	254
A. PRELIMINARY STEPS	254
B. REMAINING STEPS IN CHRONOLOGICAL ORDER	255
V. THE DECISION FILE	257
A. INTRODUCTION	257

* Richard V. de Mulder, lecturer in criminal law and computer science and law, Erasmus University, Rotterdam, Holland; Helen M. Gubby, barrister-at-law, Workshop for Computer Science and Law, Erasmus University, Rotterdam, Holland.

B.	INDIVIDUALIZATION.....	258
C.	BEHAVIOR AND ACTOR AREA.....	258
D.	HOW TO CONSTRUCT A TARIFF.....	258
E.	FIRST ORDERING OF THE SENTENCING FACTS.....	258
F.	LIMITATIONS OF THE MODEL.....	258
G.	SECOND ASSESSMENT ROUND.....	259
H.	DECISION IN CASE OF ABSENCE OF AIMS.....	259
I.	INTERNAL REARRANGEMENT OF INFORMATION.....	259
J.	CHOICE OF SANCTIONS.....	259
K.	COST-BENEFIT ANALYSIS.....	259
L.	DISCREPANCY OF GOALS.....	260
M.	REVIEW OF SANCTIONS CHOSEN.....	260
N.	DECISION ON THE BASIS OF THE C.B.A.....	260
O.	LIMITATION OF SANCTIONS.....	260
P.	SUMMARY OF THE FINAL JUDGMENT.....	260
VI.	A DEMONSTRATION OF THE SYSTEM.....	260
A.	DESCRIPTION OF THE CASE.....	261
B.	REPRODUCTION OF THE COMPUTER OUTPUT.....	262
VII.	A REVIEW OF THE PROGRAM.....	298
A.	"PORTABILITY" OF THE PROGRAM.....	298
B.	IMPROVEMENTS.....	298
C.	PRACTICAL LIMITATIONS.....	299
D.	THEORETICAL LIMITATIONS.....	299
E.	IS SIMULATION OF "HUMAN FEATURES" POSSIBLE?....	303
VIII.	SOCIAL DESIRABILITY.....	301
IX.	CONCLUDING REMARKS.....	303

I. AUTOMATION AND THE LAW

How well can legal decision making be handled by a computer? Is it possible to simulate the human processes of legal decision making? Could a computer make better legal decisions than a human agent and, even if it could, would that be desirable? Prompted by such questions, an experiment was set up by the Workshop for Computer Science and Law, Erasmus University Rotterdam. A research team, consisting of the authors, as well as A. Oskamp and W. van der Heyden, concentrated upon the question of whether or not computer-aided legal decision making is a feasible proposition.¹ The reasons for this particular focus are two-fold. First, if it appeared that computer-aided legal decision making was not possible, any question of its desirability is hardly relevant. Second, in discussions

1. R. DE MULDER, A. OSKAMP, W. VAN DER HEYDEN, H. GUBBY, SENTENCING BY COMPUTER: AN EXPERIMENT (1982).

concerning its desirability, a frequently heard argument is that it is simply not possible to use a computer for legal decision making. Proving the contrary would refute this argument.

A. THE EXPERIMENT

The experiment set out to create a system that would not be bound to any legal, social or economic demands or limitations. Because of this express intention, the computer program that resulted from the experiment is one that is suitable for all kinds of decision making. For the purposes of the study, however, it was decided to select one particular form of legal decision making—sentencing.

In most countries, the criminal law system is heavily overloaded. In view of current technology, could computers be used to solve, or at least alleviate, the burden on that system? Since a purely experimental approach was opted for, the authors did not concern themselves with any one particular criminal law system but rather with criminal law systems in general. Professor Hulsman provided a general sentencing model.² This model, which is taught to the students at Erasmus University Rotterdam, is purely academic in nature, i.e., it is concerned with a sentencing process that the designer would like to see in existence rather than one that actually exists. The model is not linked to any specific national legal system.

The result of the experiment was a system consisting of a program and a decision file, both implemented on a suitable computer. Only one conclusion could be drawn; it is definitely possible for a computer to make legal decisions. It must be pointed out, however, that the system developed was never intended to be a "perfect" system. Criticism is openly encouraged. For this reason, this Article contains all of the material necessary for a critical examination. For example, the program is written in BASIC to make it portable, and is reproduced in full with a detailed explanation; all of the necessary decision data for the use of the system are given.

B. CONTENTS OF THIS ARTICLE

This Article describes the system that we have developed, i.e., the program, the decision file and the sentencing model that underlies that file. A demonstration case is presented, followed by a criti-

2. Professor Hulsman teaches criminal law and criminology at Erasmus University, Rotterdam, Holland. The model incorporates some of the ideas found in the "Defense Sociale Nouvelle", a school of thought that was founded by Mark Ancel and which deals with criminal law; cf. M. ANCEL, *SOCIAL DEFENSE: A MODERN APPROACH TO CRIMINAL PROBLEMS* (J. Wilson trans. 1965).

cal examination of the system. The Article concludes with some remarks as to the social desirability of computer-aided sentencing.

II. DESCRIPTION OF THE SYSTEM

A. GENERAL IDEA OF THE SYSTEM

The system consists of a program and a decision file. The program can be used for all possible decision files, provided that the files are written in the correct "language." The end-user, i.e., the user who uses the complete system, including both the file and the program, does not have to have any knowledge of the internal operation of the system; the program itself gives all of the relevant instructions. It is also possible for a user to use his own, or an adapted, decision file in conjunction with the program. The system puts questions to the user and, on the basis of the answers given, puts new questions to the user and/or reaches various conclusions.

There are, in principle, two sorts of questions:

1. Open questions (the answer is a line of text); and
2. Multiple-choice questions.

The decisions, conclusions and statements also have two distinct main forms:

1. Statements that are already embodied in the system; and
2. Statements that wholly or in part consist of answers that were given to the open questions by the user at an earlier stage in the process.

Although "open" questions are put to the user, the actual decision process is only influenced by answers given to multiple choice questions. The answers to the open questions are treated as "grounds" of the decision and do not influence the decision process. These four sorts of "items" are recorded in the system. Moreover, the system determines which item must be shown to the user at every stage of the decision procedure. The items are numbered, in the case of our sentencing system, from 1 to approximately 400. The structure of the system is illustrated in the flowchart below.

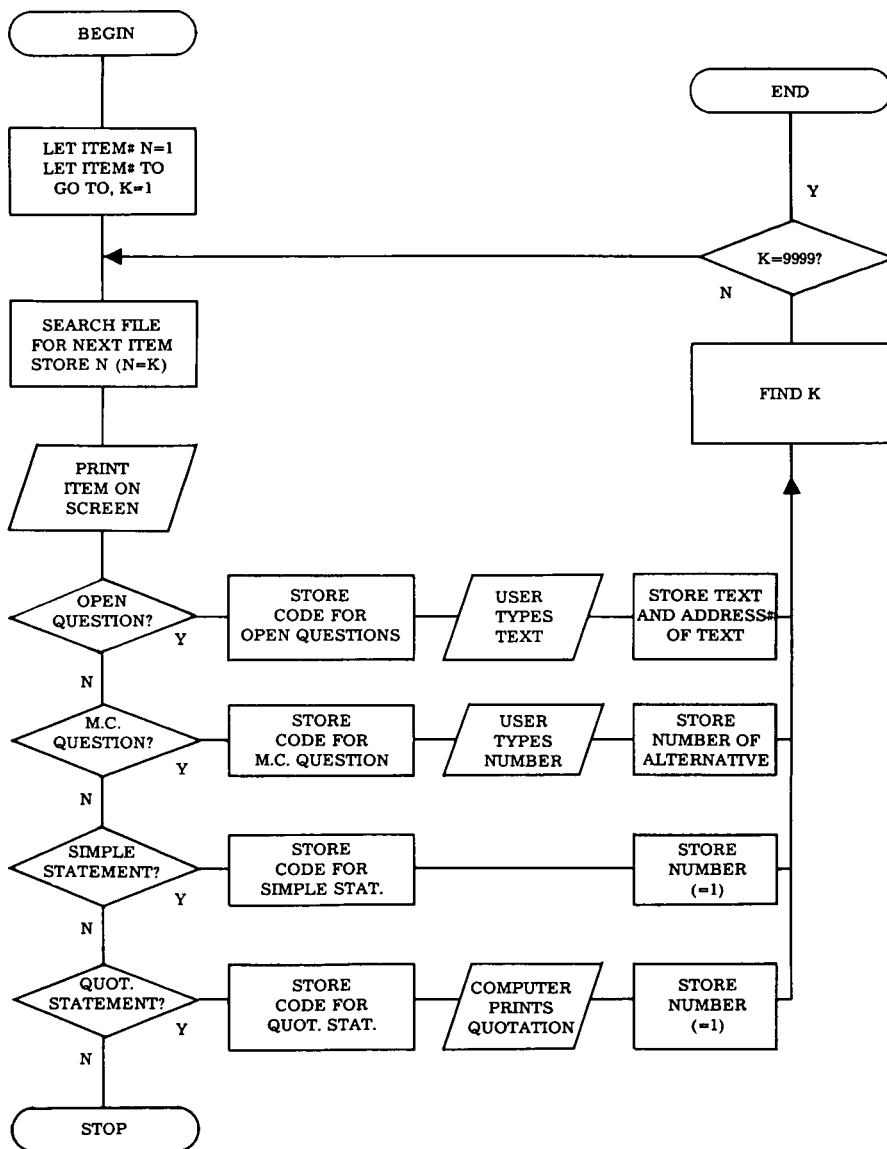
In order to be more generally applicable, the system, as implemented on the computer, consists of two components:

1. A program; and
2. A list of information about the decisions consisting of the items and the control data. This is the decision file.

