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25 Years of Criminal Justice Research

The National Institute of Justice

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U.S. Department of Justice
National Institute of Justice

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U.S. Department of Justice

Office of Justice Programs

National Institute of Justice

Jeremy Travis
Director

NCJ 151287

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Preface

In the history of any organization, the milestone of a twenty-fifth anniversary is a time of opportunity. It may, of course, present the occasion for celebrating a proud record of achievement. It is also a time for taking stock—for tallying up what has been accomplished, weighing those accomplishments against expectations, and then reflecting on what might have been done differently. It presents an opportunity to recognize victories and to acknowledge defeats and even shortcomings. In commemorating its silver anniversary this year, the National Institute of Justice is doing all this. But more important than marking the date of the Institute's founding and taking stock is pursuing the singular opportunity, offered only by a milestone of this magnitude, to achieve perspective. To be sure, twenty-five is an arbitrary number, but enough years have transpired to permit a long-term outlook. Viewing events and developments over the long term is not an end in itself, however. Rather, the vantage point arrived at by documenting NIJ's past is valuable chiefly in laying the groundwork for and guiding its future.

Documenting NIJ's past is valuable chiefly in laying the groundwork for and guiding its future.

The Three Essays

The essays presented here document, in turn, NIJ's work in research, in science and technology, and in applied research and information dissemination. NIJ is most grateful to Alfred Blumstein and Joan Petersilia, distinguished scholars in their respective fields, for the interest they have shown in NIJ by preparing the essay on research. They contribute the indepth perspective that can come only with the expertise they bring to the task.

The essay on science and technology documents many developments at NIJ that are particularly exciting, perhaps because they affect all areas of criminal justice, and perhaps because they often very directly and immediately affect law enforcement and investigatory practices. Two areas in which NIJ's role has been prominent are in the development of lightweight body armor, which has saved the lives of countless police officers over the years; and in DNA "fingerprinting" to improve evidence used in investigating crime.

The third essay details the ways NIJ has been turning the findings of research and evaluation into action. Here the crucial connection is made with the practitioner and policymaking communities. NIJ does this in a wide variety of ways. One of the first steps is identifying the research and evaluation needs of the Institute's constituents. The Institute offers training programs, conferences, and technical support, and operates an information clearinghouse that is the largest of its kind in the world. The Institute also brings new and innovative practices to the attention of the field and sets up model programs.

Perspective for the Future

It is our hope that these essays can help direct NIJ's future. In that respect, there is a fortuitous convergence of events. The 25-year milestone for NIJ occurred at the same time as enactment of the Violent Crime Control and Law Enforcement Act of 1994, the largest crime bill in the country's history. Taken together, this renewed awareness of the history of NIJ, plus the substantial resources for research and evaluation made available in the Crime Act, are serving to reenergize the Institute.

Today, our Nation is witnessing innovative approaches that confront the new realities of crime.

Twenty-five years ago, when the Institute first opened its doors, crime was a major concern, providing the impetus for enactment of major crime control legislation (that mandated, among other things, creation of NIJ). Today's world is very different. Crime has a far greater urgency—statistics on violent crime are witness to this, and in countless polls crime tops the list of Americans' worries. For the first time in our Nation's history, the number of people incarcerated has passed the one-million mark, homicide is the leading cause of death among young African-American men, and among juveniles the number of homicides committed has doubled in just the past few years.

Today, our Nation is witnessing innovative approaches that confront the new realities of crime. Police departments throughout the country are forging new, stronger links with the communities they serve. Communities are experimenting with interdisciplinary approaches in recognition of the need to ensure a balance of enforcement with social and allied services. Researchers are making new efforts to identify the roots of crime to assist in the development of long-term solutions. And today, family violence and victims of crime are being given the recognition and attention that has been long overdue.

NIJ in the Years Ahead

NIJ is embarking on its next 25 years by proceeding in a number of promising new directions. With the new perspective on prevention and the recognition that violent crime cannot be handled by criminal justice alone, comes the need to collaborate with other disciplines and other agencies, public and private. One manifestation is the coordination of research in the critical area of violence, both among Federal agencies and within the Department of Justice.

Some of the most dramatic developments will be occurring as a byproduct of events unrelated to criminal justice. The end of the Cold War has generated interest on the part of the Department of Defense in transferring technologies to operations other than war, and this presents an opportunity to explore adoption of these technologies to law enforcement. Computer technology will also be exploited more intensively.

NIJ initiated an interagency system that allows electronic access to information about programs nationwide that are working to prevent and control youth violence. This information is available literally worldwide via the Internet. NIJ recently adopted a policy of electronically publishing all its documents via the Internet and is exploring other channels of electronic communication.

Another development occurring outside criminal justice will have perhaps the most profound effect on NIJ and the entire criminal justice system. That development is in demographics. The people who are now entering their most crime-prone years—young people—will in the next few years become a much larger proportion of the country's population than they are today. This is clearly the most disturbing development but one that offers the greatest challenge to NIJ. Because the future of our Nation is its young people, NIJ is committed to rededicating itself and redoubling its work for the coming 25 years and beyond.

Jeremy Travis
Director, National Institute of Justice

NIJ is committed to rededicating itself and redoubling its work for the coming 25 years and beyond.

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NIJ and Its Research Program

by Alfred Blumstein and Joan Petersilia

When the National Institute of Justice (NIJ)[1] was created in 1969, it faced a criminal justice environment that was extremely short of empirically grounded knowledge to guide development of intelligent, in formed, and effective criminal justice policy. In particular, there were no adequate estimates of the effects of any criminal justice sanction policy on crime rates, even in simplest terms. Today the state of knowledge in the field is still very limited compared to the critical need and to the potential contributions, largely because the level of resources committed to the effort has been so small. Nevertheless, impressive progress over the , t 25 years is evident.

The purpose of this paper is to review that history and progress, possibly for reflection of where we have come from, but, more important in any such stock-taking, to assess where criminal justice research should go and to learn how to get there more effectively.

In this review, the focus is on some of the more important substantive developments in the research program. In that way, important opportunities for the future will be highlighted. Some of the most important substantive knowledge gaps amenable to new research thrusts will be identified to raise the critical questions that still need to be asked.

The authors also try to provide some guidance on processes, particularly by highlighting approaches that have worked well, or pointing out ways in which existing approaches might be pursued more effectively. All this effort is intended ultimately to bring valid new information, insights, and tools to the policymakers and practitioners who should be expected to exploit new research findings to generate improved policies and practices.

About the Authors and NIJ

It should be clear that this paper represents the authors' personal views and is not intended to—and certainly cannot—represent any official position of the National

The Institute is pleased to have fostered many marriages between policymakers seeking new knowledge and researchers eager to help but uncertain as to how to go about it.

Gerald M. Caplan
Institute Director
1973–1977

For those of us on the front line in the administration of justice, the Institute has over the years provided much needed perspective, insight, and assistance on issues of importance to public safety.

Michael D. Bradbury
District Attorney
County of Ventura, California
November 1993

Institute of Justice. Indeed, in many respects, the comments offered represent a challenge to NIJ policy and perspective.

The comments offered reflect the authors' individual experiences, many of which have been with NIJ. Both authors have been closely involved with other related research programs supported by government and by foundations and have been closely connected with the criminal justice research community, as reflected by their both serving terms in the last several years as president of the American Society of Criminology.

Joan Petersilia has been a long-time participant in the major criminal justice research effort at The Rand Corporation that has extended for more than 20 years. In that time, she has been a participant and principal investigator on numerous NIJ grants, as well as grants from a variety of other funding agencies. Her research has spanned the various priority areas of NIJ, including policing, career criminals, racial discrimination, criminal sentencing, and intermediate sanctions. In the mid-1980's, James Stewart, then director of NIJ, asked her to review NIJ's research accomplishments to date, identifying research projects that had influenced criminal justice policy and practice. That report, entitled *The Influence of Criminal Justice Research (1987)*, highlighted the importance of NIJ-funded studies for policymakers and researchers alike. The report also noted the critical importance of close collaborations between researchers and practitioners, a theme she has pursued in several subsequent writings.

Alfred Blumstein was a participant in the founding of NIJ in the sense that its creation was an outgrowth of the work of the President's Commission on Law Enforcement and Administration of Justice, and particularly its Task Force on Science and Technology, which he chaired.[2] That task force was given the mission of identifying what science and technology might do for dealing with the crime problem. One of its basic conclusions was that, while science and technology as a producer of "gadgets" had much to offer, realizing that potential required little in the way of significant advances. The only striking exception was the technology of automatic fingerprint recognition, which has now been attained. The real challenge, however, was the problem of choosing what technology should be applied and when and how to do so. Further, the primary contribution from science and technology would be through the use of the *methods* of science, of seeking knowledge to inform a criminal justice system whose greatest need the commission highlighted was "the need to know."

Stimulated by that urging by both the task force and by the larger commission, Congress, when it created the Law Enforcement Assistance Administration (LEAA) in 1968, established NIJ as a unit within LEAA to pursue the research mission. Blumstein was one of the early NIJ grantees (to pursue work related to the development of a flow model identified as Justice Simulator Model (JUSSIM) to be used in the planning function mandated by the Act). He has subsequently been involved in research funded by NIJ in the areas of imprisonment, deterrence, incapacitation, sentencing, and criminal careers.

Reviewing NIJ's Major Research Accomplishments

NIJ has been in the forefront of nearly every innovation in criminal justice research and policy over the past 25 years. Understanding of the nature of criminal careers, the effects of sanctions, and the operations of the police, courts, and corrections have all been deeply influenced by NIJ research findings.

It is clearly beyond this essay's scope to review all of NIJ's accomplishments. Rather, the purpose is to highlight some of the more important research contributions and give an appreciation of the broad range of subjects NIJ research has addressed. The selection of projects for this document is subjective and derived from the authors' judgments and opinions.

The research review is organized in the following sections:

- Evaluating the Performance of Police, Prosecution, Sentencing, and Corrections
- Understanding the Nature of Crime, Crime Rates, and Criminal Careers
- Special Topics: Drugs and Crime, Crime Prevention, White Collar Crime, and Victims
- Developing Advanced Technologies for Justice System Agencies

Evaluating the Performance of Police, Prosecution, Sentencing, and Corrections

In the public's mind, the primary function of the justice system is to arrest, convict, and punish those who are guilty of serious crime. Most agree that the police, courts, and corrections systems do not operate as efficiently and effectively as they should. NIJ has spent a majority of its funds documenting the performance of justice agencies, assessing the effects they have on crime and justice-related outcomes, and evaluating alternative programs and policies.

With the passage of the 1968 Omnibus Crime Act that established the LEAA and the Institute, the Nation had for the first time in its history an organization that concerned itself with the proper functioning and effectiveness of the entire spectrum of criminal justice.

Edith E. Flynn
Professor of Criminal Justice
Northeastern University
Boston, Massachusetts

Policing

Police administrators, perhaps more so than the leaders in other criminal justice agencies, appear to have changed practice dramatically as a result of research findings. Throughout the 1980's, according to George Kelling of Harvard, "a quiet revolution" began to reshape American policing. Many attribute those changes to the influence of a series of NIJ-funded studies that challenged traditional assumptions and methods, tested research recommendations, and widely disseminated novel police practices.[3]

Patrols and response time. The first and best-known of these studies was the Kansas City (Missouri) Preventive Patrol Experiment, conducted by researchers at the Police Foundation. Police administrators had always assumed that by driving more or less randomly in a given area, patrol cars prevented crime, made citizens feel more secure, and could respond more quickly to calls after a crime had been committed, thus increasing the chances of arresting the suspect. Preventive patrol and the pressure for quick-response time increased requirements for sworn personnel, cars, sophisticated communications systems, and other technological innovations. As the strain on police budgets grew, police administrators needed to know whether their assumptions about these practices were valid and justified the expense.

