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IMPROVING EVIDENCE GATHERING THROUGH A COMPUTER-ASSISTED CASE INTAKE PROGRAM: EXECUTIVE SUMMARY

by

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I. Introduction

In the 1920's a series of crime commissions documented the patterns of case attrition from criminal justice systems in several states (Illinois Association for Criminal Justice, 1929; Missouri Association for Criminal Justice, 1926; Pound and Frankfurter, 1922; United States National Commission on Law Observance and Enforcement, 1931). Those "mortality charts" revealed some unsettling things:

- Over half of felony arrests resulted in dismissal of all charges
- From 4% to 67% of felony arrests were reduced to misdemeanors
- From 50% to 86% of convictions were the result of guilty pleas, not jury trials
- Only 6% to 14% of felony arrests went to trial and only some of those trials were with juries.

The same general pattern of enormous case attrition has continued to hold true into the 1970's and '80's (Vera Institute, 1977; Brosi, 1979; Boland and Brady, 1985).

Over the past decade, the National Institute of Justice has funded several studies that have probed the reasons for case attrition (Cannavale and Falcon, 1976; Domash et al., 1980; Feeney et al., 1983; Forst et al., 1981; McDonald et al., 1981; Petersilia, 1976). One line of inquiry has been to focus on what has been called "inappropriate case attrition", meaning cases that reach dispositions that are different (usually meaning more lenient) than they would have but for some failure in the operation of the criminal justice system, particularly policework.

The present project grew out of the findings of these earlier studies, especially the survey of police-prosecutor relations by McDonald and associates (1981). That study found that prosecutors everywhere complain that

they were making less than optimal decisions because the police failed to supply them with adequate information about the facts of the cases.

The case-related communication break-downs between police and prosecutors were due to several factors including: **inadequate incentives** (the police culture and reward system emphasizes arrests rather than convictions as measures of police performance); **inadequate training** (the police are not given the opportunity to learn the problems of prosecution particularly the crucial importance of detail, nuance, comprehensiveness and redundancy in the case files used for prosecution); **inadequate feedback** (the police do not learn of the ways that they contribute to inappropriate case attrition because they get virtually no feedback on the dispositions of their cases); **escalating costs** (face-to-face case screening between police and prosecutors is being reduced in jurisdictions that once could afford them because of increased costs of police overtime); **attitudes** (for various reasons of their own the police deliberately withhold or fail to transmit data to prosecutors); **technology** (the physical means by which police reports are produced, copied, stored, and transmitted to prosecutors causes data degradation); **coordination** (numerous separate documents must be assembled but often parts are missing); **organization** (police and prosecutors in many places do not and can not easily meet with each other to review cases).

The most effective method of case-related communications between police and prosecutors was identified as the early face-to-face case review between experienced prosecutors and the police officers involved in the particular cases. The fact that these reviews occurred close to the time of arrest meant that missing information and hot-leads could be identified and pursued

with a greater chance of success. Unfortunately, however, this method was also the most costly and was being cut back in some jurisdictions.

II. Purpose

A. A Possible Solution

Among the possible solutions to the problems of police-prosecutor communication suggested by McDonald et al. was to try to simulate this optimal-but-costly face-to-face review with a computer-assisted case reporting program that could operate on the relatively inexpensive microcomputers. Our present project attempts to implement this solution.

Such a solution had several attractive features. If the program could operate on microcomputers then it would be affordable by most police departments. The fact that reports would be typed would reduce the problem of the illegibility of handwritten reports. The ability of the computer to branch off into a series of sub-questions contingent upon answers to earlier questions allowed for the possibility of mimicking the kind of questioning that would occur between a police officer and a prosecutor in a live case review.

The software was not intended to be just an electronic version of the standard police report form. It was not to display simply a template of items of information to be filled in. It would probe for subsequent details contingent upon initial details. These probes would be particularly designed to obtain the kind of information needed by the prosecutor in order to have the strongest evidentiary position that the available facts could support.

It was recognized from the start that even the best computer program would be a big step down from a live, face-to-face case review between a

prosecutor and a police officer. Some of the problems of communication might continue. The police might still try to withhold information, for example. All of the nuance and body-language of the reporting officer would be lost. We had no illusions about the limitations of any computer simulation of live human interactions.

But, on the other hand, the computer seemed to offer a solution to a problem that many prosecutors had reported, namely, that the police are often aware of a lot more information than they actually transmit to prosecutors because they do not recognize its importance for prosecution or simply are not asked for it. (For example, the police often fail to report false exculpatory statements by the defendant evidently because they erroneously think that anything less than a full confession is worthless to a prosecutor.)

With its ability to branch and probe, the computer offered the potential for extracting such information in a cost effective way. Also, the computer would bring a degree of standardization to the quality of police reports. All officers entering cases would have to, at least, address all relevant questions. Some officers might still choose to enter "no answer" or "unknown" to some questions in order to deliberately withhold information. But controls could be built into the software so that such answers would not be accepted for many items; and for still other items (such as, dates, case identification numbers, officer identification numbers and other items) ranges of legitimate values could be built in so that illegitimate values would not be accepted (regardless of whether they were being entered deliberately or accidently). Such controls would be a major improvement over the existing manual system of report-writing wherein the only control is the typically superficial review of the commanding officer.

Our goal was not to produce software that would make the best police report writers even better; or even to make the worst writers as good as the best. Rather it was to bring the overall average quality of all police reports up to a minimum, predictable standard of thoroughness.

B. The Model

The model that we hoped to approximate was something like a computerized version of a case preparation unit operated by the Nashville Police Department. McDonald and associates had discussed this unit as an illustration of the potential feasibility of a computer-assisted case preparation computer program. The unit consists of typists and supervisory police officials. Police officers dictate their reports onto magnetic tapes under the guidance of the unit's supervisors who may interrupt the dictation for clarification or expansion of the details. The tapes are then transcribed.

When the unit first began it developed a set of crime-specific interrogatories which were designed to ensure that the legal elements of the case were adequately addressed by the reporting officer. These were used by paralegals (law students) to guide reporting police officers through their reports. It was claimed that the typists became so familiar with these interrogatories that even they were able to ask for clarification.

The main disadvantage of the case preparation unit is its costs. It operates almost twenty-four hours a day seven days a week; and for most of that time there are two command-level police officials and two typists on duty. Such an expense is out of the question for most police departments.

Our proposed computerized version of this unit would eliminate most of

this expense. The crime-specific interrogatories would be built into the software and the police would do their own typing.

C. Faulty Assumptions

The main disadvantage of our proposal as far as we could anticipate was that it would require that the police do their own typing. We wrongly assumed that this would be one of the major obstacles to the success of our software. That is we assumed that the police would resist having to type reports and that they would be slow and inaccurate in their typing. **In effect, we accepted as unchallengeable a fundamental premise which in retrospect we now seriously challenge, namely, that the police should not be required to be reasonably good typists.**

In reality the police in our test site (Nashville, Tennessee) and in other sites that we contacted have demonstrated a willingness to type reports and the ability to do so with reasonable speed and accuracy. We now realize that **any future attempts to develop software for use by the police in applications such as the one we attempted should proceed on the assumption that the police can and should be expected to be competent typists.**[1]

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[1] This is not to say that software design does not have to be efficient. Asking the police to type in more information than they need or making them back in and out of files will defeat the program's utility. In the Nashville Police Department we observed the nonuse of a computer program that was unrelated to our project but happened to be located in the adjoining office. The program operates on a microcomputer and is intended to help the "Crime-Stoppers" unit keep track of informants, defendants, criminal events and rewards.

The officers in the unit gave up using the program in part because it asked them for details that served no purpose of theirs and because it seemed to them inefficient in that it required them to enter case information into three different files.

One of the major considerations in our choice of programming language and in the design of our "screens" (i.e. the visual displays on the computer monitor) was this mistaken belief that interactive software for use by the police must minimize the amount of typing on their part. Ironically, it was in part the pursuit of this objective that contributed to making our software less "user-friendly" than it might have been. In our attempt to spoon-feed the police, we choked them.