The program (in the internal memory, the "core") makes sure that the decision file (in the external memory, a disc) is processed in the correct order.

The program is universal. It is not bound in any way to a partic-

ular sort of decision making. It can also be used in any other decision process that is coded into a decision file in the proper manner.



B. SEARCH FOR THE NEXT ITEM

The file consists of two kinds of data:

1. Text lines, printed on the terminal screen while the program is running; and
2. Control lines, not printed on the screen, but internally processed to determine the text that appears on the screen.

The next item to which the program will jump is indicated in the file, at the end of the text of the previous item. The program can also jump back to an earlier item or repeat the same item. An example of a line with control data follows.

42,42,50,60,60,81,#

The first number of the control line has a different meaning than all of the rest of the numbers. The first number indicates the item number of a question. The answer given to that question defines which item the program will go to next. If an item comes up for discussion more than once, the last result or answer is retained.

In our example, the first number of the line, 41, establishes that the item to which the program will jump next depends upon the last answer to item no. 41. The subsequent numbers in the line can be considered as having order numbers, beginning with 0, as follows:

- the second number (42) has order number 0,
- the third number (50) has order number 1,
- the fourth number (60) has order number 2,
- the fifth number (60) has order number 3 and
- the sixth number (81) has order number 4.

(The symbol # at the end of the line indicates that the line is a control line and not a text line.) The listed numbers in our example have the following meaning:

- if question 41 has not come up for discussion (=order number 0), then go to item 42;
- if the answer to question 41 was alternative 1 (=order number 1), then go to item 50;
- if the answer to question 41 was alternative 2 or alternative 3, then go to item 60; and — if the answer to question 41 was alternative 4, then go to item 81.

Item 41 appears to be a multiple-choice question, probably with four alternative answers. If item 41 had been a statement or an open question, then the control line would have consisted of three numbers. For example, 41,50,42 would mean the following:

- Look at the "result" of item 41:
- if it is 0 (i.e., if question 41 did not come up for discussion), then go to item 50;
 - if it is 1 (i.e., if item 41 did come up for discussion), then go to item 42.

Other codes can be used each having a particular meaning. For example:

1. Code 0, in any position except the first, means: read the next

control line: for example, 41,0,42,0,52,53# means: read the next control line if question 41 either never came up for discussion or was answered by alternative 2 (since the code 0 was placed in the positions of order 0 and 2);

2. Code 9999 means: terminate the program; for example, 97,9999,98# means: terminate the program if item 97 never came up for discussion;
3. Other codes can be used to activate BASIC subprograms or subroutines. For example, they can be used to make certain calculations on the basis of the information gathered, to jump out of the program to consult a different data base.

C. EXPRESSING CONDITIONS BY MEANS OF CONTROL LINES

Control lines express the conditions under which the program has to fulfill a particular task. The program will execute an unconditional "goto" when 0 is used as the first number of the control line. The item number that the program will go to is the second number. For example, the control line "0,380" is interpreted in the normal manner as follows:

- if item number 0 has not come up for discussion (and it has not because it does not exist) then go to item number 380.

"Simple" conditions can be stated in one control line, whereas more compound conditions, such as those containing logical "and" and "or" operators, require two or more lines. In the latter case, code 0 must be used in the first line as one of the numbers subsequent to the first. In that case, code 0 means: read the next control line. For example, the two control lines "88,0,91" and "53,89,90" mean:

- if item 88 did not come up for discussion and neither did item 53, then go to item 89;
- if item 88 did not come up for discussion but item 53 did, then go to item 90; and
- if item 88 did come up for discussion, then go to item 91.

The program always reads single control line at a time, and thus the number of possible conditions is fairly limited. The number of conditions are practically unlimited, however, if the "empty" statement is used. An "empty" statement is a statement that does not appear as text on the screen but that does arise internally in the program followed by its own control lines. A more powerful tool for presenting complex conditions is the "multiple statement," which will be discussed later.³

3. See *infra* § III(D)(6).

D. HOW THE DECISION PROCESS IS RECORDED

Data is collected during the decision process. These data consist of, among other things, the answers given to multiple-choice questions and, with regard to statements, information about whether or not they have come up for discussion. These data are recorded in an $n \times 3$ matrix (L). This matrix is a list of 3 numbers on every line.

1. The first number indicates the number of the item.
2. The second number gives the code for the sort of item involved, i.e., that it concerns an open question, a multiple-choice question, a statement, etc.
3. The third number indicates either the answer given or that the statement did come up for discussion.

The matrix list follows the decision process from top to bottom:

<u>Numbers</u>	<u>Meaning</u>
1,1,1	= question 1 is item no. 1, kind of item is 1, answer is 1
2,2,5	= question 2 is item no. 2, kind of item is 2, answer is 5
4,1,7	= question 3 is item no 4, kind of item is 1, answer is 7
21,4,1	= question 4 is item no. 21, kind of item is 4, answer is 1

The meaning of the code used for the item and for the answer will be explained below. It will also be shown that the terms "question" and "answer" can be replaced by "item" and "result", making the program more versatile.

E. SOME OTHER FEATURES

If the user later realizes that he would have liked to have answered a previous question differently, he can go back one or more steps in the decision process by activating the "reset procedure". The user can also ask for help from the computer by using a special routine, the "help procedure", which was incorporated into the program for this purpose. Both features are described below.

III. THE PROGRAM

The program is called "SENPRO" and, as mentioned earlier, it can be used for all sorts of decisions. The program consists of a number of discrete blocks, each fulfilling its own functions.

A. THE STARTING PROCEDURE

In this block, memory space is reserved for the necessary matrices and provision is made for the columns and lines that will be needed. In addition, some variables are initialized, such as the number of the present item (N) and the "next" item (K), both fixed as 1. The decision file is opened.

B. SEARCHING THE FILE FOR THE NEXT ITEM

The computer searches through the file until it has found the next item, the number of which (N) equals K .

C. PRINTING THE ITEM ON THE SCREEN

D. SELECTING THE RIGHT SORT OF ITEM

In the decision file, a code at the end of each item indicates the category for that item. That code will determine which block the program will jump to. The program will jump to the block that deals with the kind of item concerned (see subheadings 1 through 7 discussed below).

In principle there are four kinds of items. In the program itself, however, some of those kinds are divided into subgroups. A whole new kind of item, the "multiple statement" also appears. Thus, in total, seven kinds of items are present in the program:

1. Open questions;
2. Multiple-choice questions;
3. Yes/no questions;
4. Waiting statements;
5. Simple statements;
6. Multiple statements; and
7. Quotation statements.

The order in which these items are placed is not accidental. The questions are ordered from analog to digital and the statements from digital to analog. Waiting statements are of an intermediate form; although the user is asked to intervene, these interventions do not supply any material information.

1. Open questions:

Open questions simply ask the user to type in appropriate text as an answer.

2. Multiple-choice questions:

Multiple-choice questions are answered by typing in a positive, integer number.

3. Yes/no questions:

Yes/no questions are a special form of multiple choice questions. The number of alternatives is two. Yes/no questions will only accept "y(es)" or "n(o)" as an answer.

4. Waiting statements:

Waiting statements are an intermediate form between questions and statements. To indicate that he has read the text printed out on the screen, the user presses the "return" key.

5. Simple statements:

The printed text is directly followed by the next item.

6. Multiple statements:

Multiple statements are a powerful means for drawing conclusions from the previously gathered information. Like the multiple-choice questions, the result of a run through of this kind of item is a positive integer number that is equal to the number of the most suitable alternative. Multiple-choice questions are different in that they are not directly chosen by the user but are fixed by the computer on the basis of the information obtained earlier.

The format of a multiple statement consists of several parts. This format, in addition to having the usual text lines and control lines found in all of the items, contains special control lines and may also contain special text lines. The alternative that the computer must choose is indicated by the conditions described in the special control lines. In its simplest form, such a control line would consist of three numbers, separated by commas, and concluded by a # symbol. For example:

100,3,1,#

In this example, if the answer to question 100 is 3, then 1 will be chosen as the alternative for the multiple statement that will now come up for consideration. Logical "or" conditions are printed on a new line and logical "and" conditions are indicated by their addition to the same control line. A "-" symbol can be used to indicate that a certain alternative to a multiple statement must be fixed if an alternative of an item dealt with earlier has not been chosen. Once the alternative has been fixed by the computer, it is stored in the matrix L. Possible special text lines, which represent the chosen alternative, are then printed and finally the program goes through the usual routine to find the next item number.