To test the effects of preventive patrol, researchers randomly assigned neighborhoods to three different patrolling techniques: (1) no preventive patrol activities (police cars entered the area only to answer specific calls), (2) customary service, or (3) increased preventive patrol (cars cruised the streets two to three times more frequently than normal). These experimental conditions remained in effect for 1 year. The results showed that neither crime rates nor citizens' perception of their safety were significantly affected by changes in these levels of random preventive patrol. The study concluded that preventive patrol did not necessarily prevent

crime or reassure the citizens.[4] Similar experiments with similar results were subsequently conducted in St. Louis, Missouri, and Minneapolis, Minnesota.[5]

The findings made national news and produced intense debate and some shock waves in the policing community. Police chiefs criticized the research design and questioned its conclusions. Some argued that the "no patrol" condition was not maintained, since police cars were going to and from other areas through that police beat. But most police chiefs stated that regardless of the methodology, the findings were consistent with their own experience. Like the other policing studies, the Kansas City Preventive Patrol Experiment was important because it challenged a traditional police practice and gave police managers latitude to experiment with alternative strategies. Following the study, many police departments assigned patrol units to proactive patrol, that is, they gave patrol officers specific proactive assignments rather than having them randomly cruise the streets.

Another major study, conducted again by Police Foundation researchers working with the Kansas City, Missouri, Police Department, studied the effects of police response time. Their results indicated that police response time was unrelated to the probability of making an arrest or locating a witness, and that neither dispatch nor travel time were strongly associated with citizen satisfaction. The researchers discovered that the time it takes a citizen to report a crime—not the speed with which police respond—was the major determinant of whether an on-scene arrest took place and whether witnesses could be located. Furthermore, citizen reporting delays constitute a significant proportion of the total recorded police response time. According to the study, if the victim or witness waited an hour before calling the police, the speed with which the police subsequently responded was likely to be unimportant—the perpetrator of the crime had ample time to flee the scene. The researchers concluded that "because of the time citizens take to report crimes, the application of technological innovations and human resources to reduce police response time will have negligible impact on crime outcomes."

In the area of policing, the Institute has played a central role in the development of both community- and problem-oriented approaches. Most importantly, NIJ has facilitated the development of more sophisticated programs and has made evaluation an important part of decisionmaking in major police agencies.

David Weisburd
Professor and Director
Center for Crime Prevention Studies
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25 years of Change in Policing

Over my 21 years of conducting research on policing, I have observed the profession move from very little organizational readiness to eager, active exploration of new ideas.

Police who are captains and deputy chiefs today were patrol officers and sergeants in the 1970's, or they hadn't contemplated making policing their life's work. They have little personal investment in the old ideas to which the managers of the 60's and 70's were committed. They have matured professionally in an era of professional questioning and seeking of better approaches. New ideas are less likely to threaten their professional self-concepts.

Many of them have been educated on the research literature that was only beginning to be developed in the 1970's. Young officers and managers have been given empirically based reasons for seeking better ways to perform their jobs.

If the stimuli for change were external ones 25 years ago, today they are internal. It is the police themselves who are saying that there is a better way to do things.

I find these very exciting times in which to be doing criminal justice research. I feel rewarded for having stayed in the field long enough to see the harvest of the seeds planted more than two decades ago.

Mary Ann Wycoff
Police Foundation

NIJ-supported replications of the Kansas City Response Time Study in Jacksonville, Florida; San Diego, California; Peoria, Illinois; and Rochester, New York, basically confirmed the Kansas City findings.[7]

These findings led researchers at the Police Executive Research Forum (PERF) to develop a model response system, called the *Differential Police Response Model.* In this model, civilian complaint-takers answer all citizen calls, classify them as critical or noncritical, and transfer the critical calls to a dispatcher for immediate response. Noncritical calls are systematically stacked, and citizens are asked to file reports at a later time. These systems were tested and evaluated by NIJ, and the positive results held that the systems saved police resources and allowed departments to handle an increased volume of calls without a corresponding increase in patrol officers. *Differential Police Response Models* have now been adopted by most major police departments across the Nation. Other departments have focused on educating the public to notify the police more quickly when a crime has occurred. Such policies are estimated to save millions annually in the police departments in which they have been implemented.[8]

Criminal investigation. At the same time that preventive patrol and fast response time policies were being questioned, so too was the criminal investigation function. Like patrol, criminal investigation consumes a large proportion of police resources. NIJ funded a Rand study of the criminal investigation process, with the aim of making it more effective.[9] The study found that "detective work" alone rarely leads to an arrest, and that the probability of an arrest is largely determined by the information that patrol officers obtain in their preliminary investigation at the crime scene. The study established that if specific types of information are not collected during the preliminary investigation, chances of solving a case are low, no matter how intense the followup investigation.

The Rand Criminal Investigation study recommended that patrol officers be given a larger role in conducting preliminary investigations, both to provide an adequate basis for case screening and to eliminate the need for redundant efforts by investigators. Detectives could then more appropriately concentrate their efforts on the most serious crimes, on the cases most likely to be solved, and on getting sufficient evidence to support the prosecution.

This body of criminal investigation research led to one of the more important developments in modern policing, the identification of "solvability factors". In many police departments today, for less serious crimes, information collected at the crime scene is assessed using solvability-factor score sheets. The assessment—conducted by the patrol officer during the preliminary investigation, or by a case-screening officer or felony-review unit—determines which cases are likely to be solved, given the initial information obtained. Those promising cases are given to the detective division for followup investigation; the rest are often closed on the basis of the preliminary investigation and reopened only if additional information is uncovered.

NIJ subsequently funded several efforts aimed at applying computer technology to further ease and simplify police investigations. The PISTOL project in St. Petersburg, Florida, which seeks a paperless police information system using lap and personal computer technology, is one example.[10] "Solvability factors" have also been computerized, such as the system developed for burglary by the Baltimore County Police department.[11]

Community policing. These early studies paved the way for modern policing strategies, with a strong emphasis on community-based policing. In particular,

The importance of police officer involvement can be seen in the move to community policing. Police leaders have communicated effectively with citizens and community and political leaders, yet most practicing police officers have little idea of the underlying concepts of community policing. Nevertheless, little is being done nationally to address this problem. I am suggesting a role in this for NIJ and police unions.

Robert B. Kliesmet
International President
International Union of Police Associations, AFL-CIO

they caused police to recognize the critical role of the community in crime prevention and control. Police began to look beyond incident-oriented policing and experiment with innovative responses to crime that took a broader view of law enforcement. Some researchers found that police departments also went "behind the offenses to the precipitating causes of crimes, building closer relations with the community."[12]

Initially police sought to enhance the self-defense capacities of the communities themselves by implementing neighborhood watch and target-hardening programs. NIJ evaluated a number of these crime prevention programs, showing them to be an important part of crime control.[13]

The National Institute of Justice has provided substantial and critical support for the development and dissemination of professional literature in policing.

Mary Ann Wycoff
Police Foundation

NIJ also funded a number of field experiments to test whether various forms of foot patrol, door-to-door contact, and other positive contacts between police and citizens could reduce the fear of crime and improve neighborhood life. Fear of crime studies in Newark, New Jersey, and Houston, Texas, and problem-oriented policing (POP) research, such as that in Newport News and Norfolk, Virginia, revealed new ways to save police resources and use them more effectively.[14] This approach calls on police to exercise both initiative in identifying the source of the problem and in enlisting community help in developing solutions.

NIJ began operations in October 1968 with a staff of four. By 1994, the staff of NIJ had increased 10 times over.

NIJ has continued its strong commitment to improving policing and has provided technical assistance and evaluation expertise to community-policing projects in Seattle, Washington; Madison, Wisconsin; Houston, Texas; Baltimore, Maryland; and Los Angeles, California. The early results are identifying the characteristics of neighborhoods and police departments that are associated with successful outcomes.

This "co-production" of community safety is now an integral part of modern policing strategy—quite a far cry from traditional policing practice of the 1970's, which consisted largely of reactive responses to all calls for policing services. To assist in this rapid change process, NIJ also supported a series of Executive Sessions on Policing at Harvard University during the late 1980's and 1990's, which brought researchers and police together to examine the nature and implications of these reforms.

Police focus on spousal assault. Police research has not only studied how best to manage personnel and resources, but also how to deal most effectively with the threat posed by different types of criminal offenders, for example, the spouse assaulter.

Police have traditionally found spousal assault calls among the most problematic to handle. Physical violence within the home was thought to be exempt from the same laws that keep acquaintances or strangers from assaulting one another on the street. In the mid-1970's, feminists began focusing attention on spouse abuse and began insisting that spouse abusers be treated like other violent criminals.

Subsequently, police departments began to view spousal assault situations differently and to reconsider how the offenders should be treated. Their thinking on this matter was significantly altered as a result of NIJ research findings.

In 1980, NIJ provided funds to Lawrence Sherman of the Police Foundation and the Minneapolis Police Department for an experiment to explore options for police responses to domestic violence calls. In the experiment, police systematically varied the use of three approaches when responding to misdemeanor spousal assault calls: (1) ordering the suspect to leave the home for 8 hours, (2) advising the couple to calm down, and (3) arresting the suspect. Both official records and interviews of victims showed that "arrest worked best."[15] The researchers found that arrest and a night in jail for the suspect appeared to cut in half the risk of repeat violence against the same

victim over a 6-month followup period, from 20 percent to 10 percent. Based on these results, the report recommended that police in all 50 States be allowed to make warrantless arrests in misdemeanor domestic violence cases.

The widely publicized research study had immediate effects on police practice. Many departments changed their policies to require an arrest in domestic violence situations. A survey found that in larger cities the use of arrest rather than mediation in dealing with minor domestic assault cases increased from 10 percent in 1984 to 31 percent in 1985 (the year after the study was released). Many departments attributed the change directly to the research findings.[16] By 1988, 90 percent of police agencies either "encouraged" or "required" arrest in such cases.[17] Furthermore, in the 5 years following the study, 10 States enacted laws making spouse assault a separate criminal offense, and over half the States dismantled legislation that prevented police from making an arrest if they did not witness the crime.[18]

The research community urged replications of the Minneapolis experiment to test the validity of the results and to explore whether the arrest policy might have different effects in communities with different economic and demographic conditions. NIJ responded in 1986 by funding replications of the experiment in Omaha, Nebraska; Charlotte, North Carolina; Milwaukee, Wisconsin; Metro-Dade, Miami, Florida; and Colorado Springs, Colorado. The replications produced mixed results. In the Metro-Dade, Florida, Police Department replication, Police Foundation researchers again found that arrest made a significant, positive difference in the recidivism rate (i.e., those arrested had lower recidivism rates). The replications in Milwaukee, Charlotte, and Omaha produced evidence that arrest *increased* the frequency of future domestic violence by the suspects. On the other hand, the replications in Colorado Springs and Metro-Dade produced victim-reported evidence that arrest reduced the risk of future violence.[19]

The replications also showed that arrest had different effects on different kinds of people within the same cities. In Milwaukee, Omaha, and Colorado Springs, analyses of the official record data suggested that unemployed suspects became more violent if arrested, but that employed suspects did not. In Milwaukee, arresting unmarried suspects appeared to make them more violent; among married suspects it did not. Milwaukee arrests had the greatest criminogenic effect among suspects who were both unemployed and unmarried. Sherman concluded that "this consistent pattern supports a hypothesis that the effects of criminal punishment depend upon the suspect's stakes in conformity, or how much he has to lose from the social consequences of arrest. The unemployment result is the single most consistent finding from the domestic violence experiments and has not been contradicted in any of the analyses reported to date."[20]

The results of the Minneapolis experiment show the benefits of research replications, and they also point to the complexity of criminal justice interventions.