Both because of our erroneous belief that we had to minimize typing by the police and because of our fundamental premise that the police had to be led through a series of questions which they might not otherwise answer, we proceeded to make a fundamental error. We underestimated the importance of the free-form narrative section of the police report. We tried to convert as much as of the information that might be given in the free-form narrative sections of the report into questions about discreet aspects of the overall case.

However, our field test has shown us that while this may insure that certain questions will get answered it does not eliminate the prosecutor's need for the free-form section of the police report. The reporting officer must still type a narrative and some of the information in it will necessarily repeat information already given in the question-and-answer section of the report.

The narrative section is essential because it gives prosecutors a grasp of the entire event as a whole and the whole tells them something more than the sum of its parts. It allows them to see how the parts are connected together and to make inferences about missing information and the credibility of information that was reported.

D. Problems in Implementation

In the end, our project proved to be a less rigorous test of the potential of the computer to substantially improve the quality of police case preparation for prosecution than planned. The main obstacle was the fact that approximately one-third of the project's time was in effect lost due to matters beyond our control.

The programming language we adopted, namely, Better Basic, has deep bugs in it that not only delayed our software development schedule but seriously degraded the quality of the final software application that we wrote. Some bugs could not be remedied and had to be "programmed around" with a consequent loss in program efficiency and user-friendliness.

The scheduling delay had a domino effect on the balance of the project. It meant that the project had to use the first fully operational version of the program. No refinements based on initial field use were possible. No full-time project personnel were available to stay in the field with the computer; to get the police detectives to use it; to train them on its use; to solve program failures that occurred; and to do those various things necessary for a good field test.

III. Methodology

A. The Original Evaluation Design

Our proposal called for both a process and an impact evaluation. The process evaluation was to be based on several types of data. Firstly there was to be a description of field observations regarding the problems of developing, installing and administering the software. This was to include

the difficulties in programming the various features that were planned for the software. In addition interviews were to be done with police and prosecutors regarding their experiences with and opinions of the software. Also, any legal or political challenges to or ramifications of the use of the software were to be reported. And, comments on the appropriate type of computer hardware necessary to support the system were to be given.

The impact evaluation was to be based on a before-and-after, quasi-experimental design. Cases prepared with the computer's assistance were to be compared with a matched sample of cases prepared under the traditional manual method to determine whether the computer improved the quality of case information transmitted to the prosecutor and whether this resulted in a difference in the pattern of case attrition.

This was to be done by having prosecutors rate the cases along several dimensions. One series of questions would ask for the prosecutors' rating of the quality of case preparation regarding specific aspects of the case report (e.g., its comprehensiveness, coherence and overall strength). Another series of questions would ask prosecutors to estimate what the likely disposition of each case would be.

The hypotheses to be tested were that the cases prepared with the computer's assistance would be rated as being better prepared and more likely to result in more severe dispositions than the manually prepared cases.

B. The Revised Design

Due to the problems in implementation, our evaluation design has been reduced to a smaller base of experience than planned. But to the extent possible, we tried to follow the original design.

Most of this report is limited to the process evaluation. It reports the underlying logic of what the software was intended to do; the problems in implementation; and observations relevant to future efforts of this kind. It includes findings from our field observations in the test site (Nashville) and interviews with police and prosecutors familiar with the software that we created. But, these interviews are limited to ten police detectives and ten prosecutors who had direct experience with our software. In addition we have interviewed police officials from three other jurisdictions where programs involving police use of computers in ways related to our project.

Our impact evaluation was reduced to a shadow of its original plan. A greatly weakened quasi-experimental design was used in a desperate effort to preserve some of the rigor of the original design.

Two sets of the same three burglary cases were prepared. The "control" set consisted of the original manually-produced police case reports. The "experimental" set consisted of the exact same documents plus for each case a special report produced with the assistance of our software. Each of the three cases involved burglary charges and each had been originally written by different police detectives.[2]

Prosecutors were asked to rate the cases along the dimensions of quality of case preparation and estimated disposition as originally planned. The

---

2. Neither set of case reports contained the special report forms prepared by Nashville Police Department's Case Preparation Unit. A comparison against that standard would not have been appropriate for our purposes.

That is, we wanted to compare our software's case reports with the kind of manual case reports that one usually finds in most other police departments, the kind of departments that were to be the beneficiaries of our software. The question to be answered was, "How much better would a computer-assisted case report be compared to the manually produced reports that are done in most jurisdictions?"

prosecutors who received the computer-assisted reports were also interviewed for their opinions of the value of the computer enhancement.

It must be pointed out that under this weakened design the nature of the potential impact of the computer-assisted case report **is limited to the impact of the form of the report rather than to any possible increase in information content.** That is, the experimental case reports contained no more information in them than was contained in the original manual reports from which they were copied! This is because the computer-assisted reports used in this part of our evaluation were prepared by us and not by the police officers who reported the cases. This compromise was necessary because the case reports that police officers produced with the assistance of the computer were not usable.

IV. The Software Application

A. Assumptions

In designing the computer-assisted case preparation software application several factors were considered. The target population of future users of the software is police officers in small as well as large departments. Thus keeping down the cost of the entire system (including the costs of purchasing, operating and modifying the hardware and the software) was a high priority.

This objective was to be met by designing a system that would operate on the comparatively inexpensive microcomputers using the PC-DOS operating system and memories not exceeding the 640K limit. It was also thought important to use a BASIC-like language and the assumption that police officers

would be most likely to know BASIC-like languages should small departments need to modify the software using their own officers.

In retrospect the above assumptions were shortsighted. Once again, we accepted the status quo rather than expecting that modern policing should be held to appropriately high standards of professional performance. More specifically, we should have proceeded on the assumption that information-processing is one of the most critical functions that the police perform; and they should be appropriately trained and equipped to do so with the degree of efficiency that can be expected of any similar organization in today's high-technology world.

No one would think of sending the police out without guns or with the cheapest possible guns or without training in the handling of guns. But police officers rarely use their guns whereas, in contrast, they produce a dozen or more reports a week; yet, they are not expected to be typists and they are not given word-processing equipment. By thinking that we had to develop the cheapest possible computer system we were perpetuating this imbalance in police priorities and, at the same time, placing unnecessary constraints on our development options.

B. Software Design

Our approach was to develop questions about the criminal incident that were universal so that they would be applicable to any and all criminal incidents. These were divided into three mutually exclusive modules in the program. The "Persons" module contains all the questions about all the persons involved in the incident. The "Event" module contains questions about certain things related to the crime and arrest, such as time and date.

The "Premises" module contains questions about the place where the crime occurred and questions about vehicles that may have been involved. (See Figure 1 for a description of the software's components.)

Thus, no matter what the crime is the program asks the same basic questions. It first asks about all the people involved. Then it asks about the circumstances of the crime, the arrest and any searches. Then it asks about the premises where the crime occurred (see sample screens, Figures 2a,b,c).

Within each of these modules there are sets, subsets, and subsubsets of questions which probe for additional information contingent upon answers to earlier questions. For example, in the Persons module the user is asked to enter the name of a person involved in the incident. Then he is asked whether the person named is: a defendant, a victim, a witness or a police officer. If the person is a police officer, then a set of questions relevant to police officers only is asked, such as their badge numbers, assignments, and roles in the case.

If there are no persons of a certain type (e.g. witnesses) involved in the case, the questions relevant to that type are never asked. After the user responds to all the questions
in one module, the program proceeds to the next module and asks the questions in it. (This modular structure in the software was necessitated by the limits of BetterBASIC's data definition (memory) area.)