7. Quotation statements:

Once a text of this kind has been printed (or there may be no text of this kind), a text that the user has typed in earlier as an answer to an open question is reproduced by the computer.

E. FINDING THE NUMBER OF THE NEXT ITEM

By means of the control lines at the end of each item in the decision file, in conjunction with the numbers stored in matrix L, the number of the new item (K) that is to be printed is fixed by the computer. The item number found may also be a special code, for example the end code 9999.⁴

F. ABORT PROCEDURE

If the user wants to stop the decision process without losing the data gathered so far, he can indicate this by using a special code. The program will then go to end procedure.

G. END PROCEDURE

Except for when an abort procedure is used, the program enters the end procedure whenever a "9999" code has been found as the new item number K. The end procedure entails the storing of all of the information collected during the decision process in a special file. This information consists of:

1. The number of items that have come up for consideration—this number equals the number of lines in the storage matrix;
2. The whole list of the storage matrix; and
3. All data given in answer to open questions.

H. RESET PROCEDURE

If the user has typed in a "A" as an answer to one of his questions, the program will enter the reset procedure. Through this procedure, it is possible to modify one or more of the answers to previous questions. The computer asks the user how many questions he desires to go back in the decision process.

I. HELP PROCEDURE

This procedure is activated by typing in a "?" as the answer to a question. A number of instructions are then printed on the screen to help the user.

4. See *supra* § II(B).

J. ASSORTED SUBROUTINES

This heading refers to those program blocks that are called upon repeatedly by various other sections of the program, for example those for yes/no questions. Yes/no questions constitute a separate ("binary") sort of item. They are, however, also used as a part of the text processing of open questions.

IV. THE SENTENCING MODEL

The Hulsman sentencing model⁵ was chosen for use in the experiment not because it is a model designed for computer-aided sentencing, but because it is one of the few explicit sentencing models available and because it is one with which the authors were familiar. It is also a very general model not directly linked to any national legal system. The model distinguishes between, on the one hand, a clear description of the goals and, on the other hand, a clear description of the means. These goals and means are not concerned with how sentencing is carried out in reality, but rather with how sentencing should be carried out according to Hulsman. Before any rational decision can be made, there must be a clear goal associated with that decision, e.g., conflict resolution. It must also be clear by what means it is hoped that this goal, or set of goals, will be achieved. Consideration must also be given to the possibility of looking outside of the criminal law system in order to resolve a case. The purpose of the model is to construct a "tariff", defined as a generalized sentencing pattern.

The model consists of several "rules of thumb". These rules of thumb can be divided into those rules that apply to preliminary and/or general considerations and those that keep pace with the chronological phases that can be distinguished within the sentencing decision itself. An example of the latter is an operation in two rounds, in which a first assessment of the situation is later reappraised, the results being subjected to a "cost-benefit analysis".

A. PRELIMINARY STEPS

1. *Definition of the area of behavior and of the actor*

Before any tariff can be developed, a specific definition of the area of behavior and of the category of actors to which the tariff will be related must be made. For example, it is not possible to make a general tariff related to theft or homicide.

5. See *supra* note 2.

2. *The principle of double subordination*

The sentencer must make use of two principles of subordination:

- a. The criminal law system should not be used when the aims of that system can be achieved or approximated by other social systems, judicial or otherwise.⁶
- b. The perpetrator of an offense should not be passed on to a subsequent service within the criminal law system unless that service can better cope with the sentence.

3. *The level of individualization*

The level of individualization is defined in the model to mean the kind and quantity of information that would be relevant in the sentencing decision. Three criteria are deemed to play a role in determining the level of individualization:

- a. The processing capacity of the system—individualization is not possible in minor, frequently occurring offenses.
- b. The justification for privacy interference—individualization must be related to the gravity of the offense.
- c. The range of sanctions that are available for the offense.

B. REMAINING STEPS IN CHRONOLOGICAL ORDER

1. *First ordering of the sentencing facts*

Those facts that are relevant to the establishment of the tariff are now ordered into a first inventory of facts. They are arranged in four categories:

- a. The first category concerns those facts that are relevant in determining whether or not a sanction goal is present. The only admissible goals are: conflict resolution, special prevention, general prevention and the development of legal rules of behavior.
- b. The second category concerns those facts that are relevant to the choice of means used in order to realize one or more of the aims in the first category. Means other than criminal law means can be used. Facts in this category are also relevant to the principle of subordination and the level of individualization.
- c. The third category of facts is relevant to limiting the means that are acceptable with respect to the particular actors involved. The criterion for the upper limit in the model is that the sanction or coercive measure taken should not be perceived as disproportionately heavy either by those involved in the offense or by the sentencer himself. This will affect the level of individual-

6. This approach is often referred to as "diversion"; cf. Law Reform Comm. of Canada, Working Paper 7, *Diversion*, 17 CAN. J. CRIMINOLOGY & CORRECTIONS 3 (July 1975); THE POLITICS OF INFORMAL JUSTICE, (R. Abel ed. 1982).

ization question. The "cost" of the means should also be considered.

- d. The fourth category of facts consists of those facts that have not already been allocated to a particular category. Special attention must be paid to those facts that are relevant to the level of individualization question.

2. *Provisional Conclusion*

A provisional conclusion about the aims, means (suitability and efficiency) and their delimitation and a less provisional conclusion about the level of individualization should now be reached. A first "sifting" of aims and means takes place, i.e., certain aims and means can quite clearly be discarded as being either irrelevant, inadequate or disproportionate.

3. *Renewed Investigation*

The next step is a renewed investigation (a second round) into those facts that are relevant to the aims of punishment, the means and the limitation.

4. *Provisional Choice of Aims*

Step four is the provisional choice of the aim or aims of punishment. The aims are re-examined in the light of the more specific information gained in step three. If it is concluded that, by this stage, no further action is to be taken within the criminal law system, the tariff will be complete. If a reason for taking action still exists, then the aim must be accurately defined and within the permitted aims of punishment.

5. *Provisional Choice of Means*

Step five contains a provisional choice of means and a "cost-benefit" assessment of those means. It must now be determined which criminal and non-criminal law means are suitable, efficient and admissible from the point of view of the delimitations in order to reach the goal or goals established according to step four. The so-called "profits" and "costs" of the means have to be investigated. The tariff will now be completed unless a criminal law means will definitely yield a higher "profit".

6. *Balancing of Interests*

Step six concerns the approach where there is a plurality of aims of punishment. In such cases, a solution is sought in a balancing of interests.

7. *Reassessment of the Delimitations*

Step seven contains a renewed assessment of the delimitation of the sanctions chosen. Only when the application of the means already chosen in step five is not considered to be disproportionately heavy can there be a decision to incorporate such a criminal law means into the tariff, or to apply the sanction; the tariff will then be concluded.

8. *Definitive Choice*

Step eight contains the definitive choice of the specified aims and means, and the grounds for choosing those aims and means. The cost-benefit analysis behind the decision is described below.

These steps are formulated in a general way indicating how, given certain premises, a rational decision structure for sentencing could look. The tariff, constructed as a result of this procedure, can play a role in nearly all sentencing decisions, whether that role is of direct importance (where the level of individualization is low) or more indirect (where the level of individualization is high). Although this decision model in itself is not linked to a particular position in the criminal law system, its implementation on the computer meant that it was linked to the position of the judge in his role as sentencer. For our purposes, the goal was to construct a tariff that is directly or indirectly usable in sentencing at a judicial level.

V. THE DECISION FILE

The translation of the sentencing model into a decision file demanded the most work in the project. The decision model had to be divided into approximately 400 items and the appropriate control data had to be included. As a result of this process, the structure of the file is not exactly the same as that of the model. The decision file can be divided into the following sections.