In 1986, Lawrence Sherman summarized the domestic violence experiments and how their results could inform research, policy, and practice. His well-received book won the 1993–1994 American Sociological Association Award for Distinguished Scholarship in Crime, Law, and Deviance. Sherman concludes: "The taxpayer's investment in seven NIJ experiments has produced a series of important scientific conclusions, including:

- Arrest increases domestic violence among people who have nothing to lose, especially the unemployed.

The NIJ research projects, internship programs, and other educational law enforcement information distributed by the Institute have been very helpful to me and the agencies that I have managed.

Ruben Ortega
Police Chief
Salt Lake City, Utah

■ Arrest deters domestic violence in the short run, but escalates violence later on in cities with higher proportions of unemployed black suspects.

■ A small but chronic portion of all violent couples produce the majority of domestic violence incidents.

■ Offenders who flee before police arrive are substantially deterred by warrants for their arrest, at least in Omaha." [21]

Sherman suggests that these findings call for a number of policing changes, including allowing the police to make warrantless arrests on probable cause for misdemeanor domestic assaults the officer did not witness, and encouraging the police and prosecutors to cooperate in developing the procedures for obtaining warrants for absent offenders, which was demonstrated to be an effective deterrent in Omaha.

NIJ breaks down the barriers among agencies of different disciplines, geographical locations, and urban and suburban. The issues become focused as the absolutely unique combination of academician and practitioner work in harmony.

R. Gil Kerlikowske
Commisioner of Police
Buffalo, New York

Police focus on career criminals. Like spouse assaulters, career criminals cause the police special problems. These offenders, who threaten public safety most, are often able to avoid arrest and conviction by intimidating witnesses, using aliases frequently, and delaying court proceedings. Overburdened police agencies are rarely able to give them the priority attention they deserve.

In the early 1970's, researchers began to study the characteristics of these career criminals. In a highly-publicized research study, Marvin Wolfgang, at the University of Pennsylvania confirmed what police had long suspected—that a small proportion of criminals committed a disproportionate number of serious crimes.[22] By studying a cohort of males born in Philadelphia in 1945 and who lived there between the ages of 10 and 18, Wolfgang discovered that 6 percent of the entire cohort (termed "chronic offenders") were responsible for the majority (52 percent) of crimes committed by the cohort (34 percent of whom committed any crime). This finding posed a major challenge for justice agencies—how to identify these chronic offenders prospectively or at the points in their careers when they were most criminally active?

With Federal funding, police began to develop special "career criminal" or repeat-offender programs (ROP's). ROP's take a proactive approach by having the police target offenders or certain types of crime and try to catch them "red-handed" rather than wait for a citizen's call.

One of the most highly developed programs of this type was the ROP begun in 1982 at the Metropolitan Police Department of Washington, D.C. The special ROP unit, which consisted of about 60 officers, used a variety of investigative undercover tactics to identify career criminals. To arrest persons for whom warrants had not been issued, they developed evidence about specific crimes in which their targets had participated. This involved several activities, including cultivating informants, investigating tips from citizens, placing targets under surveillance, tracing stolen property found in a target's possession to the original owner, and using "buy-and-bust" techniques.

Results of the ROP were closely monitored for 2 years by NIJ-supported researchers Susan Martin and Lawrence Sherman, of the Police Foundation. They found that:

■ The work of the Repeat Offender Project substantially increased the likelihood of arrest of the persons it targeted.

■ Those arrested by ROP officers had longer and more serious arrest histories than a comparison sample.

■ Persons arrested by the ROP unit were more likely to be prosecuted and convicted on felony charges and more likely to be incarcerated than comparison arrestees[23].

The researchers made frequent presentations of preliminary results and wrote a number of descriptive articles for professional publications, and the ROP results were featured on the television news program, *60 Minutes*. The publicity and the encouraging results attracted the attention of police officials nationwide, and many replications occurred.

NIJ has continued to fund evaluations in this area. Most recently, the Major Violators Unit (MVU) of the Phoenix Police Department was evaluated by Rand. In this experiment, police and prosecutors cooperated in a project that identified career criminals who were still on the street to strengthen the cases against them following arrest. The study revealed that this type of approach can pay off in longer prison terms—offenders targeted by the MVU received sentences averaging 10.4 months longer than those in the control group, and the rate of imprisonment of those convicted was also higher.[24] Close cooperation with prosecutors in case preparation was cited as an essential factor in the program.

ROP projects have continued to be replicated throughout the Nation, demonstrating that it is possible for police to identify the most serious offenders in their communities and, given adequate resources, to strengthen the cases prepared for court consideration.

With the benefit of hindsight, the 1980's strike me as a golden era for NIJ's influence on the development of criminological knowledge both in the United States and more generally in the English-speaking world. The dominant paradigm was the criminal career approach, with Alfred Blumstein as the major intellectual leader, but this could not have happened without the invaluable support of NIJ.

David P. Farrington
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University of Cambridge, England

Prosecution

The judicial process is sometimes compared to a funnel—at the top, a great number of people are arrested, but at the bottom, very few of them are convicted and sent to prison. For some, prosecutors choose not to file charges because they conclude the evidence is too weak; for others, charges are ultimately dropped or the prosecution fails to produce convincing evidence of guilt. Nationally, about 50 percent of all felony arrests fail to result in a conviction.[25] Jurisdictions across the Nation face this "case attrition" problem, and policymakers suggest it contributes significantly to serious crime in the community. Many offenders who slip through the system quickly return to crime and are rearrested, only to slip through again.

Although jurisdictions are strongly motivated to improve the prosecution process, until the mid 1970's, they had little systematic information about the process between arrest and incarceration. Since its inception, NIJ has supported research to fill this void. The most important studies in this regard include those establishing the magnitude and sources of case attrition, research supporting special prosecution efforts to identify and convict career criminals, and evaluations of new policies and laws designed to reduce case attrition.

Case attrition causes. One of the earliest studies of case attrition was conducted by Brian Forst and colleagues at the Institute for Law and Social Research (INSLAW) using data from the PROMIS (Prosecutor's Management Information System) computer system to examine case attrition in Washington, D.C.[26] At the same time, the Vera Institute of Justice was conducting a thorough study of the phenomenon in New York City.[27] These NIJ-funded studies are some of the most comprehensive research to date on overall case attrition patterns. They described not only the deterioration of cases between arrest and final disposition, but also explored some underlying patterns that help explain why that deterioration takes place.

NIJ-sponsored research in 1975 established for the first time the extent to which crime victims saw themselves as revictimized by a criminal justice system that was concerned more about everyone's interests—even the offenders'—than theirs. Recommended reforms included better orientations for victims on criminal justice operations and sources of aid and how to get it and provision of separate waiting areas, transportation, and babysitting. These recommendations provided an important model for subsequent programs nationwide, for State victim bill-of-rights legislation, and for the Federal Victims of Crime Act of 1984.

The INSLAW study found that what the police officer does has a great deal to do with whether an arrest results in a conviction. When the arresting officer is able to recover tangible evidence, a conviction is more likely. In addition, if the police locate two or more cooperative witnesses, the probability of conviction is significantly enhanced. If the arrest is made soon after the offense—especially in cases of robbery, larceny, or burglary—tangible evidence is more often recovered and conviction is, again, more probable. The researchers recommended police training that emphasized not just "preserving the scene," but crime scene management that would include initiating an immediate canvass for witnesses and for evidence. They also strongly recommended a system that would provide regular feedback to officers about final case outcomes. These recommendations coincided with those being made by policing researchers, as discussed above, and provided additional impetus for policy changes.

A followup NIJ study by Floyd Feeney and colleagues of the University of California-Davis, identified factors related to case attrition and recommended strategies that might decrease attrition.[28] Consistent with the earlier findings, they too recommended greater feedback to police officers, including statistics on case attrition and specialized training in collecting evidence in specific types of crimes. They also recommended assigning police to short periods of observation in the prosecutor's office and shifting some police investigator resources from low-priority work on unsolved crimes to building cases against suspects already arrested. All three studies discovered that much felony case attrition results from lack of victim cooperation or insufficient evidence to make a felony charge hold.

Witness and victim cooperation. All of these studies highlighted the importance of witness and victim cooperation. These results encouraged the LEAA to provide special funding for victim-witness programs in selected district attorneys' offices and courts across the Nation. Several NIJ-sponsored evaluations of these programs concluded that they do improve communications between witnesses and the criminal justice system, lead to fewer cases being dropped as a result of victim and witness problems, and result in greater victim satisfaction with the court system.[29]

In the mid-1980's, NIJ funded a number of jurisdictions to implement new practices designed to improve police-prosecutor relations. Six counties participated and tested various means of improving communication, including the use of "prosecutor checklists" that name the items the prosecutor desires prior to the formal filing of charges (e.g., type of weapon used, injuries sustained). Police investigators use these checklists to ensure that they have submitted to prosecutors only those cases for which they have sufficient evidence to support formal charges. Other jurisdictions institutionalized cooperative agreements between police and prosecutors, for example, by assigning police to the prosecutor's office on a rotating basis and vice versa. Many jurisdictions have also instituted methods to make police aware of the evidentiary requirements for effective prosecutions: for example, training sessions and meetings, videotapes, on-call prosecutors, and legal advisers in police departments.[30]

Finally, many prosecutors' offices are ensuring that patrol and detective officers know the final disposition of cases. An NIJ-funded experiment in Snohomish County, Washington; Baltimore County, Maryland; and New York State had prosecutors filling out final "case disposition" forms that indicated the exact reasons for cases not resulting in convictions. The forms were subsequently sent back to the detectives and patrol officers who worked on the case. This helped officers understand why some of their cases led to convictions and others did not. Notifying

police officers of the final disposition of their cases is now regarded as good practice, and many prosecutors now incorporate such procedures. A recent survey of prosecutors revealed that the rate at which prosecutors notify police and victims of the outcomes of their cases more than doubled from 1974 to 1990.[31]

Case attrition studies also established the fact that repeat offenders often managed to "beat the system," getting relatively lenient treatment from district attorneys in

Yesterday, Today, and Tomorrow

When I began my career in law enforcement, few chiefs of police held college degrees, and professionalism was more dream than reality. Today, a large number of chiefs and wardens hold graduate degrees and few lack a bachelors degree. A new generation of professors began to change the way in which we prepare young people for careers in the justice system.

Social science research has helped us better understand the criminal investigation process, the dynamics of our courts, and the failure of corrections. Technological research fostered safety, the introduction of new forensic approaches, and the value of computerization.

Over the years NIJ has funded hundreds of programs and experiments, many of which have set new standards and defined new directions. Yet, critics argue that crime is rampant. Looking back over the 30 years I have spent in the criminal justice field, I cannot think of a time when crime was not a problem. But, crime has changed. We have become a global society in which mobility and communications offer opportunity as well as greater potential for criminal activity.

Today's emphasis on and public concern about crime results not from a failure of NIJ, but rather a failure to recognize that solutions cannot be developed without research and experimentation.

The National Institute of Justice represents in many ways our best hope for finding solutions, for crime is not a local problem; it is a national disgrace. Our research must address a changing concept of community, of economic reform, of technological innovation, and ways we can improve the whole justice process.

Richard H. Ward
Associate Chancellor
Professor of Criminal Justice
University of Illinois

The many research projects carefully designed and detailed by NIJ in its annual Program Plan provide not only practical information for criminal justice policymakers, but they also help to shape the respective State and Federal roles in criminal justice matters. Even when prevailing political winds have made it difficult for other agencies to maintain a focus on their true missions and roles, NIJ has managed to stay its course. In an important sense, NIJ has helped to provide the means necessary, not only to develop better crime prevention policies and criminal laws, but to preserve that delicate balance and distribution of responsibilities and powers among the State and Federal Governments.