The specific items of information asked about in the modules

Figure 1 Final System Flowchart

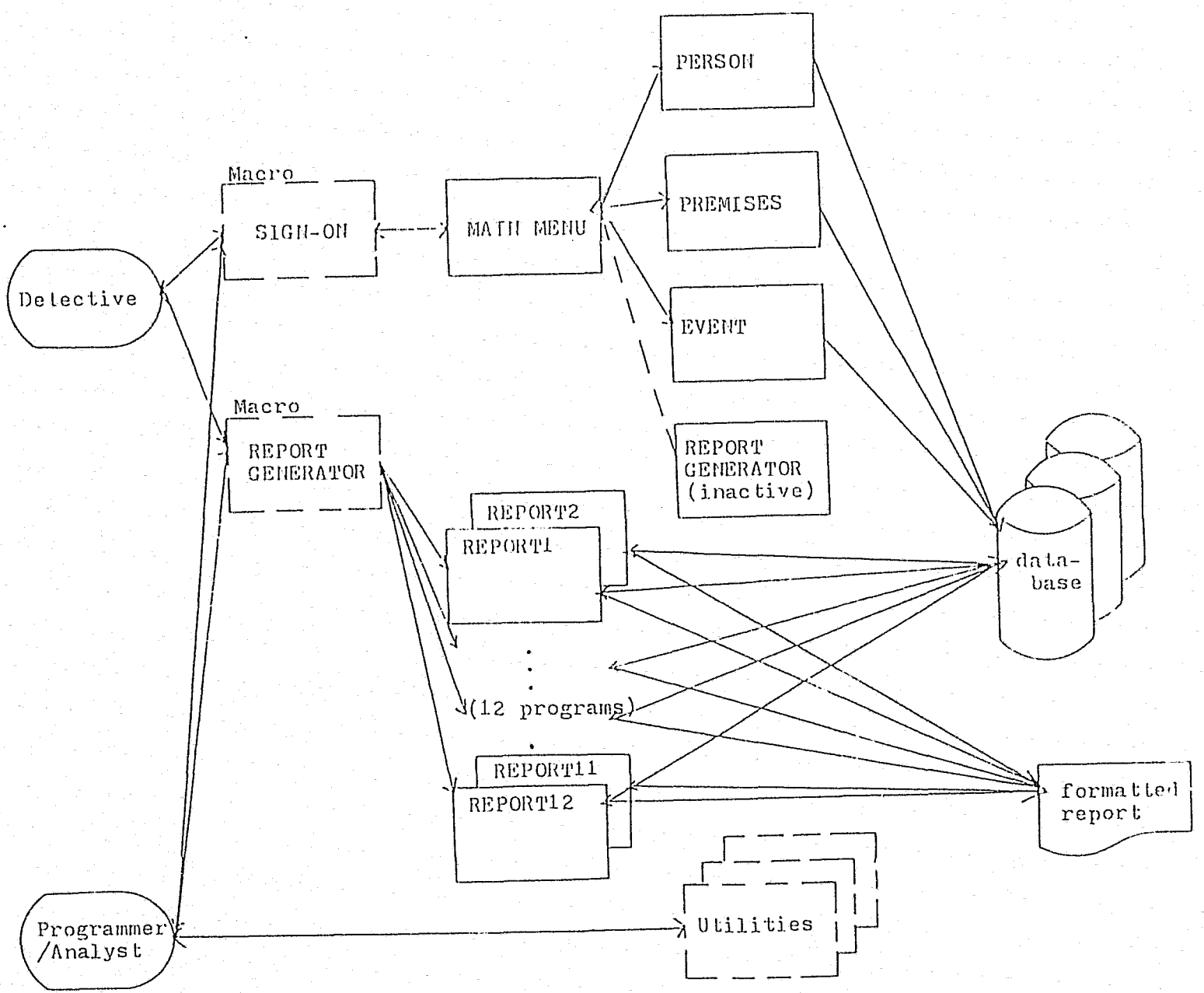
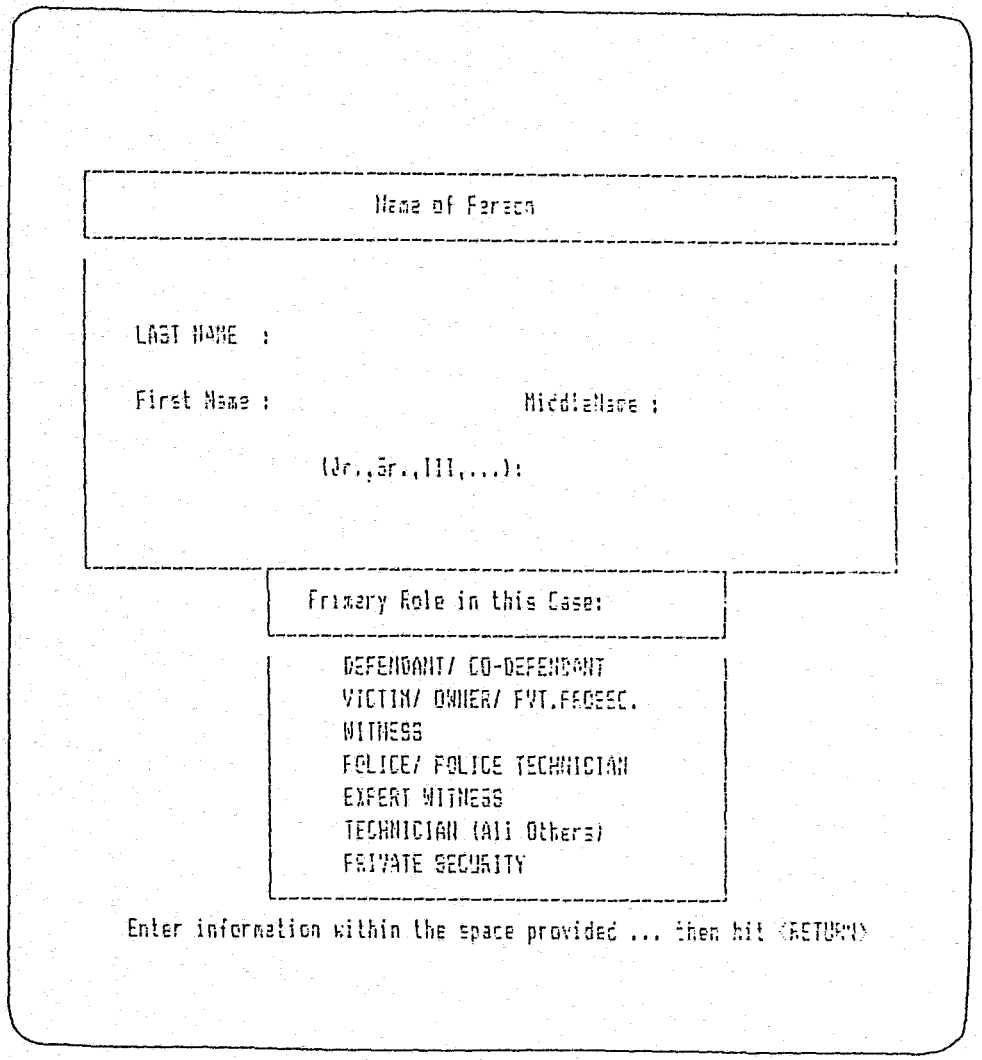