A. INTRODUCTION (ITEMS 1-19)

The introduction gives a summary of all of the necessary instructions needed for the beginner to operate the program. It also states the basic principles and limitations of the model and the model's computer implementation.⁷

7. See, e.g., § VI(B), at screens 1-7.

B. INDIVIDUALIZATION (ITEMS 20-39)

Three criteria are laid down for the assessment of the level of individualization: the processing possibilities of the system, the justifiability of an intrusion of privacy and the variation in the sanctions available.⁸

C. BEHAVIOR AND ACTOR AREA (ITEMS 40-45)

Questions are presented to the informant to specifically define the behavior and actor area.⁹

D. HOW TO CONSTRUCT A TARIFF (ITEMS 45-49)

The principles for the construction of a tariff are presented.¹⁰

E. FIRST ORDERING OF THE SENTENCING FACTS (ITEMS 50-149)

The relevant facts are split up into two categories. The first category consists of those facts relevant to the question of what sanction goal, if any, is present. The second category consists of those facts relevant to the determination of the means needed to achieve the sanction goal. A third category, that deals with the limitations on the sanctions imposed, will be discussed below. Questions presented to the informant are aimed at finding out whether the goal is conflict resolution, special prevention, general prevention, some combination of these three or none of them.¹¹

After a conclusion has been made about the aims of the punishment, the means for realizing those aims are analyzed. Questions are presented to the informant in order to ascertain whether a criminal or non-criminal law means, or both, is the most suitable for achieving the aims. A provisional conclusion is then made based on the first ordering of the sentencing facts.¹²

F. LIMITATIONS OF THE MODEL (ITEMS 150-154)

The model is only concerned with sentencing decisions in the judicial phase. The user then has to decide whether a tariff can be constructed immediately, or whether instead a second round of information gathering is necessary.¹³

8. *See, e.g., id.* at screens 8-10.

9. *See, e.g., id.* at screens 11-14.

10. *See, e.g., id.* at screen 15.

11. *See, e.g., id.* at screens 16-33.

12. *See, e.g., id.* at screens 34-40.

13. *See, e.g., id.* at screen 41.

G. SECOND ASSESSMENT ROUND (ITEMS 155-254)

A summary is given of both the aims of punishment that are still under consideration and the most appropriate means for achieving those aims. In the second assessment round a number of suggestions are made concerning the gathering of further information in connection with the refining of the already stated line up of facts. An assessment then has to be made as to whether the initial description of the behavior and actor area and/or the level of individualization should be modified. Likewise, all other aspects of the decision making process already dealt with are either repeated, corrected or supplemented as necessary.

H. DECISION IN CASE OF ABSENCE OF AIMS (ITEMS 255-258)

This section looks at what the position may be if it appears that no criminal law means or aims of punishment are relevant—the sentencing decision is taken and the tariff for that particular category of cases is laid down. If this is not the case, the program continues.

I. INTERNAL REARRANGEMENT OF INFORMATION (ITEMS 322-329)

This section internally rearranges the gathered information.

J. CHOICE OF SANCTIONS (ITEMS 330-374)

At this point a selection from the categories of legal punishments is made.¹⁴ The user is informed of the Hulsman model ideology, limiting the choices to be made. The informant then considers which punishment is appropriate, whether it is forfeiture or one of the “principal sentences” listed, such as a fine, imprisonment, detention or a mental health order. If either imprisonment or a mental health order is chosen, the informant is reminded of the disadvantages of these two sentences. Since fines and custodial sentences can be conditional or unconditional, or a combination of the two, special conditions are also considered, along with the possibility of imposing an additional punishment.

K. COST-BENEFIT ANALYSIS (ITEMS 285-304)

A cost-benefit assessment (C.B.A.) is instigated in order to establish whether or not the means selected are suitable for realizing the aim(s) of punishment.¹⁵ A C.B.A. is described, the informant states the pros and cons of the decision (the “costs” and “benefits”)

14. See, e.g., *id.* at screens 42-57.

15. See, e.g., *id.* at screens 58-63.

and a conclusion is drawn as to which means, if any, yields a credit balance. The C.B.A. determines whether the fixing of the tariff is possible or if instead a non-criminal law means should be chosen.

L. DISCREPANCY OF GOALS (ITEMS 305-307)

The informant is asked whether or not there are any discrepancies between the goals, i.e., that the means chosen for achieving one of the goals conflicts with the means chosen for another goal. A hierarchical order of goals is given.

M. REVIEW OF SANCTIONS CHOSEN (ITEMS 308-318)

The sanctions that might have been chosen earlier are presented again. These include forfeiture, an unconditional fine, a conditional fine, a period of probation, conditional or unconditional imprisonment or any combination thereof.¹⁶ Any special conditions or additional punishments are also stated.

N. DECISION ON THE BASIS OF THE C.B.A. (ITEMS 319-320)

In this section, it is determined whether or not, based on the results of the C.B.A., the chosen sanctions should be maintained. If the chosen sanctions are not maintained, the program returns for the selection of new sanctions.

O. LIMITATION OF SANCTIONS (ITEMS 375-384)

The informant is forced to consider whether the tariff is correctly delimited, i.e., whether the upper limit is believed by the actor or the sentencer to be disproportionately heavy.¹⁷

P. SUMMARY OF THE FINAL JUDGMENT (ITEMS 385-406)

A final summary of the judgment is made, based on the behavior and actor area, the level of individualization, the aims of the judgment, and the means to be used.¹⁸

VI. A DEMONSTRATION OF THE SYSTEM

To demonstrate our system, a sample fact situation that might commonly occur will be analyzed. Assume the following facts.

16. *See, e.g., id.* at screen 64.

17. *See, e.g., id.* at screens 65-68.

18. *See, e.g., id.* at screens 69-70.

A. DESCRIPTION OF THE CASE

At one o'clock in the morning on September 23, 1981, the accused, Paul de Vries, was stopped by the police in connection with a routine inspection. The police requested that the accused take a breathalyzer test; the test indicated that de Vries was inebriated beyond the permissible limit. The accused was escorted to the police station where a blood sample was taken, the result also being positive. After a charge of drunken driving had been registered, he was allowed to telephone for a taxi to take him home.

The following is a statement made by Paul de Vries:

I had been sitting the whole evening in a public house called "The Three Feathers" in Rotterdam. Earlier that day, the 22nd of September, I had been informed that my wife was in labor. I had rushed over to the hospital in time to see the birth of my first child. I had to return to work later in the day where I informed my colleagues of the birth of my son and they had suggested that we should go out and celebrate. I had agreed and we all went over to "The Three Feathers" after work. I had not intended to stay for long, but somehow I lost track of the time as one after the other of my colleagues bought me drinks to celebrate. I knew that I had had enough but everytime that I looked down someone else had bought me a drink.

About 12:30 a.m. I decided to leave. I knew that I had had too much to drink and I intended to go home by public transport. As I live outside the city, I had to catch a bus as the underground service does not extend as far as my home. I left my friends and walked to the bus stop only to find out that the last bus had just gone. I walked around for a time and when I thought I was sober enough I got into my car and drove towards my home. I was stopped for a routine inquiry by the police. I had not caused any accidents or been swerving or in any way driving abnormally. I took all of the tests without opposition and they proved positive.

I would like to point out that this is my first offense. I am not a habitual drinker and I was only drinking on this occasion because I was so thrilled with the birth of my son and wished to celebrate.

I am a travelling salesman and I need to use my car almost every day. I now have a wife and child to take care of and if I am deprived of the use of my car I will lose my job. I am truly sorry for what has happened and promise that it will not occur again, no matter what the occasion is.

The statement made by the police was in accord with that of the accused: The accused was apprehended during a routine investigation and no accidents had been reported as a result of the accused's conduct; nor had the accused been driving in an obviously erratic

way. Both the breathalyzer test and the blood sample yielded a positive result.

B. REPRODUCTION OF THE COMPUTER OUTPUT

All underscored texts were typed in by the user. All other texts were printed by the computer.

CASE: Paul de Vries

SCREEN: 1

RATIONAL SENTENCING

You have just put into action a program that aims to achieve a rationally justified system of sentencing in the category of criminal cases.

Before we begin the decision process, you should become familiar with certain points.

Do you need a further explanation of this program regarding the operating techniques involved? For example, when and what keys must be pressed? If you do need such an explanation, press the key marked "1" and then press in the key marked "return." If you do not need such an explanation, press the key marked "2" and then "return."

THE MOST SUITABLE ALTERNATIVE IS: ? 2

CASE: Paul de Vries

SCREEN: 2

Do you need further information about the criteria by which the

sentencing model used here (the Hulsman model) is constructed so that it may be considered rationally justified.

? n

CASE: Paul de Vries

SCREEN: 3

Will you now state your name so that it can later be ascertained who acted as the informant in this category of cases?

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? Richard de Mulder

<Richard de Mulder>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

CASE: Paul de Vries

SCREEN: 4

What is the date?

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? 30.3.82

<30.3.82>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

CASE: Paul de Vries

SCREEN: 5

We will now start the decision process. You will have to type the information into the computer and the computer will finally come to a decision based on the information that you have provided.

We suppose that you have a particular criminal case (or category of cases) in mind. Please state by use of a keyword or by a short sentence what kind of a case it is.

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? drunken driving

<drunken driving>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

CASE: Paul de Vries

SCREEN: 6

Are you aware of the present limitations of this program?

? y

CASE: Paul de Vries

SCREEN: 7

We will now start the actual gathering of information in order to fix a tariff for the (category of) case(s) you have in mind.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 8

Case:
drunken driving
Informant:
Richard de Mulder

LEVEL OF INDIVIDUALIZATION

The fact that sentencing decisions are made within an organization whose capacity is limited has certain consequences. Certain groups of decisions have to be made on a strongly categorized basis. The more that a punishment is individualized the heavier that the burden is of collecting and processing information. Therefore, one of the principal sentencing decisions that has to be made is what level of individualization is applicable to the sentencing process.