Nolan E. Jones
Director, Justice and Safety
National Governors' Association

Gwen A. Holden
Executive Vice President
National Criminal Justice Association

Today our shelves are filled with the literature that continues to define the [criminal justice] field, much of it fostered in one way or another by NIJ.

Richard H. Ward
Associate Chancellor
Professor of Criminal Justice
University of Illinois

exchange for guilty pleas or from judges who were optimistic about rehabilitation. For example, sentencing patterns in Los Angeles County showed that only 50 percent of defendants who had served a prior prison term received prison sentences for a subsequent robbery conviction, and only 15 percent received them for a subsequent burglary conviction.[32] Research was funded by NIJ to explore the reasons for such high dropout rates for career criminals. Two particular factors were discovered. First, many career criminals have juvenile records that are not transferred and used by the adult courts, and hence serious offenders may appear to be first-time offenders to the adult justice system.[33] Second, the common procedures of handling cases (horizontal prosecution, where different attorneys are responsible for overseeing different proceedings in a single case) mean that career criminals are often not handled in a manner consistent with their public safety risk.

For 25 years, NIJ has promoted and facilitated expansion of scientific knowledge to replace subjective impressions and emotional reactions as the sources of criminal justice policies.

Daniel Glaser
Senior Research Associate and Professor Emeritus
University of Southern California
Past President, American Society of Criminology

Career Criminal Prosecution Program. Publication of these data prompted prosecutors around the Nation to consider special efforts to eliminate the "revolving door" for career criminals. These efforts were similar to those undertaken by policing agencies. They constituted a sort of grassroots experimental movement that ultimately led to a major Federal initiative for Career Criminal Prosecution (CCP) programs. CCP included vertical prosecution—where a single prosecutor handles the case from filing to disposition—limited plea bargaining, and close coordination with law-enforcement agencies. Researchers were helpful in evaluating the CCP programs and in providing empirical guidelines that prosecutors used to identify the most active career criminals.

NIJ funded Eleanor Chelimsky of the Mitre Corporation to conduct a national evaluation of Career Criminal Prosecution Programs in four jurisdictions: Orleans Parish, Louisiana; San Diego, California; Franklin County, Ohio; and Kalamazoo County, Michigan.[34] This evaluation described the development of the program concept and also focused on changes in case outcomes, including: conviction rates, incarceration rates, average sentence lengths, and average time to disposition. The evaluation showed that the length of prison term received by career criminals increased, but the probability of incarceration (following conviction) did not change in any of the four sites, partly because in three out of the four sites, career criminals had a high (90 percent) rate of incarceration prior to the establishment of the special CCP unit. The programs continued to be implemented throughout the Nation, and many States (including California) implemented statewide programs. Although the Mitre evaluation did not find that CCP programs made a difference in incarceration rates, the later evaluation in California indicated that they held promise. The researchers found small but significant increases in conviction rates, a large increase in the fraction of defendants convicted of the most serious charges, increases in incarceration and imprisonment rates, and an increase in average sentence length.[35]

These early CCP programs provided the foundation and experience in prosecutors' offices to experiment with vertical and specialized priority prosecutions and laid the groundwork not only for the many career criminal units that exist today, but also the specialized units that now exist in the areas of gangs, child abuse, and domestic violence.

Pretrial Release Decisionmaking

The court is the pivotal institution of the criminal justice system. Improving the adjudication process—while safeguarding the public from offenders on pretrial

release—has been a major research priority of NIJ. Whether to release defendants awaiting trial—and under what condition—is a critical issue affecting the courts.

Early research conducted by the Vera Institute of Justice in New York City attempted to determine what proportion of the jail population was being detained simply because of inability to post the required bail, and whether or not there was a relationship between the amount of bail, the ability to post it, and appearance at trial. This research documented that much jail space was being occupied by persons who were not necessarily dangerous, but simply indigent. Although the court had statutory power to release defendants on their own recognizance (i.e., a promise to appear), that option was being used in less than 1 percent of cases in the 1960's. Vera researchers further noted that a prerelease policy based solely on an ability to pay was overtly discriminating against the poor. It also made clear, however, that unselective prerelease policies could put the community at risk if a significant proportion of persons released prior to trial continued to commit crimes in the community.[36]

These early findings led Vera researchers to undertake a 3-year study of prerelease policies and the characteristics associated with remaining crime-free and showing up to face charges. This experiment came to be known as the *Manhattan Bail Project*. The researchers found that a defendant with roots in the community was not likely to flee, irrespective of his ability to pay a bondsman.[37]

The researchers devised a point system in which weights were assigned to information concerning the defendant's residential stability, employment, family contacts, and prior criminal record. The number of points a defendant achieved placed him in a particular "flight-risk" category, which was then used as a basis for recommending release on his or her own recognizance (ROR). Vera subsequently discovered that when an objective scoring system was used to decide ROR candidates, the rate of appearance was frequently higher than that for defendants released by posting bail. The ROR defendants' "skip rate" was 1.6 percent, less than half the rate for defendants who posted bail. The results indicate that a bail bond is often a less effective guarantee for the court than verified information about prior record and community ties.

The Vera research and many projects that have since replicated its findings, suggested that an objective method exists by which it is possible to identify defendants who have a high probability of appearing for trial. This finding, along with the subsequent testing and refinement of the method, has widespread implications for jail costs, since space can be used for those who are most likely to flee or to recidivate. It also leads to a fairer and more equitable punishment response, since defendants are not penalized primarily on their ability to pay.

Since that time, literally hundreds of courts across the United States have instituted formal prerelease guidelines modeled after the original Vera research. As a result, more than 85 percent of defendants today are released prior to trial, and approximately 70 percent of those released are freed without paying bail.[38]

As Gottfredson and Gottfredson noted:

> In few areas of criminal justice has a reform effort had such widespread and rapid impact as did the Vera program of increasing pretrial release by providing verified information about a defendant's "community ties." It has been estimated that "release criteria" identified by the Vera project have now reached over 200 cities.[39]

There can no longer be a localized approach to criminal justice...NIJ can and should play a leadership role in the development of more democratic legal and criminal justice institutuions throughout the world.

David Weisburd
Professor and Director
Center for Crime Prevention Studies
Rutgers University

NIJ funded several evaluations of formal bail decisionmaking guidelines, for example in Philadelphia. These evaluations showed that with these guidelines, one could do a better job of predicting who would and would not recidivate.

NIJ has played a particularly notable role in the field of corrections. In 1980, it published American Prisons and Jails, *a multivolume report surveying prison-related legislation, populations trends in correctional facilities, conditions of confinement, and the numerous policy options for treating offenders. The Federal Bureau of Prisons and NIJ have frequently worked together, collaborating on studies or exchanging information, on such issues as costs of confinement, boot camps, and prison crowding.*

Kathleen M. Hawk
Director
Federal Bureau of Prisons
U.S. Department of Justice

Sentencing

Researchers have played a critical role in U.S. sentencing policy, particularly in assessing the extent to which sentencing practice achieves the goals of rehabilitation, deterrence, and incapacitation.

Reviews in the 1970's of the outcomes of rehabilitation programs have shown that rehabilitation is often not a viable goal of sentencing and that participating in rehabilitation programs does not, in general, significantly reduce the probability of recidivism.[40] This research prepared the ground for the shift from indeterminate to determinate sentencing, for removing treatment participation as a primary consideration in parole decisions, and for developing sentencing guidelines.

NIJ funded some of the research that motivated the sentencing changes, but more often has funded evaluations of the impacts of those changes. Some of the more noteworthy have been evaluations of determinate sentencing, mandatory-minimum laws, sentencing guidelines, the abolition of parole boards, and promulgation of new administrative policies by parole authorities.

In addition to broader sentencing reforms, courts have implemented programs to deal with special types of offenders more appropriately, particularly drug offenders. Several counties have now implemented "drug courts," where offenders arrested on drug charges are channeled into an innovative court-operated rehabilitation program as an alternative to prosecution. Defendants who succeed in the program have their criminal cases dismissed.

Drug courts now exist in several locations, and NIJ and the State Justice Institute (SJI) provided funding to evaluate one of the largest, the one in Dade County (Miami), Florida. The evaluation, completed by John Goldkamp of Temple University, showed that drug court offenders received treatment and case management services that included counseling, acupuncture treatment (to relieve withdrawal symptoms), education courses, and vocational services along with strict monitoring through periodic urine testing and court appearances.[41] After an 18-month followup, researchers found that defendants who participated in the drug court were rearrested less frequently. Drug-court defendants who were rearrested during the followup period managed to stay arrest-free roughly three times longer than other similar felony drug defendants handled outside the drug court.

These results have led to continuing national interest in establishing drug courts based in large part on the experiences of the Dade County program. Not only do many now exist but many more will be created in response to the mandate of the Violent Crime Control and Law Enforcement Act of 1994 (P.L. 102–352).

Corrections

The number of convicted felons now imprisoned is greater by far than ever before in our Nation's history, and figuring out how to cope with the influx of offenders has become the major challenge for corrections. Imprisonment guarantees punishment and accountability, but it is costly and may not rehabilitate offenders or prepare them to return to the community. On the other hand, an NIJ study of

probation in California showed that routine probation does not provide sufficient punishment nor protect the community.[42] Policymakers have thus been interested in exploring the costs and effects of intermediate sanctions—alternative sentencing options that lie between prison and probation.

Since the late 1980's, jurisdictions around the Nation have been experimenting with many types of intermediate sanctions, the most popular being boot camps, intensive supervision probation or parole, and electronic monitoring. Revenue-strapped States have not had the funding necessary to evaluate these programs' impacts, and nearly all of the existing evidence on the performance of intermediate sanctions has resulted from NIJ-funded research.

As of spring 1993, at least 59 State and 10 local boot camps were operating.

Boot camps (or shock incarceration) programs are aimed at young offenders convicted of nonviolent crimes who are serving their first prison term. The program requires offenders to serve a short term (90 to 180 days) in prison or jail in a quasi-military program similar to military basic training. One objective is to convince them that they don't want to return to prison, and thereby reduce their subsequent recidivism. Boot camps were first established in the early 1980's, and by 1993 more than 30 States and the Federal Bureau of Prisons had implemented such programs.[43]

NIJ supported the first evaluation in 1989 of a State boot camp program, initiated by the Louisiana Department of Corrections. This preliminary evaluation showed that the program could be implemented successfully, inmates liked it, the State reported saving money, and the recidivism rates were similar to those of other comparable inmates. Doris MacKenzie, of The University of Maryland, recommended a greater focus on education and employment training, as well as providing community-based aftercare provided to inmates upon release. Many States heeded that advice and later programs often incorporated such elements.[44]

As boot camps expanded, NIJ felt the need to conduct a more comprehensive, multisite evaluation. In 1991, they funded a national evaluation of boot camps, focusing on programs in Florida, Georgia, Illinois, Louisiana, New York, Oklahoma, South Carolina, and Texas. The study results show that the newer programs incorporate rehabilitation. Indeed, the goal most frequently selected as "very important" in the study was rehabilitation.[45] Boot camps appear to reduce prision crowding, primarily because inmates serve less time in camps than they would if they had served their sentences in traditional facilities, but boot camps still do not appear to reduce recidivism rates. Some suggest that aftercare—a critical component—is not incorporated in boot camp programs, while others attribute a lack of recidivism differences to poor matching in comparison samples.[46] In reviewing all of the evidence, the U.S. General Accounting Office (GAO) and others have agreed that boot camps appear to reduce short-term prison costs, but their long-term impact on recidivism is uncertain.[47] This information was relied upon in developing the Violent Crime Control and Law Enforcement Act of 1994 (P.L. 102–352), which includes funding to expand boot camps.