Figure 2a

Sample Introductory Screens



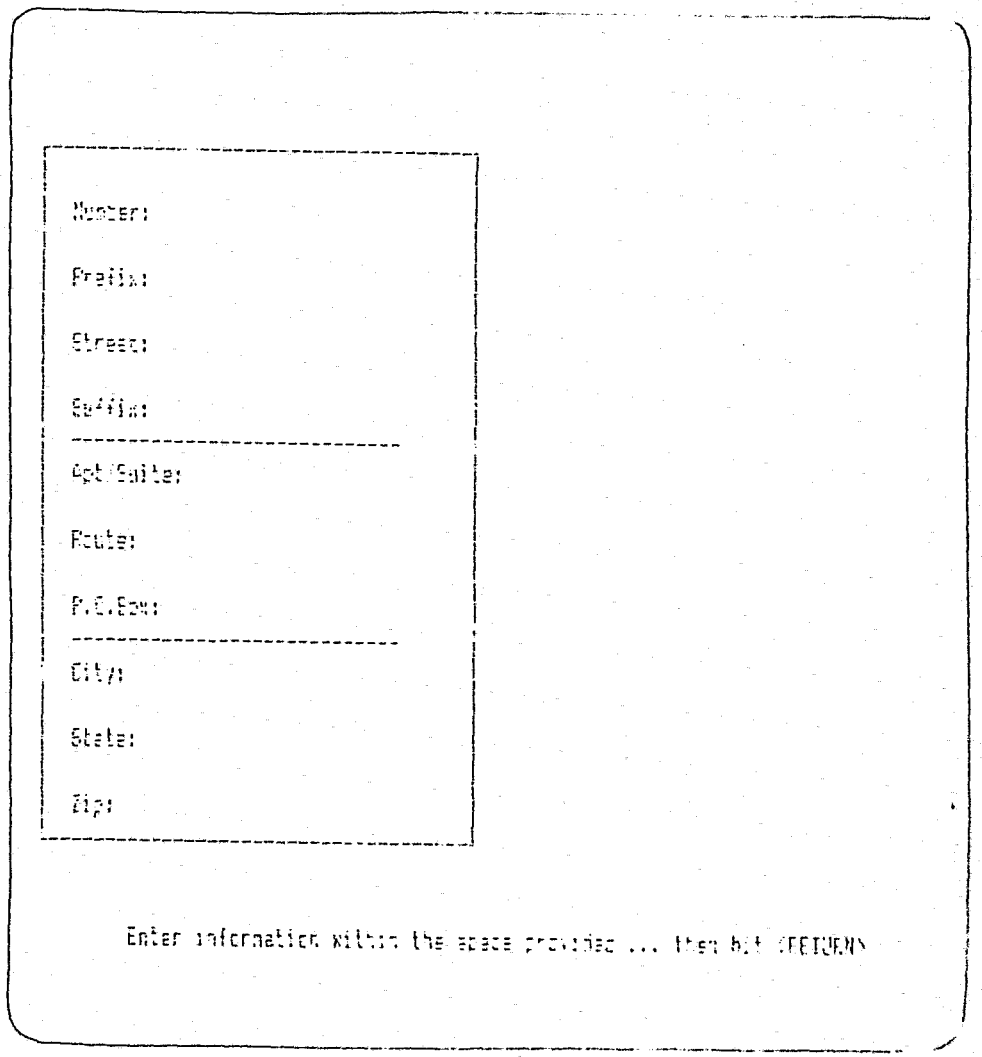


Figure 2b

Sample Introductory Screens

CASE PREPARATION : BURGLARY

This is a brief introduction to the program that handles data entry for Burglary (as opposed to other crimes).

The entry of data for this burglary is divided into three categories:
the PEOPLE involved,
the PREMISES burglarized,
and the EVENT of the burglary.

First you will enter the names of anyone associated with this case. Then enter all information about the burglarized premises and its surroundings. Finally, you will be asked specific questions about the facts of the crime and witness testimony.

Hit any key to continue

PERSONS

(This is an introduction and menu for gathering personal information.)

1. You are to enter the names and primary roles of ALL people involved in this case. Do this by choosing <A> -- to add each name.
2. Then, each person should be updated to enter specific information about their participation in this case. Do this by choosing <U> -- to update each person. Each person is updated only one time!
3. Finally, after all names have been entered and updated, choose <3> -- to go on to the next section.

!! Enter all participants first, before you update anyone !!