A number of questions follow, the aim of which is to fix the level of individualization in the case presently under discussion.

FIRST CRITERION FOR THE LEVEL OF INDIVIDUALIZATION

The first criterion to be dealt with concerns the processing possibilities of the system.

Will you now indicate whether or not the case with which you are concerned is the type of case which occurs frequently (e.g., minor traffic offenses)?

1. The case occurs frequently.
2. The case occurs infrequently.
3. The case occurs neither frequently nor infrequently.

THE MOST SUITABLE ALTERNATIVE IS: ? 3

CASE: Paul de Vries

SCREEN: 9

**SECOND CRITERION FOR THE LEVEL OF
INDIVIDUALIZATION**

The second criterion concerns the question of to what extent an intrusion of privacy would be justified in order to obtain the information necessary for a highly individualized decision.

How far is such an intrusion justified?

1. In this case it is certainly justified.
2. In this case it is only justified to a certain extent.
3. In this case it is only justifiable at a low level.
4. In this case it is not justified.

THE MOST SUITABLE ALTERNATIVE IS: ? 3

CASE: Paul de Vries

SCREEN: 10

The extent to which an offense is regarded as "serious" should determine an upper limit to the intrusion of privacy and any other consequences of an inquiry into the case.

In this case a fairly low level of individualization is indicated.

The final sentencing decision will be of a generalized character; the following processing of information and the decision making will concern the "type" of case that is now submitted for a decision.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 11

DEFINITION OF ACTOR AND BEHAVIOR AREA

The following questions aim to achieve a definition of the actor and behavior area.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 12

As far as this case is concerned, a low level of individualization is involved. The area of behavior and the category of actors must be specifically defined so that a tariff can be constructed.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 13

For every tariff the first step must be to define the actor and the behavior area. It is not possible to design a general tariff, e.g., for theft in general or homicide in general. The following is the kind of definition intended:

- theft,
- from empty schools and office premises,
- by youths between the ages of 16-25 years,
- who operate, more or less, as a group.

Would you like to see a number of further examples of what is meant by definition of the actor and the behavior area before you attempt to type in your own definition?

? n

CASE: Paul de Vries

SCREEN: 14

Will you now give a sufficiently specific definition of the area of behavior and the category of actors with which the tariff, directly or indirectly, is concerned?

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? drunken driving

<drunken driving>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE SECOND LINE OF TEXT

? first offense

<first offense>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE THIRD LINE OF TEXT

? with high alcohol content of the blood

<with high alcohol content of the blood>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

<drunken driving>

<first offense>

<with high alcohol content of the blood>

THIS IS YOUR ENTIRE ANSWER TO THE QUESTION.

WOULD YOU LIKE TO ADD ANY MORE TEXT ? n

THANK YOU.

ANY CHANGES OR ADDITIONS CAN NOW ONLY BE MADE BY
RETYPING THE ENTIRE ANSWER TO THIS QUESTION.

DO YOU WISH TO DO SO ? n

CASE: Paul de Vries

SCREEN: 15

SOME MORE PRINCIPLES

We are now going to construct the tariff. A tariff is, as mentioned above, a pattern of sentencing in a certain category of cases. The following principles should be the basis for its construction.

- a) It should be based upon the "best" information that is currently available.
- b) It must be effective as far as the workings outside of the criminal law system are concerned.
- c) It should be effective in the sense that it should not prohibit the effective functioning of the criminal law system internally.
- d) Justice, in the sense of delimiting the coercive intervention into the life of the accused and his associates, should not be forgotten.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 16

THE FIRST ORDERING OF THE SENTENCING FACTS

Now that the actor and the behavior area have been defined, the next step is the ordering of relevant facts. In order to achieve a usa-

ble inventory of facts, the facts must be looked at in a multi-disciplinary way as well as from the point of view of the various client systems of the criminal law system (actor and victims, those directly concerned with actors and victims and other groups who are more remotely connected with the criminal act(s) or with possible reactions to these acts).

These facts are then split up into three categories. The first category concerns those facts that are of interest when answering the question whether or not, in this case, a sanction goal is present and if so which one. Possible sanction goals to be considered are conflict resolution and behavior control (special and general prevention).

The second and third category concern, respectively, the facts that could be of interest in choosing a means in order to realize one or more of the chosen goals, and that are of interest from the point of view of delimiting the means that could possibly be used regarding the actors.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 17

AIM 1 - CONFLICT RESOLUTION

With respect to conflict resolution, the very first facts that should be looked at are those that can answer the question "is there still a conflict that concerns the actor?"

? n

CASE: Paul de Vries

SCREEN: 18

**A PROVISIONAL CONCLUSION ABOUT CONFLICT
RESOLUTION**

On the basis of the information obtained, it is apparent that conflict resolution in this category of punishable acts does not arise as a penal goal.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 19

AIM 2 - SPECIAL PREVENTION

In our first ordering of the sentencing facts with regard to the fixing of the possible goals of the sanction, we now turn to those facts that can be of interest for special prevention.

The first question is:

Is there, in this category of actors and this category of behavior, a particular reason to fear a repetition of the act?

? y

CASE: Paul de Vries

SCREEN: 20

Does it appear from dark number research that the offenses concerned with this category of actors usually cease by themselves?

The category meant here is the category you described above:

drunken driving

first offense

with high alcohol content of the blood

? y

CASE: Paul de Vries

SCREEN: 21

**A PROVISIONAL CONCLUSION ABOUT SPECIAL
PREVENTION**

On the basis of this first ordering of the sentencing facts, it appears that the penal aim of special prevention is to be left out of consideration for this category of cases.

PRESS 'RETURN' to CONTINUE ?

CASE: Paul de Vries

SCREEN: 22

HOW MANY QUESTIONS WOULD YOU LIKE TO GO BACK ? 1

CASE: Paul de Vries

SCREEN: 23

Does it appear from dark number research that the offenses concerned with this category of actors usually cease by themselves?

The category meant here is the category you described above:

drunken driving

first offense

with high alcohol content of the blood

? n

CASE: Paul de Vries

SCREEN: 24

Which factors usually play a role in bringing about the offense?

Please describe some of the causal factors of this category of offenses.

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? Usually the act is not the result of a drinking problem,

<Usually the act is not the result of a drinking problem,>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE SECOND LINE OF TEXT

? but stems from "social drinking" and/or is a response to a

<but stems from "social drinking" and/or is a response to a>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE THIRD LINE OF TEXT

? special (and infrequent) occasion.

<special (and infrequent) occasion.>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

<Usually the act is not the result of a drinking problem,>
<but stems from "social drinking" and/or is a response to a>
<special (and infrequent) occasion.>

THIS IS YOUR ENTIRE ANSWER TO THE QUESTION.

WOULD YOU LIKE TO ADD ANY MORE TEXT ? n

THANK YOU.

ANY CHANGES OR ADDITIONS CAN NOW ONLY BE MADE BY
RETYPING THE ENTIRE ANSWER TO THIS QUESTION.

DO YOU WISH TO DO SO ? n

CASE: Paul de Vries

SCREEN: 25

Having looked at the factors that usually play a role in this offense,
would it be worthwhile to appeal to the individual actor?

1. Yes, it would be worthwhile to appeal to the individual actor.
2. No, it would not be worthwhile to appeal to the individual actor.
3. The worth of such an appeal is doubtful.

THE MOST SUITABLE ALTERNATIVE IS: ? 1

CASE: Paul de Vries

SCREEN: 26

When he is actually sentencing, the sentencer should continually
make use of two principles of subordination as a line of action.

In the first place he uses the subordination of the criminal law sys-
tem (the external subordination principle). On the basis of the lim-
ited possibilities of the system, the sentencer must give up using

that system when the aims of the system can be achieved or approximated just as well by other social systems, judicial or otherwise.

In judging the question as to whether or not another system can approximate to those aims "just as well", attention must be paid to the interests of society as a whole as well as to those of the actor.

(Subordination within the system (internal subordination principle) will come up for discussion later).

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 27

Is a system other than the criminal law (e.g., the family, school or center for dealing with alcoholics) clearly not able to take care of the special prevention as well as the criminal law system?

? y

CASE: Paul de Vries

SCREEN: 28

A PROVISIONAL CONCLUSION ABOUT SPECIAL PREVENTION

On the basis of this first ordering of the sentencing facts, it appears that special prevention can possibly be brought in for consideration as a penal aim for this category of cases.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 29

AIM 3 - GENERAL PREVENTION

To conclude our first ordering of those sentencing facts that may be of interest in the fixing of sanction goals, we now consider general prevention.

Is it possible for you to describe one or more groups of people to whom the aim of general prevention could be relevant in this category of cases?

? y

CASE: Paul de Vries

SCREEN: 30

Will you now describe this group or these groups, to whom the aim of general prevention could be relevant in this category of cases.