House arrest is another popular intermediate sanction that has expanded rapidly in the United States. House arrest is a sentence imposed by the court in which offenders, usually nonviolent, first-time offenders, are ordered to remain confined in their own residences. They are usually allowed to leave their residences only for medical reasons and employment. They may also be required to perform community service or to pay victim restitution and probation supervision fees.

Florida operates the largest house arrest program in the Nation. More than 40,000 offenders have been placed in the program since it was implemented by the Florida Department of Corrections in late 1983. The program received a great deal of national attention because it was specifically designed to reduce prison and jail crowding while ensuring public safety with a punishment-oriented, community-based alternative. Given the potential widespread implications of the program, NIJ funded a comprehensive program evaluation by the National Council on Crime and Delinquency (NCCD). The evaluators concluded that the program produced positive impacts: it diverted a sizable number of offenders from prison, the recidivism rate for house arrest offenders was lower than for similar offenders sentenced to prison, and the program helped alleviate prison crowding.[48] These results have proven instructive for other jurisdictions considering similar programs.

Electronic monitors, which are telemetry devices designed as an augmentation to house arrest, have also grown rapidly. In 1986, just 95 offenders were being monitored "electronically," but by 1992, the number had grown to 45,000.[49] Jurisdictions have looked to NIJ for assistance in learning whether these programs work, how much they cost, and for what types of offenders they are most appropriate. NIJ has provided technical assistance by assembling and disseminating descriptive information on service providers and agencies involved in testing the equipment. Coordinating this information proved extremely valuable during the early years when local jurisdictions were trying to quickly locate who was doing what, where, and with what success. As the programs were implemented, NIJ funded a number of evaluations to assess how well the programs accomplished their purposes. The results were mostly consistent: jurisdictions could successfully implement the programs, but there were unforeseen technical difficulties found with the equipment. Further, electronic monitors uncovered many violations which, if responded to, would increase jail and prison costs. On the other hand, low-risk offenders (e.g., white-collar offenders) were ideal program candidates. NIJ evaluations have had a major influence on the expansion of these programs, creating a more realistic assessment of what these programs can be expected to accomplish and at what cost.

Intensive Supervision Probation and Parole (ISP) is the most popular intermediate sanction program currently being implemented. ISP is a form of release into the community that emphasizes close monitoring of convicted offenders and imposes more rigorous conditions than routine probation or parole supervision. Most ISP's call for frequent contact with the supervising officer, random and unannounced drug testing, and stringent enforcement of court-ordered conditions.

Results of an ISP evaluation conducted in the early 1980's by the Georgia Department of Corrections suggested that ISP programs could produce both lower recidivism rates and reduce prison admissions.[50] These results generated a great deal of media and professional interest. An August 16, 1985, *The Washington Post* article called Georgia's ISP "the future of American corrections." Other States moved quickly to adopt the "Georgia model," and by 1990 jurisdictions in every State had instituted ISP programs for adult offenders.[51]

Two of the early ISP programs, implemented in Massachusetts and New Jersey, were evaluated with NIJ funding. The results of these evaluations were more ambiguous than those reported by Georgia. The New Jersey evaluation reported costs savings, while the one in Massachusetts did not. Moreover, neither ISP evaluation found significant reductions in the recidivism rates of ISP participants.[52] But because these evaluations did not include a randomized research design, it was unclear whether the findings could be attributed to the ISP program or to selection

effects of those who participated. Researchers urged that experiments be conducted in which eligible offenders were randomly assigned to ISP or to the relevant alternative sanction (prison or routine probation or parole).

In 1986, the Bureau of Justice Assistance (BJA) and NIJ jointly sponsored a national ISP demonstration and evaluation. Fourteen jurisdictions from nine States participated in the 5-year project.[53] During that time, more than 2,000 offenders were randomly assigned to participate in an ISP or routine supervision program. The researchers' findings showed that ISP was not a panacea that could simultaneously ease prison crowding, reduce offender recidivism, and cut costs. In 11 of the 14 sites, arrest rates during a 1-year followup period were not significantly different but somewhat higher for ISP participants than for the control group. The researchers concluded that, with an ISP program, surveillance may be so stringent as to increase the probability that crimes will be detected and an arrest made. In this way, ISP may increase officially recorded recidivism. For similar reasons, 65 percent of the ISP offenders compared to 38 percent of the control group were found to have committed technical violations of their conditions of probation or parole. While the programs reduced neither costs nor recidivism rates, they clearly achieved their goal of providing an intermediate sentencing option, where the more serious probationers and parolees were watched more closely and revoked more quickly when new crimes were discovered.

The United States, through the National Institute of Justice, is the only Nation that has worldwide outreach to the criminal justice research and practitioner communities. Especially in Germany, Finland, England, and the Netherlands, NIJ's influence has been significant.

Heike Gramckow
CSR, Incorporated
Washington, D.C.

The ISP programs studied were also oriented more toward surveillance than treatment of offenders, and the researchers suggested that recidivism outcomes might have been more positive if treatment resources had been available. Across all of the sites, about half the offenders were judged drug-dependent by their probation and parole officers. Yet ISP staff often reported difficulty obtaining drug treatment, and at some of the sites, a large percentage of all offenders in need of drug treatment went untreated. In the one site (Ventura, California) that was able to combine surveillance with treatment, recidivism rates were lower by 10 to 20 percent.[54]

The researchers cautioned planners to define their ISP program objectives clearly. If they wish to create an intermediate punishment between routine probation and prison, then ISP can do that, but they should realize that cost savings are unlikely since stepped-up surveillance and frequent drug tests are likely to increase incarceration rates and drive up program and court costs compared with routine supervision.

The ISP study results had immediate policy implications. For example, Minnesota developed an ISP program in 1990 with strengthened treatment components in the hopes of lowering recidivism. NIJ is currently funding an evaluation of this ISP program to assess whether it accomplishes this purpose. Other ISP programs (e.g., Los Angeles, Contra Costa) were discontinued because the county judged the additional costs unacceptable.

Taken together, the intermediate sanction evaluations have had profound impacts on policy and practice. In some instances, they have shown that practitioner expectations have not been borne out and that implementing programs of this type is difficult. On the other hand, these studies have shown which program components are associated with which outcomes and costs. This information is being widely disseminated within corrections and helping jurisdictions decide whether they wish to implement programs of this sort, and if they do, how best to design them to meet local expectations.

Understanding the Nature of Crime, Crime Rates, and Criminal Careers

In 1975, NIJ identified career criminals as a topic deserving sustained research attention. The Rand Habitual Offender Program was designed to provide new insights into career criminals' characteristics, to discover how the system treats them, and to assess the potential effects of alternative sentencing on their subsequent behavior. One of the Rand goals was to estimate the number of crimes a person commits relative to the number of times he or she is arrested. To make that estimate, the researchers had to ask offenders directly about their criminal behavior.

In the late 1970's, congressional leaders became convinced that vast amounts of tax revenue were being lost to a growing underground economy. Carl Simon and I wrote a monograph on this economy for the Joint Economic Committee. Our research convinced us that the underground economy had implications for criminal justice as well as tax policy. We asked NIJ for support to continue our work. The resulting book Beating the System: The Underground Economy *is now considered a classic on the topic.*

Ann Dryden Witte
Professor of Economics
Wellesley College

In the 5 years of this research, Rand conducted three self-report studies. In the first Rand study, 49 male armed robbers from a California prison, all of whom had served at least one prior prison term, were interviewed.[55] Rand used this data to design the first self-administered Rand inmate survey. The survey used a written questionnaire to collect self-report data from a sample of 624 inmates chosen to represent the male population of California prisons.[56] The researchers constructed scales to consider the number and the frequency of crimes committed, as well as the length of the criminal career. In terms of specialization, the study uncovered only 52 specialists—those who committed one type of crime at a higher rate. As a whole, these offenders were unconcerned about the probability of punishment. They admitted committing crimes for "high times." They believed that skill and practice would enable them to evade capture and enjoy the fruits of their crimes. Drugs and alcohol played a significant role in their criminal behavior. During the 3-year period before their present incarceration, 42 percent of the sample admitted to using heavy drugs (e.g., heroin and cocaine). Drug abusers committed more, different, and higher rates of crime than nondrug users.

Profile of criminally active offenders. The second Rand inmate survey targeted more than 2,200 prisoners from three States (California, Michigan, and Texas). This analysis profiled the most criminally active offender—for example, the violent predator. Violent predators were prolific offenders, committing an average of more than 135 robberies per year.[57] They tended to be young (less than 23-years-old when they entered prison) and typically began committing violent crimes before age 16. They were more socially unstable—unmarried and unemployed—and their unemployment tended to encourage more crime. They used and sold hard drugs and commonly abused more than one drug (multiple drug abuse was highly correlated with violent crime).

NIJ continued to fund studies of repeat, career criminals in different locations. Julie Horney and Ineke Marshall interviewed 403 Nebraska inmates and used calendars to record when crimes had been committed versus when an individual was incarcerated. On the basis of this study, the researchers concluded that the Rand studies may have overestimated the rate of crimes committed by career criminals. But in other ways, they confirmed the earlier Rand results. For example, they also discovered a very low probability of arrest for drug crimes, a peaking of criminality in the early 20's, and a disregard for criminal penalties.[58]

Rand also identified characteristics that were typical of high-rate offenders. Peter Greenwood used this information to create a model for calculating the potential effects on both crime rates and prison populations of "selective incapacitation"—that is, identifying high-rate offenders and giving them longer sentences than low-rate offenders. A simple scale was also developed for categorizing potentially high-rate offenders. This "selective incapacitation" scale identified the following variables as being positively correlated with high-rate offenders:

- Incarceration for more than half of the 2-year period preceding the most recent arrest.
- A prior conviction for the crime being predicted.
- Juvenile conviction prior to age 16.
- Commitment to a State or Federal juvenile facility.
- Heroin or barbiturate use as a juvenile.
- Employment for less than half of the 2-year period preceding the current arrest.[59]

Assigning a value of 1 to each variable, Greenwood classified offenders with scores of 1 as low-rate offenders, those with scores of 2 to 3 as medium-rate, and those with scores of 4 or more as high-rate.

Prediction of recidivism. NIJ funded Rand to follow up with the approximately 600 inmates who had participated in the Rand inmate survey and who had been released to the community to see how well the selective incapacitation scale proposed by Greenwood, as well as other scales in existence at the time, worked to predict recidivism. The authors concluded that any given scale's predictions of whether an inmate would be arrested, convicted, or incarcerated after release were no more than 5 to 10 percent more accurate than what would be obtained by chance.[60]

These findings were quite consistent with the report of the National Research Council (NRC) Panel on Research on Criminal Careers, which reanalyzed the data used to construct the various prediction devices.[61] The panel found that while risk prediction devices can improve decisionmaking, they are not totally accurate. The panel was concerned that the protection of juvenile records often shields serious young adult offenders from more appropriate sentences, and so the panel recommended that the adult criminal justice system should have access to juvenile records of at least those offenders who are arrested as adults on a felony charge.

These studies supported the claim that a small proportion of offenders account for a disproportionate amount of crime and highlighted the difficulty in identifying at sentencing those offenders with the highest probability of recidivism so they could be selectively imprisoned on the basis of recidivism risk. The NRC panel called for a major long term research program on criminal careers. It urged that estimates of offending frequencies and estimates of the length of criminal careers be developed. The panel believed this sort of research was needed to estimate the amount of crime prevented by incarceration and to obtain a better grasp of how incarceration and/or other sanctions retard or accelerate the development of offenders' subsequent criminal behavior. As a direct result of this NRC recommendation, NIJ supported a series of influential studies on criminal career development.