INFORMATION ABOUT PEOPLE

A -- ADD a new person's name to the file

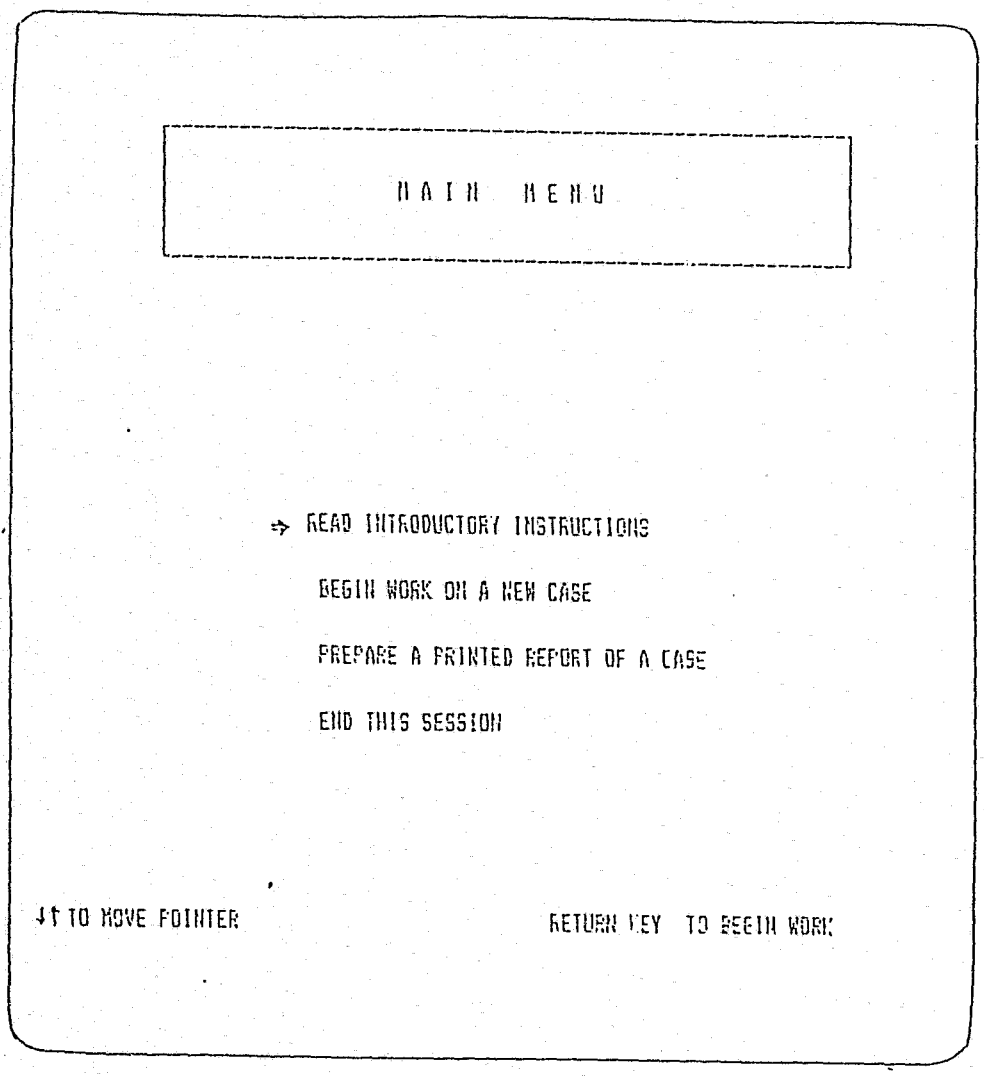
U -- UPDATE an existing person's record

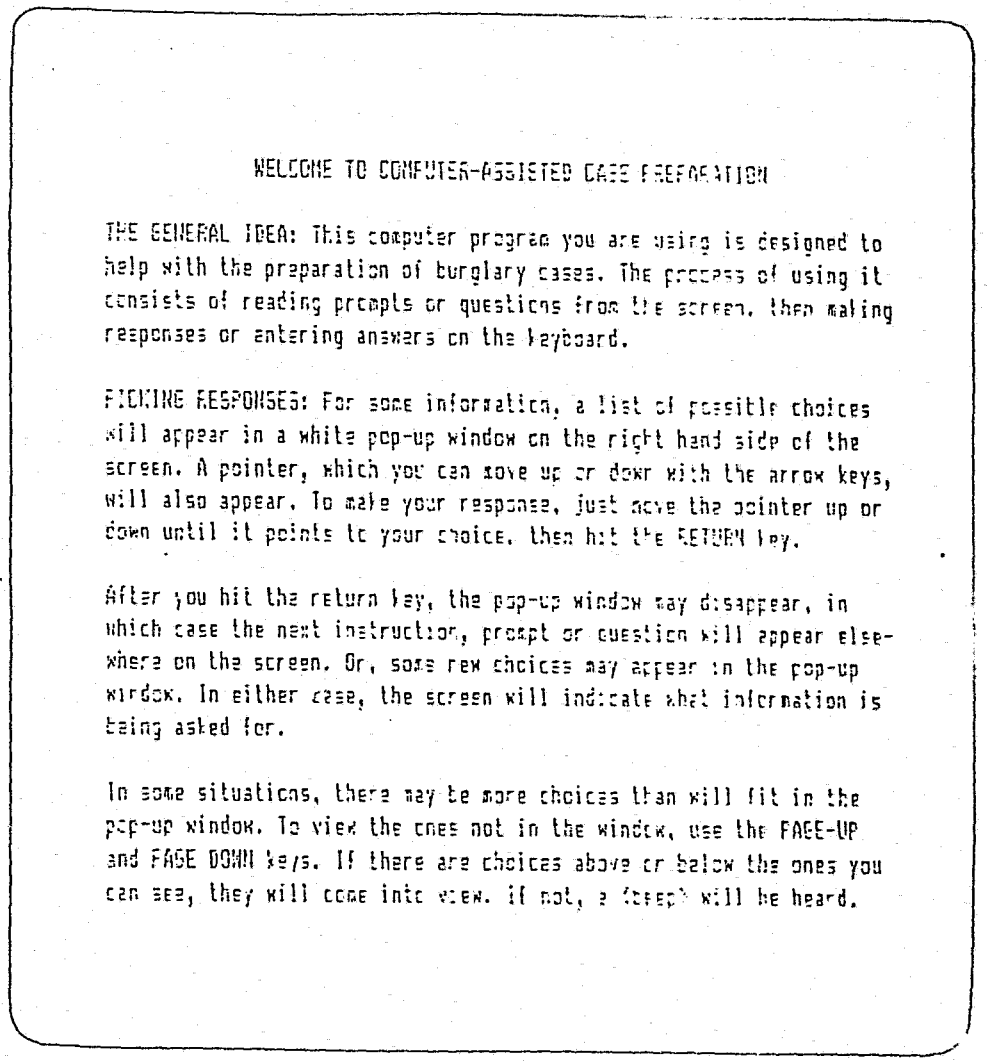
Q -- QUIT and go on to the Event

Enter Choice: A, U, or Q

Figure 2c

Sample Introductory Screens





were selected based upon our review of the information that is currently asked on the police reports used in Nashville; interviews with Nashville prosecutors about the critical items of information that are often absent or incomplete in reports; and upon our own experience.

C. User-Friendliness and Guidance

The primary method of trying to make the system user-friendly was through the extensive use of the "pop-up screen" facility of BetterBASIC. Whenever questions were asked that could be answered by selecting words or short phrases from a list, a pop-up screen was created. It is a rectangular screen containing the list of possible answers. It partially overlays (in a different color) the screen with the original questions. The user then moves the cursor to the correct choice and strikes the RETURN key. The choice is automatically printed in the appropriate answer space.

In addition, user-friendliness was sought by using the graphics and color coding facilities to highlight instructions and choices for the user, and by providing an extensive set of instructions and prompts to guide the user.

Further user-guidance was achieved by an error-trapping method. At the end of each screen the user is asked if the information he/she has entered on that particular screen is correct. If not, the screen is erased and the user re-enters the data.

Another feature is that for certain items of information entered by the user (e.g. the names of all the persons and the descriptions of all the vehicles involved in the case) the computer automatically compiles lists which become pop-up screens themselves. Thus, at those points in the program

where the user is asked such things as who was present at the search or the arrest, the list of all the names of the persons in the case pops up and the user merely points to the relevant names rather than having to retype them.

D. The Prosecution Report

The main design question regarding the prosecution report generated by the software was its format. The key choice was between condensed or extended formats. Condensed reports would have omitted any sections of the report for which there was no information and would have butted each separate section up against the preceding one so as to conserve space.

The extended format prints all sections and begins each new section on a new page. The expected advantage was that this would allow prosecutors to know exactly where to look for certain information once they became familiar with the report format. The disadvantage is that it consumes enormous amounts of paper and spreads the report across several pages.

V. Findings

In brief, it might be said of our project that the operation was a failure but the patient lived.

- The police did not make significant use of our software application. But they favored the idea behind it and favored the use of a friendlier version of it in the future.
- The prosecutors liked the police report produced by the software and believed it would make them more efficient.
- The quantitative analysis based on minimal data tentatively suggests that the software makes a difference in the prosecutors' estimate of the case preparation and in the probable disposition of the case. But,

the difference is not always in the direction of a more severe disposition for the defendant.

The particular software application that we produced was not used by the police to any significant extent. The nonuse was due primarily to three factors: the project delay and consequent inability to have a staff person in the field coaxing and training officers in the use of the equipment; the user-unfriendliness of the software as it was finally written; and the fact that the reports produced on the computer were not scheduled to replace the handwritten reports; rather, they constituted duplicate work for the officers.

Although the police made little use of our software, it was not because they were opposed to the idea behind it. Indeed virtually all detectives familiar with our software were in favor of it in principle; hoped that further work would be done to develop it; and indicated that they would prefer to use such a program rather than write reports manually (assuming the software met certain conditions discussed below).

They felt that if prosecutors had to choose between manually produced reports and ones produced with the assistance of a software application such as ours, the prosecutors would prefer the computer-assisted reports because of their greater legibility, clearer organization and because the computer method seemed to help the police include more information relevant to proving the case.[3] Moreover, even though they found it slow and difficult to use

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3. One dissenting view was expressed by a detective who is notorious among prosecutors for filing poor case reports. He believed that prosecutors would prefer manually produced reports because in court handwritten reports might "seem more affective rather than 'just a computer number'".

our software, they believed that with practice they would be able to produce reports as fast as by hand.

On the other hand, when asked to compare the value of the reports produced with our software to the special prosecution reports produced by Nashville Police Department's Case Preparation Unit, most of the detectives believed that prosecutors would find the latter more useful.

There are four conditions that the detectives regarded as essential before they would use such software: (1) the software must be highly user-friendly; (2) the police would have to be adequately trained on it; (3) the report that they would type on the computer must not duplicate any other report that they would have to give; and, (4) hard-copies of the reports must be readily available if wanted. (None of these conditions were met by our program.)

The response among prosecutors to the sample case reports produced with the assistance of our software was largely positive but with some qualifications.

Without training in the use of our reports, prosecutors were able to read them and understand them immediately. They liked numerous particular features of the computer-assisted case report including its legibility; its level of detail; its consistency (among different authors of reports); its summary of the roles enacted by everyone in the case; its format; and its comprehensiveness.

The prosecutors reported that the computer-assisted reports made it easier for them to quickly review the highlights of the case, an important advantage when one has to dispose of a large daily caseload without much time for thorough preparation.

But, prosecutors also pointed out some limitations of the computer-assisted reports. The most critical limitation is that the program can not eliminate the need for a free-form, narrative section to the police report. It is to the narrative that the prosecutors ultimately go in order to determine how all the parts of the puzzle fit together.

Prosecutors could not say whether having the computer-assisted report would result in any difference in what they decide to do with the case.

The quantitative analysis found that in two of the three cases, the presence of the computer-assisted case report had a significant effect on the prosecutors' evaluation of the quality of the case and the estimated disposition of the case. But, the effect was in opposite directions. In one case the presence of the computer report resulted in prosecutors regarding the case as stronger and in the other case, weaker. This result is not what we had predicted but it is not altogether unexpected or negative.

The general hypothesis was that the presence of the computer report would improve the quality of all cases and result in estimates of more severe dispositions. But, we also acknowledged the fact that information is neutral with respect to conviction or acquittal. More or clearer information could sometimes result in cases being dropped that might otherwise have gone further. Our findings appear to confirm this latter possibility. However, these findings must be regarded as tentative at best because of the small size of the samples of both respondents and case fact-patterns upon which they are based.

The impact of the computer-assisted report compared to the traditional, manually-produced report is demonstrated in Figures 3,4,5,6. These represent four of the 16 out of 18 measures of the prosecutors's estimates of the

quality of case preparation or case strength where the interaction between the type of case (fact-pattern) and the presence or absence of the computer enhancement were statistically significant.