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? all car drivers

<all car drivers>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

CASE: Paul de Vries

SCREEN: 31

In judging the general prevention power of a possible punishment, one must bear in mind that this never directly issues from the sanction itself but only from the notion concerning it that exists in the community. What the community thinks is to a large extent dependent upon what the media lets them know.

The first question in this connection is:

Will the decision of the sentencer get through to the group or groups to which the possible general prevention will be applicable?

? n

CASE: Paul de Vries

SCREEN: 32

A PROVISIONAL CONCLUSION ABOUT GENERAL PREVENTION

On the basis of this first ordering of the sentencing facts it can be stated that, in this category of cases, general prevention does not come up for consideration as an aim of punishment.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 33

SUMMARY CONCLUSION ABOUT THE AIMS

Now that we have finished the first ordering of the relevant facts, we can come to a summary conclusion about the aims of punishment. Aims of punishment that, according to our first ordering of the facts, come up for consideration in this case are:

special prevention

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 34

FIRST ORDERING OF THE SENTENCING FACTS.

PART 2: THE MEANS

Introductory Remarks.

Within the first ordering of the facts that can be of interest for the aim, or aims, of punishment you should keep in mind the aspect of the possibility of controlling the authorities. This means that you consider the means by which the aims of punishment are realized by criminal prosecuting authorities, and these means may turn out to be different to those used in dealing with "normal" offenses.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 35

Before we begin the first ordering of facts that could be of interest in the choosing of a means, or means, in order to realize the aims of

punishment that come up for consideration in this case, we must draw your attention to the following two points:

1. The behavior and the actor area with which we are concerned in this case can be described as:

drunken driving

first offense

with high alcohol content of the blood

2. In giving information that is of interest in the choosing of the means, you should keep in mind that the case concerned here is one in which there is a (fairly) low level of individualization. Where the level of individualization is low, the information that is gathered and processed is less specific. The sentencing in this case, to a certain extent, can not be anything other than "generalized" and "characteristic".

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 36

NON-CRIMINAL LAW MEANS FOR SPECIAL PREVENTION

Can you state facts that could be of interest in choosing one or more non-criminal law means in order to achieve special prevention? (The facts should form a basis for a provisional estimate of the "profits" (effectiveness) and the economic and social "costs" of the means and the way in which they are distributed.)

N.B. Non-criminal law means.

Please answer "yes", (information available) or "no", (information not available).

? n

CASE: Paul de Vries

SCREEN: 37

Is it plausible that special prevention will resolve itself without recourse to specific criminal law or other measures?

? n

CASE: Paul de Vries

SCREEN: 38

CRIMINAL LAW MEANS FOR SPECIAL PREVENTION

Can you state facts that could be of interest in the choosing of a criminal law means in order to achieve special prevention? (The facts should form a basis for a provisional estimate of the "profits" (effectiveness) and the economic and social "costs" of the means and the way in which they are distributed).

N.B. Information relevant to criminal law means.

Please answer "yes", (information available) or "no", (information not available).

? y

CASE: Paul de Vries

SCREEN: 39

Will you indicate those facts relevant to criminal law means of special prevention?

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? An unconditional sanction could make it clear to the actor

<An unconditional sanction could make it clear to the actor>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE SECOND LINE OF TEXT

? that drunken driving, even as a first offense, is not

<that drunken driving, even as a first offense, is not>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE THIRD LINE OF TEXT

? acceptable.

<acceptable.>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE FOURTH LINE OF TEXT

? A conditional sentence could draw to the actor's attention

<A conditional sentence could draw to the actor's attention>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE FIFTH LINE OF TEXT

? that a second offense would incur more severe treatment.

<that a second offense would incur more severe treatment.>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

<An unconditional sanction could make it clear to the actor>

<that drunken driving, even as a first offense, is not>

<acceptable.>

<A conditional sentence could draw to the actor's attention>

<that a second offense would incur severe treatment.>

THIS IS YOUR ENTIRE ANSWER TO THE QUESTION.

WOULD YOU LIKE TO ADD ANY MORE TEXT ? n

THANK YOU.

ANY CHANGES OR ADDITIONS CAN NOW ONLY BE MADE BY
RETYPING THE ENTIRE ANSWER TO THIS QUESTION.

DO YOU WISH TO DO SO? n

CASE: Paul de Vries

SCREEN: 40

SUMMARY OF THE FIRST ROUND

There now follows a summary conclusion based on the first ordering of the sentencing facts.

As a result of the definition of the behavior and the actor area the following description is made:

drunken driving

first offense

with high alcohol content of the blood

With respect to the question of what is considered to be the applicable level of individualization in this case, the following conclusion was reached:

a fairly low level of individualization is indicated.

The aim(s) of punishment that still come up for consideration at this stage of the sentencing are:

special prevention.

As a result of the aims of punishment that have been chosen, the following means have been considered:

As regards special prevention:

only criminal law means

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 41

SECOND ROUND OF INFORMATION GATHERING

Before turning to the second assessment round, we would like once

more to draw your attention to the limitations of this sentencing model as regards the sentencing of actual cases. The model is concerned with sentencing decisions from the moment of arrest to the final judgment. Of course, during the entire decision process many points of investigation have to be put forward.

Since you are only involved in the judicial phase of the sentencing, you may now turn to the sentencing itself. A case may be so complex, however, that even in the judicial sentencing phase there is still a need for a second round.

N.B. If you decide to turn to the construction of a tariff at this stage, it implies that the level of individualization involved in this case is of a low or at least a fairly low level.

Do you think that the actual tariff can be constructed right away, i.e. without conducting a second round of assessment first?

? y

CASE: Paul de Vries

SCREEN: 42

CHOICE OF ACTUAL MEASURES

At this point, the selection from the categories of possible legal punishments will be made. It is presumed that you are familiar with the articles of the criminal law code involved or with any other relevant formal rule. It must also be mentioned that the choice will be limited because of the ideology that underlies the Hulsman model.

The upper limit for punishment as specified in the Hulsman model is much lower than the present upper legal limits. It would be inconceivable that a 15 year term of imprisonment could be imposed in whatever case was concerned. The boundaries set for differentiation are also much narrower than those usually found in criminal law procedures.

While choosing the means, all selected aims of punishment should be kept in mind.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 43

While selecting the criminal law means, it will appear that the choice will be somewhat structured as a consequence of the remarks and questions. The order of the questions, however, is purely pragmatic and you should not hesitate to use the reset procedure (^ and return) if you change your mind at any stage during the process.

The structure does not mean that your choice is in accordance with the penal code. You must put your choice to the test yourself in order to be sure that you have fulfilled all of the requirements of the applicable formal rules.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 44

FORFEITURE

It will first be ascertained whether or not forfeiture is a measure that comes up for consideration. It may be an appropriate measure from the point of view of behavioral control. If the formal rules allow goods obtained by the act, or realized goods, to be returned to the legal owner (where the legal owner is ascertained), forfeiture may also be a means of conflict resolution.

Is forfeiture an appropriate measure in this case?

? n

CASE: Paul de Vries

SCREEN: 45

PRINCIPAL SENTENCES

You can choose from the following (principal) sentences:

1. a fine
2. imprisonment
3. detention
4. a mental health order

THE MOST SUITABLE ALTERNATIVE IS: ? 2

CASE: Paul de Vries

SCREEN: 46

There was no mention of either a high or fairly high level of individualization and, therefore, you can not justify a substantial infringement of privacy by imposing a sentence of imprisonment.

Please choose a different punishment.

PRINCIPAL SENTENCES

You can choose from the following (principal) sentences:

1. a fine
2. imprisonment
3. detention
4. a mental health order

THE MOST SUITABLE ALTERNATIVE IS: ? 1

CASE: Paul de Vries

SCREEN: 47

A conditional fine might be an effective means of conflict resolution where the condition consists of payment of compensation to the victim. It may also be an effective means of special prevention.

State whether the fine should be:

1. a conditional fine (a fine with special conditions attached);
2. a fine, a part of which is conditional; or
3. an unconditional fine (a fine where no special conditions are attached)

THE MOST SUITABLE ALTERNATIVE IS: ? 2

CASE: Paul de Vries

SCREEN: 48

The range of unconditional fines that can be imposed is an amount of money equivalent to:

1. 1 hour of work
2. 2 hours of work
3. half a day's work
4. 1 day of work
5. 2 days of work
6. 1 week of work
7. 2 weeks of work
8. 1 month of work

THE MOST SUITABLE ALTERNATIVE IS: ? 6

CASE: Paul de Vries

SCREEN: 49

The range of conditional fines that can be imposed is an amount of money equivalent to:

1. 1 hour of work
2. 2 hours of work
3. half a day's work
4. 1 day of work
5. 2 days of work
6. 1 week of work
7. 2 weeks of work
8. 1 month of work

THE MOST SUITABLE ALTERNATIVE IS: ? 6

CASE: Paul de Vries

SCREEN: 50

You may impose one of the following periods of probation:

1. 1 week
2. 2 weeks
3. 1 month
4. 2 months
5. 4 months
6. 6 months
7. 9 months
8. 1 year

THE MOST SUITABLE ALTERNATIVE IS: ? 6

CASE: Paul de Vries

SCREEN: 51

As you know, during the probation period you can impose a special condition. You can order the accused to pay compensation to the victim, but this is not the only condition available.