Career criminal development. Much of this research was conducted by Jacqueline Cohen and Alfred Blumstein of Carnegie-Mellon University. Analyzing data from offender arrest records, they discovered large differences in crime incidence rates for different demographic groups—highest rates were observed for males aged late teens to early 20's. Using a variety of data sources, researchers were also able to document key aspects of the "criminal career" paradigm, including the frequency at which individual offenders commit crimes, termination rates of ending active criminal careers, and patterns in seriousness of offenses during careers. Specifically, their research showed that:

- For all adult offenders who were active in criminal careers by age 20, careers in serious offense types averaged about 5 years in length.

My nomination for NIJ's top priority is the role of drug use detection (urine and hair testing) and addiction prevention and treatment in the criminal justice system. The urgent need today is to sort through the many claims being made for public funds in the areas of prevention and law enforcement and treatment and correctional punishment. We need to find the approaches that work best to achieve important public purposes. NIJ can provide the needed leadership over the next decade as crime and drug move to the top of the Nation's agenda, as they did in 1968.

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- By age 40, a "wear-out" process began as termination rates rose with increasing age.
- There was a general absence of escalation in terms of crime seriousness.[62]

Their research was summarized by the NAS Panel on Research on Criminal Careers, in the report *Criminal Careers and "Career Criminals."*[63]

These research data have proven extremely valuable as it has helped researchers and policymakers consider whether there are stages during a criminal career when particular formal and informal sanctions may be more or less effective. This research also revealed that an extraordinarily large increase in prison populations would be required to achieve even modest reduction from the prevailing levels of crime. It was estimated that the maximum potential reduction in crime from incapacitation was between 25 and 35 percent in several different jurisdictions.[64] This research has caused many policymakers to reassess their once optimistic assessments that large decreases in crime would result from increases in the prison population.

Building on the recommendations of the NRC panel on criminal careers, NIJ, in collaboration with the MacArthur Foundation, initiated a major longitudinal study of the development of criminal careers from birth through age 32. That study, designated as Human Development in Chicago Neighborhoods, will interview 11,000 participants and their families in 80 neighborhoods in the Chicago metropolitan area. The project will select 9 cohorts (including a cohort of 2,000 infants) equally spaced from birth to age 24 and follow each of these cohorts for 8 years to examine their social development, including the development of criminal behavior. This will be the most ambitious such effort ever undertaken and promises to yield important insights into which developmental circumstances lead to prosocial and anti-social careers.

Special Topics: Drugs and Crime, Crime Prevention, White-Collar and Organized Crime, and Victims

Drugs and Crime

Drug-related crime and the pervasive problems of drug abuse and drug trafficking tend to dominate current discussions of crime policy. These debates would take place in an empirical vacuum, however, were it not for the information produced by NIJ. NIJ has studied the nature and extent of drug-related crime and the factors that affect it and conducted numerous evaluations of the costs and effects of alternative laws and interventions for reducing drug abuse and drug-related crime.

Early research documented the changes in crime with changes in drug abuse. Findings reported by researchers in Baltimore and at the University of California at Los Angeles (UCLA) clearly confirmed one of the major assumptions of drug treatment—that reducing the level of drug usage can reduce the level of criminality, even among relatively hard-core drug users.

The Baltimore team analyzed background factors and long-term patterns of crime for male heroin addicts. Their results showed how the intensity of criminal behavior—especially property crime—tended to be directly related to drug use. During a 9-year period at risk, offenders' crime rates dropped to relatively low levels during periods when they had little or no narcotic use. While they were actively addicted, however, their criminality was typically about 4 to 6 times higher. For those who

had several cycles of addiction and reduction or cessation of narcotics use, the levels of criminality clearly tended to rise and fall with drug usage.[65]

The UCLA team's analyses yielded parallel patterns. Their Southern California sample consisted of heroin addicts admitted to methadone maintenance programs from 1971 to 1978. Contrasting these addicts' criminal involvement in the year prior to first addiction with their criminality in the year after addiction revealed notable increases. Arrest rates increased from 40 to 100 percent overall, with the largest increases occurring for burglary and theft. There were 21 to 30 percent increases in the numbers of individuals engaging in crime from the pre- to post-addiction years, and three- to fivefold increases in the number of days on which they committed crimes.[66]

Identification of drug users. The strong findings of a crime-drug connection led to interest in developing better methods of identifying active drug users. At about the same time, urinalysis testing emerged as a relatively inexpensive means of identifying drug users. One of the earliest applications of drug testing in the justice system was for pretrial releasees. In two NIJ-funded demonstrations, high drug usage of pretrial detainees was demonstrated, as was their increased risk of recidivism. This research revealed that 56 percent of the District of Columbia arrestees and 81 percent of a New York sample had taken one or more drugs other than alcohol or marijuana prior to their arrest. Pretrial rearrest rates were 50 percent higher for drug-positive offenders, with multiple drug users presenting the greatest risks to the community.[67]

The Washington, D.C., project established the operational feasibility of a comprehensive pretrial drug testing program, and it soon became a national model. Numerous courts throughout the Nation received Federal funding to implement similar projects, and NIJ funded program evaluations. The followup research questioned the utility of using drug testing data to predict pretrial conduct but did confirm the widespread use of drugs and alcohol in arrestee populations.[68]

These studies of high levels of drug use among arrestees encouraged NIJ to initiate the Drug Use Forecasting System (DUF) in 1987 with the assistance of Eric Wish, an NIJ Visiting Fellow, who had conducted the earlier research in New York. DUF is a drug use monitoring system designed to provide estimates of recent drug use among booked arrestees. To obtain the data, voluntary and anonymous interviews and urine specimens are obtained on a quarterly basis from samples of male arrestees processed through booking facilities at each of DUF's 23 sites. The urinalysis results are then merged with official record information on crime and self-report data from the interviews. DUF is now recognized as one of the leading indicators of illegal drug use.

In addition to monitoring national drug use trends, the DUF results have been used in a number of ways. For example, they led to the establishment of pretrial drug testing programs in New Orleans and Chicago. DUF findings in Chicago, Illinois and Portland, Oregon stimulated State-funded DUF replications in suburban and rural counties. DUF data are also widely used at the Federal level to obtain a more complete picture of drug consumption patterns in American cities. DUF findings were a major information source for the Office of National Drug Control Policy's (ONDCP) commissioned paper on heavy cocaine use and for the ONDCP Technical Report, *What America's Users Spend on Illegal Drugs*.

As an extension of the DUF project, in 1986, NIJ pioneered hair analysis as a less intrusive, more accurate means than urinalysis for detecting illegal drug use. Uri-

Research sponsored by NIJ and NIDA in the past several years has been instrumental in highlighting the importance of drug abuse prevention and early intervention with high-risk youth....

Another important finding of NIJ-sponsored research is the strong relationship between drug abuse and crime, particularly the fluctuation in criminal activity due to changes in addiction status over an addiction career. An encouraging sign in drugs/crime research has been that criminal activity decreases while individuals are in drug abuse treatment. This consistent finding has broad implications for policy and procedures for both correctional and drug treatment agencies.

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In 1970 and 1971, the Institute sponsored studies of public housing and crime that illustrates how social sciences can help criminal justice agencies. Over a 3-year period, Oscar Newman, an architect and urban planner at New York University, studied the relationship between architectural design and criminal activity.

The most dramatic contrast was found between two neighboring public housing projects that were comparable in population, size, density, and social composition. The sole difference was architectural. One was a cluster of high rise buildings while the other consisted of smaller walk-up apartments. The high rise project experienced 264 percent more robberies and a total crime rate that was 66 percent higher than the other project.

On the basis of this and other studies, the researcher identified four design elements that contribute to a secure environment.

- **Defined zones of influence.** The fewer people who share an entrance or hall, the greater their protective attitude toward it, and the more likely they are to contest an intruder.
- **Natural surveillance.** Doors, windows, and lobbies should be arranged to permit constant monitoring of what is happening in public areas.

nalysis, the most commonly used drug test, can only detect recent consumption of drugs, while a strand of hair 2 inches long cannot detect recent use but can reveal use over a 4-month period. NIJ is working with the National Institute on Drug Abuse, U.S. Department of Health and Human Services (HHS), to develop accurate procedures for hair analysis as a complement to urine testing. Already in use in three States in correctional settings, NIJ is currently funding a demonstration project to more fully integrate the use of hair testing as well as DUF data to inform local criminal enforcement and treatment policy.[69]

Evaluations of drug laws. NIJ funding has supported evaluations of newly enacted drug laws as well. The earliest NIJ study, which has since become a landmark in the field, was the evaluation of New York State's 1973 "Rockefeller" drug law. The quantitative and qualitative analyses by the American Bar Association provided inputs to state legislatures, both on the specific topic of drug laws and on the broader issues of penal law revision.[70] These laws severely increased the prescribed penalties for drug offenses, restricted prosecutorial discretion in plea bargaining, and limited judges' discretion in imposing nonprison sentences. The evaluation concluded that, during the first 3 years the law was in effect, the objectives—to control illegal drug use and related crime—were not achieved. Heroin use, for example, was as widespread in New York City in mid-1976 as in 1973, and there were no significant deterrent effects on repeat offenders or changes in patterns of drug-related crimes. Considerable increase in court case backlog occurred and the plea bargaining provisions of the laws were changed.

Crime Prevention

As more is known about the nature of crime and the limited ability of justice agencies to control it, the importance of crime prevention has become clear. Most researchers now agree that crime prevention must be an integral part of any overall crime control strategy, and NIJ has funded some of the seminal research studies identifying the personal, household, and neighborhood activities that can reduce the incidence and fear of crime in communities.

Early NIJ research on neighborhood crime prevention in Hartford, Connecticut in the 1970's provided a framework for dealing with crime, fear, and social disorder that included a comprehensive focus on environmental features as well as the actions of citizens and the police. The Hartford study (and the subsequent replications) showed that there were a number of actions citizens could take, both individually and collectively, to protect themselves, their homes, and their neighborhoods. As citizens became more active in crime control activities, their fear of crime was reduced.[71] This research—and the importance of sharing responsibility between the police and the neighborhood residents for community safety—has influenced the design of many community-policing programs today.

Over the past 25 years, however, citizens have initiated their own crime prevention programs, such as Neighborhood Watch and Crime Stoppers, and NIJ has funded evaluations of these programs.

Neighborhood Watch. The primary activity of Neighborhood Watch is citizen patrol. Other aspects of the program include property marking, promoting behavior that increases safety (such as not walking alone after dark), and disseminating local crime-related information to members. NIJ funded a review in the late 1980's of these programs and discovered that they were difficult to implement and maintain, particularly in the high-crime neighborhoods that needed them most.[72] When these programs were implemented well, there was some evidence suggesting that

they modestly affect rates of residential burglary and robbery. They certainly increased community cohesion, which may in turn affect the reporting of crime and the identification of suspects.

Crime prevention. The Federal Government developed a national public service campaign on community crime prevention, known as the McGruff campaign or "Take a Bite Out of Crime." The program includes a series of public service announcements in the media intended to provide helpful assistance to the public through crime prevention tips. The McGruff figure is now well-known to kids and adults and can be seen on television, posters, and brochures. One study found that those who were familiar with the McGruff campaign were more knowledgeable about crime prevention and were more confident in their abilities to prevent crime.[73]

Security by design. NIJ has also had a long-standing interest in understanding how the physical environment affects crime rates and crime prevention efforts. Architect Oscar Newman first advanced the notion that the physical environment, particularly the placement of buildings and lighting, affects a neighborhood's susceptibility to crime.[74] For example, by controlling offender access and enhancing surveillance of offender behavior, the opportunity for crime to occur is reduced. In addition, studies have found that particular features of the physical environment can be used to make it more or less "defensible" against crime by providing opportunities to exercise greater control of activities in various settings.