In each of these figures it is clear that the impact of the computer enhancement varies depending upon the fact-pattern of the case. Although the three cases were all charged as "burglaries", their fact-patterns differed substantially, which in turn was related to the prosecutors's estimates of their respective probabilities of conviction, as shown in Table 1. Case # 2 had the highest average estimated probability of conviction; Case # 3, the lowest.

Table 1

Prosecutors' Estimated Probability of Conviction By Case

Case #	N	Mean	Std Dev	St Err of Mean	Vari-ance	Coef. of Variation
1	17	75.5	19.3	4.8	393.3	26.2
2	17	79.6	21.9	5.3	480.2	27.5
3	17	62.0	31.2	7.5	975.1	50.3

The computer enhancement had the greatest effect on Case # 3. It significantly increased the prosecutors's estimates of the probability of conviction (Figure 3); and the overall evaluation of the preparation of the case (Figure 4); and, it significantly reduced their perceived need for additional information (Figure 5) and their estimate that the case would reach a different disposition if additional information about the case were available

Figure 3
Probability of Conviction
By Case & Method of Preparation

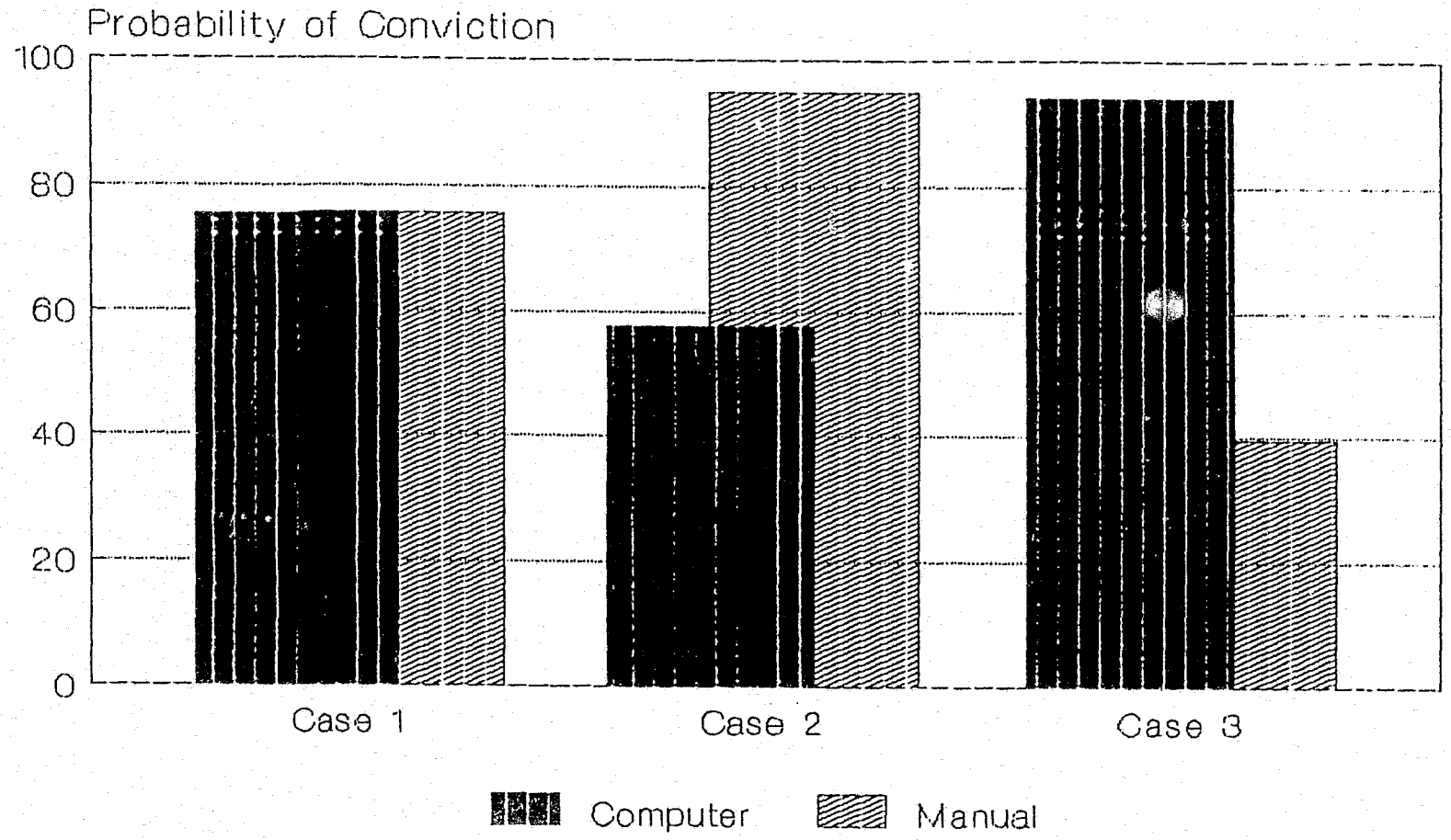
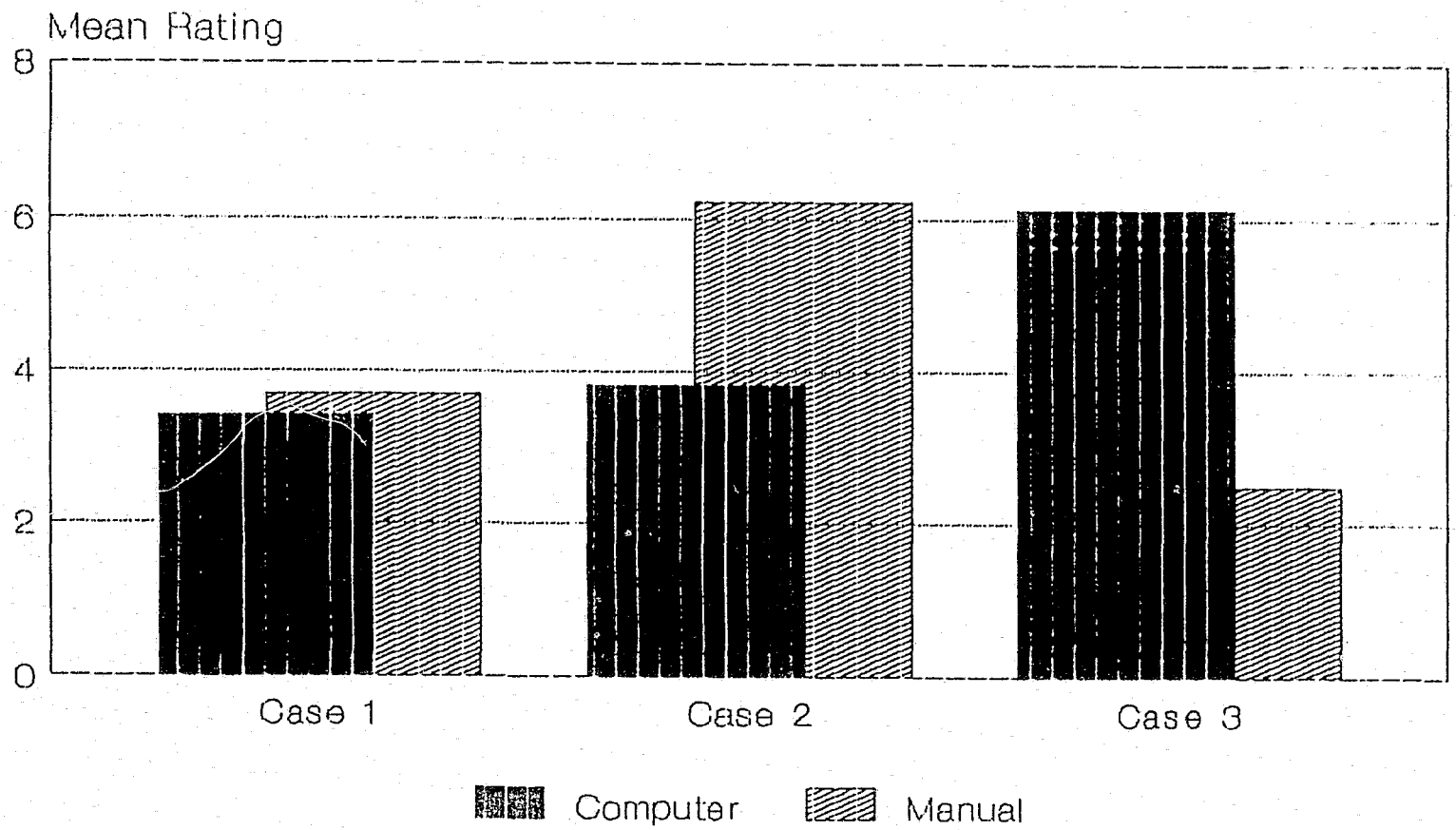
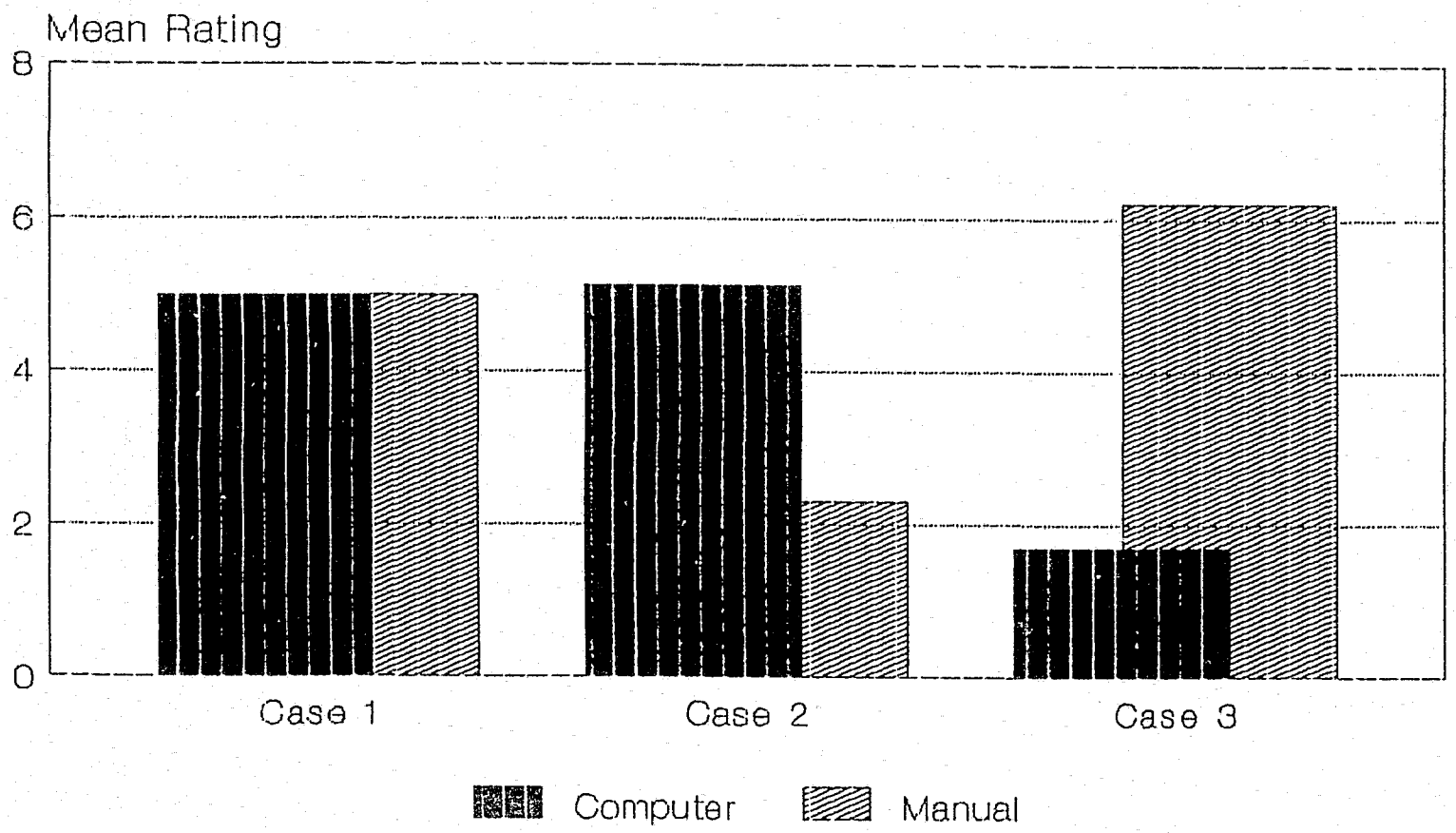