Would such a condition be appropriate?

? n

CASE: Paul de Vries

SCREEN: 52

As a high or rather high level of individualization is not the case, a fine equivalent to two weeks of work or more should not be imposed.

Please choose again.

A conditional fine might be an effective means of conflict resolution where the special condition consists of payment of compensation to the victim. It may also be an effective means of special prevention.

State whether the fine should be:

1. a conditional fine (a fine with special conditions attached)
2. a fine, a part of which is conditional
3. an unconditional fine (a fine where no special conditions are attached)

THE MOST SUITABLE ALTERNATIVE IS: ? 2

CASE: Paul de Vries

SCREEN: 53

The range of unconditional fines that can be imposed is an amount of money equivalent to:

1. 1 hour of work
2. 2 hours of work
3. half a day's work
4. 1 day of work
5. 2 days of work
6. 1 week of work
7. 2 weeks of work
8. 1 month of work

THE MOST SUITABLE ALTERNATIVE IS: ? 5

CASE: Paul de Vries

SCREEN: 54

The range of conditional fines that can be imposed is an amount of money equivalent to:

1. 1 hour of work
2. 2 hours of work
3. half a day's work
4. 1 day of work
5. 2 days of work
6. 1 week of work
7. 2 weeks of work
8. 1 month of work

THE MOST SUITABLE ALTERANTIVE IS: ? 5

CASE: Paul de Vries

SCREEN: 55

You may impose one of the following periods of probation:

1. 1 week
2. 2 weeks
3. 1 month
4. 2 months
5. 4 months
6. 6 months
7. 9 months
8. 1 year

THE MOST SUITABLE ALTERNATIVE IS: ? 6

CASE: Paul de Vries

SCREEN: 56

As you know, during the probation period you can impose a special condition. You can order the accused to pay compensation to the victim, but this is not the only condition available.

Would such a condition be appropriate?

? n

CASE: Paul de Vries

SCREEN: 57

ADDITIONAL SENTENCES

In addition to the main sentence, according to the formal rules, a

supplementary punishment might be imposed. According to the law of the Netherlands, for example, a mental health order can be made in addition to the main sentence.

This combination, however, is not possible in this model, as it is considered to be irrational. The ideas behind a mental health order and sentences of imprisonment are so different that a combination is never recommendable. From a humanitarian point of view, it is most undesirable that someone should first go to prison (for the part of the offense for which he is deemed "responsible") and then be "treated" for that part of the offense for which he cannot be held responsible, e.g., in a mental care institute.

The question, therefore, simply asks whether or not an additional sentence should be imposed.

? n

CASE: Paul de Vries

SCREEN: 58

COST-BENEFIT ANALYSIS

Now that all of the relevant choices have been made, we may turn to a cost-benefit assessment in order to establish whether or not the means selected are suitable means for achieving the aim(s) of punishment. Is it clear to you what, in general, a cost-benefit assessment is and how one should be carried out in a sentencing decision?

? n

CASE: Paul de Vries

SCREEN: 59

The basis of a cost-benefit assessment (C.B.A.) is the demand that decisions should be analyzed in terms of pros and cons, and thus be optimal within the margin of freedom that is accorded to the decision maker.

The hallmarks of a C.B.A. may be summarized as follows:

- systematic research into the effects of a decision or series of decisions;
- an explicit statement of the value that is given to all of the possible effects by the participants in the decision process; and
- an attempt to quantify the pros and cons of these effects.

While acknowledging that, according to these principles, systematic research should be carried out into the alternatives regarding the decision that has to be made, naturally there is neither the time nor the means available to subject every decision that has to be made by the criminal law system to a detailed C.B.A. Quite often a less detailed C.B.A. will have to suffice and, particularly when an actual case is concerned, an intuitive balancing of pros and cons will often be the only C.B.A. carried out.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 60

You may now make a C.B.A. that should be an as-sound-as-possible balancing of pros and cons in an actual case.

Under profits in the assessment, you should enter what the effects are as concerns the established goal. Under costs, you should enter economic (pecuniary) and social costs (e.g., stigmatizing, family circumstances).

It should be kept in mind that the whole balancing operation must also pay attention to the aspect of controlling the exercise of power by the authorities.

Will you now state the costs (economic as well as social)?

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? Paul de Vries will have to pay the unconditional part of the
<Paul de Vries will have to pay the unconditional part of the>
CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE SECOND LINE OF TEXT

? fine while also having to bear in mind that the conditional part
<fine while also having to bear in mind that the conditional part>
CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE THIRD LINE OF TEXT

? of the fine would become payable under certain circumstances.
<of the fine would become payable under certain circumstances.>
CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

<Paul de Vries will have to pay the unconditional part of the>
<fine while also having to bear in mind that the conditional part>
<of the fine would become payable under certain circumstances.>

THIS IS YOUR ENTIRE ANSWER TO THE QUESTION.

WOULD YOU LIKE TO ADD ANY MORE TEXT ? n

THANK YOU.

ANY CHANGES OR ADDITIONS CAN NOW ONLY BE MADE BY
RETYPING THE ENTIRE ANSWER TO THIS QUESTION.

DO YOU WISH TO DO SO ? n

CASE: Paul de Vries

SCREEN: 61

Please now state the profits.

PLEASE TYPE FIRST LINE OF REQUIRED TEXT

? The combination of a conditional and an unconditional fine

<The combination of a conditional and an unconditional fine>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? y

PLEASE TYPE SECOND LINE OF TEXT

? might be sufficient to prevent a recurrence of the act.

<might be sufficient to prevent a recurrence of the act.>

CORRECT SO FAR ? y

MORE TEXT TO BE ENTERED ? n

<The combination of a conditional and an unconditional fine>

<might be sufficient to prevent a recurrence of the act.>

THIS IS YOUR ENTIRE ANSWER TO THE QUESTION.

WOULD YOU LIKE TO ADD ANY MORE TEXT ? n

CASE: Paul de Vries

SCREEN: 62

Do you wish to make any other remarks about the cost-benefit assessment?

? n

CASE: Paul de Vries

SCREEN: 63

Now, please indicate which of the following conclusions is correct on the basis of the above mentioned considerations:

1. none of the means yields a credit balance
2. some of the non-criminal law and some of the criminal law means yield a credit balance
3. only criminal law means yield a credit balance

4. only non-criminal law means yield a credit balance
THE MOST SUITABLE ALTERNATIVE IS: ? 3

CASE: Paul de Vries

SCREEN: 64

At an earlier stage the following sanctions were chosen:

an unconditional fine of:

an amount of money equivalent to 2 days of work

a conditional fine of:

an amount of money equivalent to 2 days of work

a period of probation of:

6 months

Should this choice of means be maintained in the light of the cost-benefit assessment enacted above?

? y

CASE: Paul de Vries

SCREEN: 65

LIMITATION

The last question to be put forward is, whether or not the selection of the tariff is correct with respect to the delimiting of the means regarding the actors.

Would you like further information on this point?

? y

CASE: Paul de Vries

SCREEN: 66

Limitation of the means means that you should not exceed certain upper limits if you choose imprisonment or other repressive sanctions. The upper limit should be such that neither the most concerned by the offense and the sanction nor you, as the sentencer, feel that the sanction is disproportionately heavy.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 67

You must be aware, in choosing your means, of how the relationship between the act and the selected sanction will be experienced by the groups concerned, and of the possible disadvantageous consequences of this sanction for the actor and those associated with him.

One point to always bear in mind should be how the "costs" of the sanction are distributed over those people indicated above.

Have all of these considerations been sufficiently taken into account in the selection of the means?

? y

CASE: Paul de Vries

SCREEN: 68

Can you then say that neither you in your capacity as sentencer nor those most affected by the offense and the sanction believe the chosen criminal law sanction to be disproportionately heavy in relationship to the act committed?

? y

CASE: Paul de Vries

SCREEN: 69

THE FINAL JUDGMENT

Having followed through this decision model (the Hulsman sentencing model), we have now arrived at the following final judgment:

The behavior and the actor area were described as:

drunken driving

first offense

with high alcohol content of the blood

The level of individualization is:

fairly low

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 70

The aim, or aims, of punishment to be achieved are:
special prevention

Taking into account the cost-benefit assessment, these goals can be achieved by the following sanction:

an unconditional fine of an amount of money equivalent to:

2 days of work

a conditional fine of an amount of money equivalent to:

2 days of work

a period of probation of:

6 months

Thank you for your assistance.

PRESS 'RETURN' TO CONTINUE ?