With Federal funding, Oscar Newman developed detailed architectural plans for safe neighborhoods, and they were tested in various locales across the Nation. In several of the neighborhoods, crime did decrease. While it was not empirically demonstrated that the architectural changes were directly responsible for the crime decrease, planners have continued to incorporate many of Newman's major features in building projects both here and abroad. NIJ helped disseminate the findings in an operational handbook on "Crime Prevention Through Environmental Design," which focused on the development and implementation of this approach.[75] Planning guidelines were also developed on environmental security planning for urban design practitioners.[76] Further, many commercial establishments (for example, the Southland Corporation that operates the 7 Eleven convenience stores), have incorporated these guidelines in the design of their stores since the 1980's.

■ **Residential appearance.** When the institutional image is avoided, residents take more pride in where they live and have a greater incentive to maintain public areas.

■ **Neighborhood character.** The safety of lobbies, walkways, and playgrounds is enhanced if the neighborhood is residential rather than commercial.

The report of this research was published by the National Institute in 1973 as *Architectural Design for Crime Prevention.*

Beginning in 1969, the Institute's exploratory studies into the relationship between the design of buildings and citizen fear of crime and vulnerability to crime were widely reported not only by the Institute in its publications but also by the national media, such as *The New York Times* and *The Washington Post*, and in architecture journals. They stimulated the first general awareness of a potential for consciously designing physical environments to simultaneously reduce opportunities for crime and encourage protective activities by citizens.

White-Collar and Organized Crime

White-collar crime may not generate the paralyzing fear stimulated by such violent crimes as rape and robbery, but these complex and predatory offenses have far-reaching consequences that threaten economic security and undermine trust in public and private institutions. Such crimes have been rapidly increasing, due in part to the computerization of financial and investment transactions (enabling electronic fund transfers) and the growing profitability of drug trafficking (providing incentives for the emergence of new organized crime groups and enterprises). These crimes pose special problems for law enforcement and prosecutors since their intricate and covert nature makes them particularly difficult to identify and successfully prosecute.

Recognizing the emerging importance of white-collar crime, NIJ designated it a priority research area in 1988. Since that time, major studies have been funded on savings and loan fraud, insurance and securities fraud, money laundering, computer

The much less publicized, but critical problems of insurance fraud, employee dishonesty, and theft must be fully exposed.

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crime, telemarketing fraud, and public corruption. While some of the research is still ongoing, it has already provided valuable insights into the nature of this type of crime and criminal and promising prevention and enforcement strategies.

Fraud in the savings and loan industry in the 1980's constituted what may be the biggest white-collar swindle in the history of the Nation.[77] NIJ was interested in understanding the factors that contributed to such widespread fraud, the role that white-collar crime played in the debacle, and the government response to the crisis. NIJ funded Kitty Calavita and Henry Pontell, of the University of California at Irvine, to study those issues. Using data from California, Florida, Texas, and Washington, D.C., they were able to examine the origins of the thrift crisis, focusing particularly on the impact of deregulation and the Federal deposit insurance system, which together they believed provided significant incentives to profit from fraud. In addition, they identified the particular organizational environments and regulatory structures that were most vulnerable to particular fraud activities.[78] This information was used to provide testimony on the issue before the U.S. Senate Committee on Banking, Housing, and Public Affairs in 1992 and has been incorporated into the training materials for Secret Service and regulatory agents.

Researchers at the Institute for Law and Justice (INSLAW) and the Police Executive Research Forum (PERF) conducted separate international and national assessments of money laundering, attempting to evaluate the methods employed in such crime in the United States and elsewhere.[79] These assessments identified the most common types of money laundering and described the most effective enforcement strategies of experienced Federal investigators and prosecutors. The information was then distributed at a training conference cosponsored by the Federal Bureau of Investigation and NIJ on emerging economic crimes. Subsequent to the conference, the information was used to develop guidelines for State and local officials enabling them to select effective strategies for control of money laundering.

Much of this research is just being published, but given its importance, NIJ funded a separate volume of the prestigious *Crime and Justice* series devoted to white collar and organizational crime. The volume highlighted research on organizational offenses in such industries as securities, commodities, savings and loan, health care, government procurement, and construction.

Victims

The focus on issues of domestic violence has changed. In the 1960's the focus was on child abuse; in the 1970's, on abuse of women; in the 1980's, on family violence; and in the 1990's, on the family system in which the effect of violence on all members is examined.

While most NIJ funding has been devoted to understanding justice agencies and criminal behavior, victims have also been the subject of Institute studies. Early NIJ research focused primarily on the victimization process in terms of victim-offender relationships and the criminal incident itself, while more recent research has shifted to more practical concerns about the consequences of victimization, and ways to facilitate victim participation in the justice system.

Effects of victimization. Early NIJ research showed that victims of crime often experience crisis reactions similar to those experienced by victims of war, natural disasters, and catastrophic illness. Psychological reactions of victims were examined indepth under a 1984 NIJ study funded at the Medical University of South Carolina.[80] Researchers interviewed female victims of sexual assault, robbery, aggravated assault, and home burglary. Psychological adjustment of victims was measured against that of a sample of nonvictims. This research provided the first reliable information about the proportion of victims in various crime categories who experience serious adjustment problems. Results indicated that victims of

sexual assault suffer more adverse psychological reactions and adjustment problems than victims of robbery or burglary.[81]

In addition, research found that victim involvement in the criminal justice process often compounds the harm they have suffered.[82] This is particularly true with victims of sexual assault. Other research has documented that female victims of rape and non-sexual assault have increased utilization of medical services 5 years after victimization.[83]

Research detailing crime's impact on victims has helped build support for the creation of victim service programs, such as crisis intervention centers and rape counseling programs. Institute-supported projects have provided legislators, criminal justice planners, and practitioners with new information on the effects of crime on victims, on the success of programs to help victims recover psychologically and financially, and on ways of helping victims through the criminal justice process.[84]

Victim participation in the criminal justice process. Because victim participation is critical to the criminal justice proceedings, many courts have encouraged victims to participate in the felony sentencing proceedings; however, estimates show that less than 5 percent of eligible victims actually appeared. NIJ-funded research discovered that few victims were aware that they had the right to appear and speak at sentencing. Most victims interviewed indicated that they would need more information, more support, and some legal assistance to be able to exercise this right effectively. This research also showed that victims wanted information about the status of their case as much as they desired the legal right to participate in the case. This research has supported victim advocates' efforts to notify victims of decisions related to their case.[85]

Effects of child abuse and neglect. One of the most important studies in the victim research area has been one documenting the detrimental effects of child abuse and neglect. NIJ-supported research by Cathy Spatz Widom uncovered strong evidence of the existence of a "cycle of violence," that is, a childhood history of physical abuse that predisposes a victim to violent behavior later in life. By analyzing the arrest records of more than 1,500 individuals, it was found that abuse and neglect during childhood increased the odds of future delinquency and adult criminality by 40 percent.[86] NIJ funded Widom to continue research in this area, by supplementing the arrest record data with that obtained from personal interviews with victims. This later research (still in progress) suggests that child abuse contributes to other negative outcomes, such as poor education performance, substance abuse, and mental health problems. Such data are helping to build a base of knowledge with which prevention and treatment programs can be designed.

Circumstances of victimization. A continuing area of investigation at NIJ has been the etiology of victimization, both at the individual and neighborhood level. At the individual level, NIJ has focused on how individual attributes and daily life routines interact with environmental concerns to lead to victimization. Studies of victimization patterns show that certain demographic groups face higher rates of victimization (e.g., males, elderly, minority). Further studies of particular populations have emphasized the fact that various aspects of American lifestyle significantly influence rates of victimization. These include increased patterns of mobility, increased availability of portable valuable goods, and limited guardianship of residences.[87] These elements are under the individual's control, and as publicized, may ultimately lead to more effective individual crime prevention measures.

NIJ has been instrumental in providing funding and direction to research efforts that have served as catalysts for the growth of services for crime victims in this country. The Justice Department-sponsored victim services programs and the associated research in Brooklyn and Milwaukee were the inspiration of the Victim Services agency, which opened its doors in New York City in 1978.

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To celebrate the 30th anniversary of the *Journal of Research and Crime* in 1993, Ann Dryden Witte was asked to discuss her thoughts on how research can contribute to the control and reduction of crime and delinquency in American society. To celebrate NIJ's 25th anniversary, we have been given permission to provide excerpts of Witte's comments. Provided below are some of Witte's responses to questions that were posed.

Methods and research questions. Experiments and longitudinal studies of high-risk groups are likely to be most productive. They can improve our understanding of crime and delinquency and beneficially inform policymakers.

Longitudinal data will be most useful if they contain both individual information on general population groups and aggregate data on communities, institutions and policies. Such data require considerable care in statistical analyses but can substantially advance both our understanding of crime and policies to combat it.

Infrastructure of social science. Coordination and cooperation are central to carrying out a productive research agenda on crime and delinquency. Two examples of such efforts are described below.

The Minneapolis experiment, which was funded by NIJ and the Ford Foundation and with the coop-

Developing Advanced Technologies for Justice System Agencies

Science and technology programs at NIJ cut across the whole range of criminal justice issues and are aimed at providing the foundation for the development of tools that aid the criminal justice community by improving the effectiveness of law enforcement. For example, NIJ took a prominent role in the development and testing of the Kevlar bullet resistant vest. This lightweight, garment is now used by thousands of police officers and corrections officers across the Nation and prevents dozens of officer deaths each year.

NIJ has contributed extensively to the knowledge of DNA testing and utilization. Because every cell in the human body contains DNA, it may be present at crime scenes in innumerable forms—blood or semen stains, hair follicles, or skin cells shed in clothing. Because DNA is unique to every person except identical twins, it offers the possibility of much greater accuracy in determining the identity of a suspect.

Since 1991, NIJ has supported development of standards for DNA procedures using two standard testing methods—restricted fragment length polymorphism (RFLP) and polymerase chain reaction (PCR)—and has continued to develop improvements in PCR (which yields results in a fraction of the time required by RFLP and eliminates the need for hazardous radioactive materials). These standard development projects have been recognized by *R&D Magazine* as one of the 100 best research and development projects for 1993. NIJ has also been conducting research on environmental factors that adversely affect DNA samples and has been looking for ways to further increase the accuracy of DNA identification methods.[88] In addition, NIJ sponsored a National Academy of Sciences (NAS) review of DNA research, which subsequently concluded that DNA was a reliable test for identifying suspects.

Fingerprint identification. NIJ is now supporting several major efforts to improve the taking of latent fingerprints. An NIJ initiative developed a portable one-step cyanoacrylate fingerprint detection technology, which can increase the efficiency of lifting fingerprints at a crime scene. A new device that is about the size of an ordinary fountain pen was developed under an NIJ grant: it develops the prints in a matter of seconds onsite in a single step. This device is expected to cost less than $50 and requires virtually no training in its use.

Less-than-lethal weapons. Most recently, NIJ has been heavily involved in a program to develop less-than-lethal weapons (LTL). The objective of this program is to develop alternative devices that, without causing significant harm, quickly incapacitate those who would harm others. In 1992 and 1993, a series of grants and cooperative agreements were initiated by NIJ to form an integrated and broad based LTL program focused on the practical needs of users. U.S. Attorney General Janet Reno formally requested assistance from the Secretary of Defense and the Director of Central Intelligence in identifying military and intelligence community technologies with dual-use promise for law enforcement. Liaison offices have been established in both the Departments of Defense and Justice to assist in NIJ efforts to transfer mature technologies to law enforcement. NIJ has also tapped the technical expertise within the Department of Energy national laboratories, particularly in the Special Technologies Programs charged with development of technology for intelligence gathering and the safeguarding of nuclear materials.