Figure 4
Overall Evaluation of Case Reporting by Case & Method of Preparation



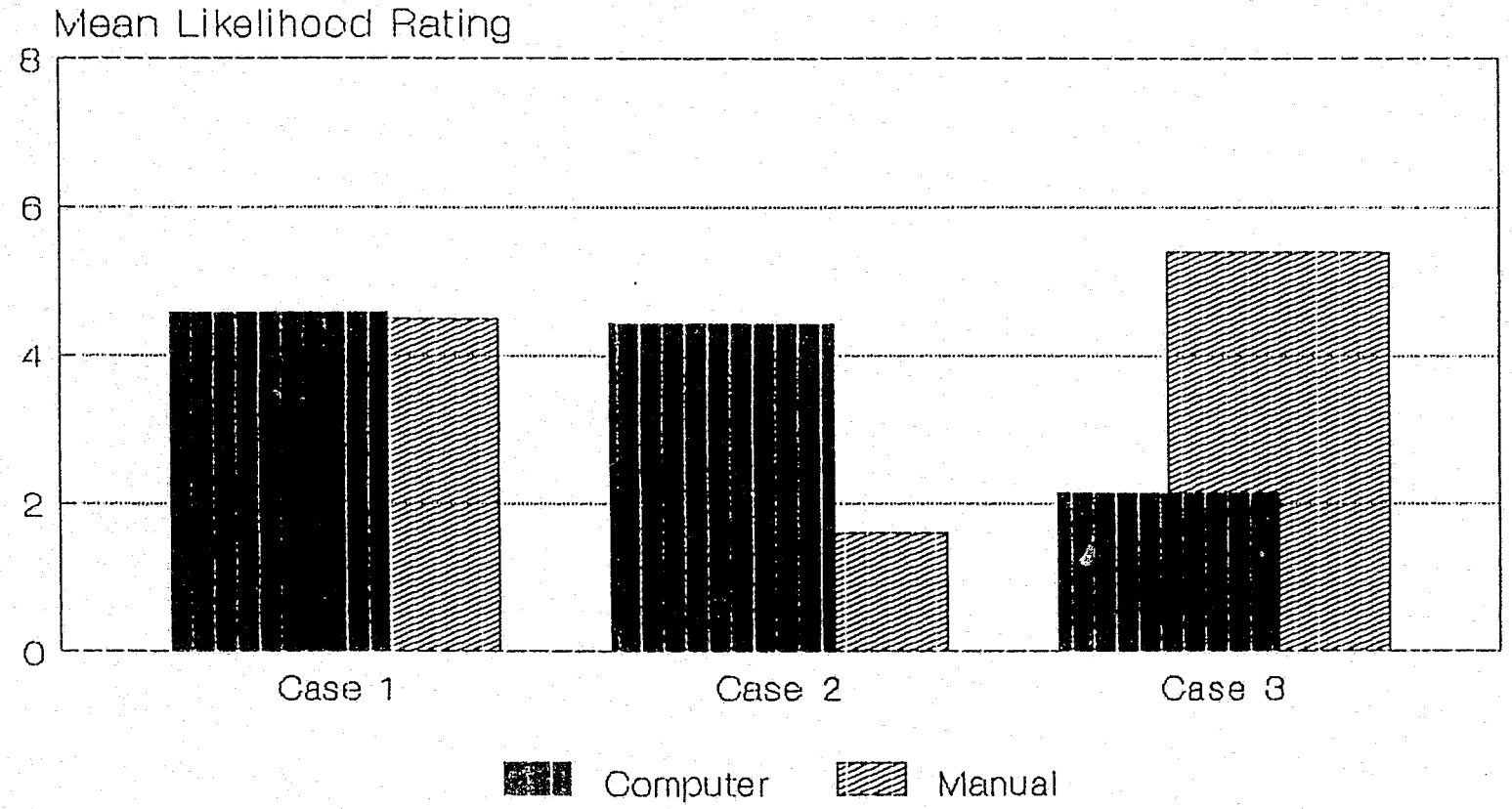
Means, on 7 point scale, 7 = very well.