CASE: Paul de Vries

SCREEN: 71

DECISION PROCESS RECORDED

END OF SENPRO.B20 - COPYRIGHT R.V. DE MULDER 1982

VII. A REVIEW OF THE PROGRAM

A. "PORTABILITY" OF THE PROGRAM

The aim behind the program was to keep it as "portable" as possible. The implementation of the program on computers other than the DEC 2050 system that was used along with a BASIC other than "BASIC plus 2" should not be a problem. The program can even be implemented on microcomputers as long as sufficient background memory is available.

B. IMPROVEMENTS

There is certainly room for improvement in the program. Some solutions to possible problems are listed below.

1. *Running start*

A "running start" is a supplementary possibility. This would mean that the decision process would begin with a higher item number than 1, i.e., the process need not begin at the beginning.

2. *Hard copy of the output*

The user may wish to have a printed copy of the output, or some part of it. Special documents might also be required.

3. *The formulating of conditions*

The program would be more elegant if the syntax for the formulating of conditions was modified and in accordance with the standard notations of symbolic logic. If this occurred, it would also be possible to equate the formulation of conditions for selecting a new item with the formulation of conditions for selecting the correct alternative to a multiple statement.

C. PRACTICAL LIMITATIONS

The decision file is derived from a particular sentencing model that must be transcribed in the correct "language." In order to derive a decision file from a model, the model must be split up into suitable items. Also, at the end of each item an indication must be given by means of a formula of the conditions that determine which item will be next. The designers of the file must first learn this language; inexperience causes mistakes to be made. Furthermore, the designers have to be aware of all of the possible alternatives at each stage of the decision making process. The decision file can be run in so many different ways that it is easy to forget to check some alternatives, even though various test runs are carried out during the construction of the file.

The creation of a decision file for a rather complicated decision making process is an extremely intricate task. In total, three people spent hundreds of hours working on the file and it is still not unlikely that there are errors that will sooner or later catch the eye of the user. The user of our system has to keep these practical limitations in mind. They may be forced to his attention as errors either in the form of BASIC error messages, whether or not "lethal" for the decision process, or in the form of faulty decisions or grounds for decisions.

D. THEORETICAL LIMITATIONS

The above limitations result from the fact that the construction

of the decision file was carried out by human beings. The theoretical limitations are a consequence of the system and, in particular, of the program itself. It is possible to consider the system design as a form of artificial intelligence whereby some aspects of the decision process of a judge, sentencer or decision maker are simulated. The program used simulates the decision making process of a judge with the following limitations:

1. The decision process is only controlled by the multiple-choice questions and the yes/no questions. The answers given to open questions do not play a role in the course of the decision process, only in the grounds for the decisions.
2. The decision process depends upon the information supplied by a human informant. This information can be checked for internal consistency in as far as it concerns answers to multiple-choice and yes/no questions. This program cannot interpret natural language; there is no check on the internal consistency of the answers given to open questions nor of their consistency with answers to multiple-choice questions. Checking the external correctness of the answers is not possible because the program does not have any "knowledge of the world."
3. The structure of the decision making process is not subject to change as a result of being run through frequently. In this sense it is not a "learning system."

The limitations stated here are real, theoretical limitations that arise from the ideas upon which this program is based. It is a matter for discussion whether or not the three limitations really are limitations. If a human judge is equally, or at least to a certain extent, subject to the same limitations, then the computer program is a valid simulation.

This question clearly plays a role with respect to the first limitation listed above. In analyzing decisions, a distinction must always be made between (a) the decision itself, and (b) the grounds for that decision. Often the law demands that the grounds for (judicial) decisions be stated. According to many writers, the decision is really made on grounds other than those stated as being the grounds for the decision.¹⁹ If this is true, it is certainly not surprising that human decision makers may deal with a more or less fixed structure of decisions that cannot be derived from the grounds stated as the basis for those decisions. Even if this decision structure was not fixed but rather subject to change, the model system as restrained by the first limitation is no less "real," but it does clarify that there is a certain connection between the first and third limitations. The

19. Cf. L. BENDIX, *ZUR PSYCHOLOGIE DER URTEILSTAETIGKEIT DES BERUFSRICHTERS* 69 (1968); J. FRANK, *LAW AND THE MODERN MIND* 110-11 (1963).

program becomes a "snapshot" of the way in which a human judge may operate.

The program would also be quite simple to revise, making the multiple-choice questions "quasi-open questions." The alternatives, although keeping their fixed meaning within the structure, could be open to the insertion of a different text content by the user. In this respect, the program would recognize certain answers to these "quasi-open questions," and thus serve, at least partially, as a "learning" program.

E. IS SIMULATION OF "HUMAN FEATURES" POSSIBLE?

Finally, can certain human features, such as any random elements in the decision or any emotional factors, be simulated by the system? Since BASIC, like most high-level languages, has a built in random number generator, random factors can be easily incorporated into the decision. "Random statements" could be used in the same way as a multiple statement, thus choosing an alternative at random.

The definition of "emotional factors" itself is not clear. Because the sentencing model used was classified as rational, however, only those emotional factors that fit into a goals-means relationship were accommodated. To include other emotional factors that can not easily be accommodated in a goal-means relationship (such as a desire for retribution), it is necessary to formulate the factors in a way most understandable to the informant who ultimately uses the program. Further, the maker of the file must indicate how the decision will be influenced by the emotional factor information provided by the user.

VIII. SOCIAL DESIRABILITY

As shown in this Article, it is possible to make sentencing decisions with the help of a computer. Although their full development is beyond the scope of this Article, several aspects of the social desirability of such a system should be mentioned. An important question to ask is whether or not the advent of computer-assisted decision making furthers the principles of equality and legal certainty. Sentencing varies from judge to judge and from place to place.²⁰ Such variation emanates, on the one hand, from the enor-

20. Cf. Carter & Wilkens, *Some Factors in Sentencing Policy*, 58 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 503 (1967) (exploring the relationship between parole board sentencing recommendations and the actual judicial disposition); R. HOOD, *SENTENCING IN MAGISTRATES' COURTS* (1962) (studying the variation in sentencing of different English magistrates).

mous discretionary power of the judiciary and certain other legal authorities and, on the other hand, from the policy in many countries of demanding only the grounds for the punishment, being concerned with the punishment itself only incidentally. It appears that a computer could reduce this type of variation. This is not necessarily the case, however, because the application of computers is not required to be centralized or uniform. In addition, the discretionary powers of sentencers play an important role in the issue of legal certainty; the way in which sentencers apply their powers is not directly known to anybody except the sentencers themselves. Nor will any clarification result from the use of computers unless the computer programs or the algorithms used in the process are published.

In the category of cases where the offenses involved are relatively trivial, the use of computer sentencing would promote efficiency. It is possible, however, that the present sentencing practice has several positive aspects that are unavailable under a computer sentencing system. For example, a man charged with a minor offense may prefer to have his case come to trial rather than pay a fine because he wishes to "have his say" on the matter. If there is no human agent available to whom he may express his point of view, his purpose will be frustrated. Such frustration of purpose could easily affect the legitimation of the authority.

In addition, computer sentencing demands clearly structured information. The determination of what is and is not relevant would become less the province of the police and more that of a separate expert. This shifting of emphasis would affect the discretionary power of the police and might lead to less effective police performance.

It must also be noted that automation is not synonymous with increased efficiency. Computers cost money, require regular maintenance and are still subject to regular breakdowns. Therefore, computer personnel must be integrated into the organization. On top of all of this, security and individual privacy demand effective measures to prevent computer misuse.

Efficiency may be defined as the attainment of certain, specific goals by the most minimal means necessary. Therefore, the extent to which someone will appreciate an increase in efficiency will depend upon how the goals are defined. Someone who maintains an "abolitionist" view about criminal law systems generally will not be an unconditional supporter of an increase in the system's efficiency. Thus whenever "the reaching of defined goals" is discussed, it must be realized that it is not only the reaching of various goals in an active sense that is important. The avoidance of negative effects must also be considered.

IX. CONCLUDING REMARKS

The influence of automation on society can be compared with the invention of writing and printing. Writing and printing enabled the law to be codified; automation could, in turn, revolutionize that codification. Just as different countries at different times applied or rejected codification, it can be expected that different countries will either accept or reject automation in legal decision making.²¹

This experiment, apart from its contribution to the discussion of the social desirability of sentencing by computer, is also relevant to the fields of science and education. The program, in conjunction with the decision file, simulates several of the cognitive processes of a decision maker, adding to legal decision making knowledge. In particular, it is informative about the processes used in making sentencing decisions and how they can be incorporated into an algorithmic structure. The system serves as a useful means for teaching legal personnel how to approach legal decision making in a more systematic and rational way. Also, the experiment can familiarize lawyers with some of the problems inherent in automation.

21. Cf. H.L.A. HART, *THE CONCEPT OF LAW* 92 (1961); F. WIEACKER, *PRIVATRECHTSGESCHICHTE DER NEUZEIT* 322, 458 (1967).