Figure 5
Amount of Additional Information Needed By Case & Method of Preparation



Means, on 8-point scale, 8 = a lot.

Figure 6 Likelihood of Different Disposition Upon Additional Information By Case and Method of Preparation



Means, on 7-point scale, 7 = very likely
1 = very unlikely.

to them (Figure 6).

V. Other Software Options

Although our particular software design does not merit further development, we have reviewed an alternative software design that holds promise. It is based on a design that we considered and rejected because it is more modest than what we attempted to do. Nevertheless, its comparative simplicity seems to be the key to its success. The design is the one that underlies the proprietary program called ALECS by Coastal Computer Systems. It is currently fully operational and being used by two police departments who give it high praise.[4]

This software does not attempt to simulate a dynamic, contingency-based probing interview with a prosecutor (as ours does) and it does not assume minimal typing skills among police officers (as ours does). Officers sit at a terminal and are prompted to fill in the items on the screen which is just an electronic version of the usual police report form. At the end the police-user types in a narrative account of the e as one would do on existing police forms.

Also being prepared for optional use with ALECS is an expert system that selects charges based on a few questions that the computer asks the officer. The limited prototype model of this expert system that we reviewed

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4. The system was produced by Coastal Computer Systems, Inc., Long Beach, New York. Its development was initiated by Lt. Joseph Lauriano of the Lynbrook (New York) Police Department. It operates on a minicomputer and can be configured to support as many as 150 terminals at one time. It does on-line booking and arrest processing and preparation of the prosecution report. It also performs other functions (see Mattura, 1986; and Unnamed, 1986).

demonstrates the technical feasibility (in the limited sense explained below) of using an expert system to assist in making this particular decision. But whether such a system represents a viable alternative to current practice remains to be demonstrated.

Among the problems that can be anticipated with the use of such a system are: the likely resistance of prosecutors to putting their discretionary policies into a concrete form that could raise political risks, and the problem of "overcharging". The prototype we reviewed employs a strictly legalistic approach to selecting charges. It asks the user for facts about the criminal event and then lists every section of the penal code that is relevant to those facts. This results in what many people would regard as "overcharging".

Installing such a system would not achieve the dismissing or reducing of weak or low priority cases. Until this or another prototype system has demonstrated the feasibility of incorporating criteria that are higher than merely a legal, probable cause standard for charge selection computer-assisted charging will remain only an intriguing possibility.

A second type of software that may hold promise for application to the police-prosecutor communication problem derives the emerging field of computer-assisted-telephone-interviewing, CATI systems (Freeman and Shanks, 1983; Shanks and Tortora, 1985). CATI systems consist in part of questions that interviewers ask respondents over the phone. The answers are keyed into the computer by the interviewer. The system could present the questions on a monitor and have the respondent key in the answers directly. This aspect of the CATI systems is not remarkable and does not differ substantially

from the ALECS system described earlier or other systems that can be constructed with such programs as DBASE III or RBASE.

The intriguing feature of the CATI systems lies in their potential solution to the problem of the narrative section of the police report. In theory, the CATI systems can take the answers which have been given to discreet questions and assemble them into a narrative account of those facts.

In other words, CATI systems might be able to solve the crucial weakness in our own and other software languages. They might be able to not just take the case report apart detail for detail but also to reassemble it in a narrative. Remember it is the narrative that prosecutors rely upon heavily for their sense of the case. It is the narrative that case preparation units like the Nashville Police Departments are designed to enhance. It is the narrative that repeats much of the detailed information that the reporting officer has already had to enter in the fixed-format section of the report. And, it is the narrative that tends to be the most problematic section of the police report.

If a CATI system could be developed to ask the extensive contingency-based probing questions of police officers and also to assemble the answers into both a fixed-format and a narrative account of the incident, such a system would constitute a major advance in police-prosecutor communications. However, such a system would be more complex than the type of questioning for which CATI systems are currently used. Thus, one of the pioneers of this technology and currently Director of the Computer-Assisted Survey Methods Program of the University of California, Berkeley, Dr. Merill Shanks cautions

that exploring the possibility of such an application should proceed on a modest scale.[5]

VI. Conclusions

Our major conclusion is that it is not currently feasible to substantially simulate a face-to-face case report preparation session between a police officer and a prosecutor using a micro-computer. But it is possible to develop software that will guide police officers through the typing of the equivalent of normal police reports. And, it is feasible to expect that police officers who have had no typing lessons will quickly and willingly develop sufficient skill to use such interactive software.

Moreover, reports produced with the assistance of the computer will be accepted by prosecutors as an important improvement over handwritten reports. Most importantly, in some cases depending upon the fact-pattern involved, such reports will have a significant influence on the prosecutors' estimates of the quality of case preparation and the probable disposition of the case. Sometimes computer-assisted reports will make the cases seem stronger than they would otherwise have seemed; and sometimes, weaker. In as much as, information is neutral with respective to guilt or innocence, such an outcome is in keeping with the interests of justice.

However, there are narrower limits to what can be done with a computer than the enthusiasts might lead one to believe.

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5. Interviewed by phone, August 2, 1988. Dr. Shanks stressed that while CATI systems can produce something that is called a "narrative" the quality of that narrative may not be sufficient to meet the needs of a complex application such as the one involved in police-prosecutor communication. He believes that the best way to determine the utility this software is to develop a prototype and to get users to assess its value.

Although the computer can be programmed to branch and probe for information, there is a limit to how many questions can be asked before the program becomes tiresome and unfriendly. Moreover, this approach can not eliminate or substantially reduce the need for a free-text narrative of the incident. In fact too many questions in the fixed-answer format section of the report, would probably discourage users from writing good free-text narratives because many of the details would have to be given twice.

The narrative chronology is an essential source of information for prosecutors and can not be omitted or replaced by a series of answers to specific questions. The narrative provides the only way in which the prosecutor can get a sense of how the pieces of the puzzle fit together.

Computer-assistance in the preparation of cases can not solve certain problems in the police-prosecution communication link. Prosecutors will still be suspicious of the credibility of the reports of certain police officers who they have come to distrust. Poor investigations will not be improved just because they are reported through a computer. Police memories will fade and the quality of police reports will suffer if the police do not make their reports as close to the incident as possible. (Some prosecutors believe that this should be done in the field at the crime scene and immediately after arrest.)

It is technically feasible to produce an expert system that will select criminal charges based on a literal reading of the penal code; but the usefulness of such a system remains to demonstrated.

An expert system that selected all relevant charges based on a literal reading of the penal code would please the police but would not be in keeping with professional standards regarding proper charging. A system that incorp-

orated a local prosecutor's policies of downgrading or rejecting charges in certain cases will involve substantial political risks for the prosecutor. A system that weighs case strength as one of the criteria for case acceptance has yet to be developed. The latter seems feasible but it may have to rely on police judgments about case strength which could prove unreliable.

One of the crucial functions of the police is to gather information and transmit it to the prosecutors for disposition decisions. Greater amounts of information in the police reports does result in cases being more likely to be resolved on their merits, which in effect means more likely to reach a more severe disposition than might otherwise have occurred. Thus the police should be required to have the skills and technology appropriate to this crucial function. They should be able to type and should have data processing equipment and software to support this function. Moreover, their personal evaluations should be based in part upon the quality of their performance of these skills.

Attrition rates either for individual officers or for departments as a whole are inappropriate measures of police performance relative to the prosecution of cases. The more appropriate measure is the quality of case preparation. However, instruments for measuring the quality of case preparation have not yet been perfected. Before police performance from the point of view of the prosecutor can become subject to quality control, these instruments will have to be further refined.

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