As a result of these efforts, NIJ has developed several prototype technologies, including: a rear seat airbag to safely subdue violent arrestees in the back seats of patrol cars; a prototype device to safely deflate the tires of a fleeing vehicle; a preliminary version of a velocity adjusting weapon that will allow plastic bullets to be fired safely and effectively at any range; and a device to project a thin stream of non-toxic sticky foam (developed as part of the U.S. Nuclear Security program) at a distance of 30 to 50 feet, gluing an uncooperative suspect's legs and feet to the ground. Under development are "dazzling" and disorienting light systems and a device that will allow a fleeing vehicle to be marked so that it can be tracked without a high-speed pursuit. NIJ is also developing a "safe" gun that can be fired only by an authorized user. The safe gun technology will address the problem of officers being killed with their own weapon when it is captured by others, and also it may reduce the incidents of children killed in firearms accidents.[89]

Panels at the National Academy of Sciences

Even though it represents a small part of NIJ's total program, the Institute has benefited considerably from a number of studies it has assigned since the late 1970's to the Committee on Research on Law Enforcement and Administration of Justice of the National Research Council of the National Academy of Sciences. Such studies have typically been used for assessing some potentially important research findings and for formulating research agendas in an emerging problem area.

The first effort for which NIJ sought out the Academy was an evaluation of the overall NIJ research program. The resulting report[90] critiqued programs and processes at NIJ and made a number of recommendations for changes in process and in authorizing legislation. Many were adopted and strengthened NIJ.

Since that initial effort, there have been panels in the following areas:

- Deterrence and incapacitation.
- Rehabilitation.
- Legislative impact on the courts.
- Sentencing research.
- Criminal careers.
- Violence.

These panels have typically been convened to assess some potentially important new findings with significant technical content that requires a mixture of disciplinary perspectives. A result of the assessment involves a set of qualifications on the research findings and identification of a research agenda that will repair problems identified in initial findings. The agenda also provides for more effective interprtation and use of the research results, thus aiding the policy process. The panels bring together a number of distinguished academics in the relevant disciplines, along with practitioners who can interact effectively with the academics.

The panels also bring the virtue of a multidisciplinary perspective and ideological balance, a characteristic that is particularly needed in a field that is so often beset by research findings made suspect by an ideological orientation. By bringing a diversity of perspectives onto a panel, any ideological proclivities tend to be held in check and so the panels converge on those conclusions the empirical evidence can validly support.

eration of the Minneapolis police department, provided evidence that arresting a suspect in domestic violence incidents was the most effective method of reducing the likelihood of future violence. Many police departments throughout the county have changed their policies as a result of this finding, and NIJ funded six new experiments, with six different police departments, designed to discern the replicability and generalizability of the Minneapolis results. By funding these experiments, NIJ showed the kind of integrative and long-term perspective that will be necessary to fund future research and that research outlined in the agenda. The fact that six police departments in diverse parts of the country were willing to participate indicates that there are progressive criminal justice agencies willing to work with researchers to lower crime rates and improve the functioning of criminal justice agencies.

A second example is the program Human Development in Chicago neighborhoods, which was conceived by a number of leading scholars and its aim is to advance understanding of the developmental paths that lead to delinquency and criminality. To do this, it plans a series of overlapping longitudinal studies. The long-range commitment of a diverse set of researchers, a private foundation, and a governmental agency, was necessary to start this effort. Long-term

commitment and coordination will be necessary to see that it continues and that the data collected is subject to extensive and diverse theoretical and empirical research.

These two programs of research provide us with some insights, including:

- Successful research on crime and delinquency requires the cooperation of many organizations and individuals.

- Much of the research needed to better understand crime and delinquency and formulate effective policy are long term. Both researchers and funders must make commitments of more than a decade if the full benefits of experimental and longitudinal research are to be realized.

- Some of the most insightful and policy-relevant research that has come from experiments and longitudinal studies has come from reanalyses of the data collected. Funding agencies need not only fund the original data collection. They must be prepared to make the data available to a wide body of researchers and to fund both applied and theoretical research on the databases that result from such efforts.

As a result, conclusions and recommendations that come from such panels tend to have a greater credibility than that of any individual investigator. Thus, the panels can serve as effective vehicles for sorting out conflicting, complex technical findings (e.g., as in the widely varying estimates of deterrent effects). With that base of involvement, a panel can then formulate a research agenda that will provide greater illumination for a particular important question (e.g., stimulating research on criminal careers, at least in part to be able to make better estimates of incapacitation effects).

Impact of Federal Investment in Criminal Justice Research

The 25 years of Federal investment in criminal justice research through NIJ has had a major impact on the operation of the criminal justice system, and it has produced results and insights about criminals and about the effects of the criminal justice system on crime rates that have significantly illuminated issues that are central to the development of crime-control policy.

It cannot yet be claimed, however, that those results and insights have been major influences on the formulation of crime control policy. In today's times, with the strong political influence in the formulation of crime policy, research has contributed less to the substantive formulation of policy than the base of knowledge warrants. But research is supposed to be ahead of the policy in any event, and it clearly has generated information that will be available at the next opportunity for rational policymaking.

Prospects for the Future

This essay on NIJ research has highlighted how much has been accomplished in the past quarter century. NIJ has been an important source of influence on the world of practice in criminal justice. It has brought some new methods and technologies to bear, it has avoided some inappropriate ones, it has cast light on some serious problems, and it has contributed to some significant maturity in the way people think about crime and punishment.

When compared to the public debate about these issues, which is still often focused on ideological issues and simplistic solutions to complex problems, it is clear that the thinking resulting from research, backed up by strong evidence, is very sophisticated, but it still has a long way to go to become an important part of the public debate. Researchers must also remember that the revolution in thinking brought about by Galileo and Copernicus took far longer than 25 years to become widely diffused to European thinking.

Criminal justice policy imposed primarily through the legislative process over the past decade or more has been dominated by the theme of incarceration. Legislators responding to the public's concerns over crime have reacted by calling for the increased used of imprisonment. This is in marked contrast to research recommendations highlighting the limitations of imprisonment as a major strategy to reduce crime.

Strategies have to be considered more thoughtfully with particular awareness of the limitations of the criminal justice system. There is so little that it can do beyond the simple incarceration of particular individuals, as appropriate, for as along as they are seen to be major threats to society that creative efforts are clearly needed to develop and evaluate alternative methods.

Much greater effort still has to be applied to the theme of crime prevention. That is clearly not the primary mission of the Justice Department, but there are many opportunities for the Justice Department to work with other government departments, particularly HHS, to pursue those themes. The longitudinal research projects initiated in Office of Juvenile Justice and Delinquency Prevention and being extended in some exciting ways by the NIJ-MacArthur Foundation project in Chicago clearly offer promise in those directions.

There is now a growing awareness in many circles that despite the political rhetoric proposed for addressing the crime problem, one must weigh the benefits to be attained by the intervention efforts against the costs associated with pursuing them. Research is needed to get measures of these positive and negative consequences of various kinds of intervention, and particularly of criminal justice interventions.

It is thus an appropriate time to initiate action programs intended to address those issues. It should be clear, however, that any such action programs will largely result from the imagination of their creators because there is a lack of well-established theories on which to build such programs. This lack of knowledge should not inhibit efforts to use the best judgment and creativity available to formulate such programs. The task is too important to be delayed until the knowledge arrives.

It would be equally irresponsible to fail to pursue parallel efforts to build the knowledge base, to study factors that contribute to delinquency and criminality, and to conduct careful evaluations of innovative projects. This is all necessary so that the cut-and-try approaches which will be pursued in the near future do not become the standard forever. A research program in parallel with operational activities is the necessary combination for being able to perform better in the future. Industry takes it for granted that it must spend about 3 percent of its operating costs on research and development. Research in the area of crime and criminal justice is well below that level of 3 percent.

With an appropriate infusion of support, there is a strong prospect for developments over the next 25 years having much greater impact on policy, and contributing to reduced crime and improved criminal justice in the United States.

In the context of diminishing resources and increased public concern about violent crime, justice agencies look to NIJ for assistance in meeting the challenges of the future....it can be expected that future criminal justice research efforts will include a focus on the juvenile justice system, and particularly efforts at early identification of those juveniles with a high risk of becoming predatory adult offenders.

Michael D. Bradbury
District Attorney
County of Ventura, California
November 1993

Notes

1. The initial name of the Institute was the National Institute of Law Enforcement and Criminal Justice (NILECJ), but it was basically the same agency as currently, but with a somewhat different organization structure in the Department of Justice. The name was changed to the National Institute of Justice in 1978. We refer here to the Institute as "NIJ" for the entire 25-year period.

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The contributions of NIJ over its brief 25-year history have been substantial and it is clear to me the result is a higher quality of policing through America. The challenges of policing today and in the future are, however, as great as the day the National Institute of Justice opened its doors.... The need for timely, policy-relevant research is critical to the future of policing in America and remains one of the most important contributions that the Federal Government can make.

Darrel W. Stephens
Chief of Police
St. Petersburg, Florida

One kind of research that NIJ should emphasize in the coming years, to further enhance its impact on our criminal justice system, is to assess the economic costs and benefits of alternative types of crime control policies for specific types of offenses and offenders.

Daniel Glaser
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Much more promising is to investigate thoroughly the postulate that early prevention strategies will be more effective than criminal justice interventions in really 'doing something about' our crime and justice problems.

Austin Turk
Professor and Chair
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If African Americans have higher rates of involvement in serious and violent crime, we need to better understand why those rates are so high. One way to understand the social processes that are at work in those communities is to provide funding for African-American researchers to live and work in those communities.

Julius Debro
Associate Dean
University of Washington

Some themes to be stressed in the future are:

- Consolidation of research into a coherent set of consistent categories.
- Identification of risk variation among arrestees.
- Creation of a means to quantify the parameters of the drug abuse profile at the local level.
- Shift more to policy relevant research over academic oriented studies.
- Examination of human development and criminal careers.
- Transfer of research into action.

James K. "Chips" Stewart
Director of NIJ
1982–1990

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As NIJ prepares to face its next 25 years, the International Association of Chiefs of Police believes the Institute will face two major ongoing research challenges: understanding the upsurge in violent crime and searching for effective methods to control crime.

Daniel N. Rosenblatt
Executive Director
International Association of Chiefs of Police

As you know, the National Council on Crime and Delinquency has consistently argued that crime reduction is inextricably tied to the well-being of America's children and their families. We believe that NIJ must expand its research agenda in this direction.

Allen Breed
Chair Emeritus
National Council on Crime and Delinquency

William J. Bratton, New York Police Commissioner, sees a continuing vanguard role for the Institute in such strategic areas as the following:

- Information technologies to increase efficiency and change methods and forms of organization to carry out problem-solving policing.
- Research to give keys to reduce and control violence.
- New technologies for criminal investigations that will make it even more difficult for guilty criminals to elude apprehension and proper sanctions.
- Research into factors of fear and how the criminal justice networks can be deployed to eliminate this social corrosive from our communities.

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Criminal Justice Science and Technology Program

The idea of using science and technology to combat crime has long sparked the imagination of criminal justice professionals and the general public. Arthur Conan Doyle, in his Sherlock Holmes stories, begun in the 1890's, fascinated readers with techniques such as cataloging tobacco ashes to identify suspects' brands of choice. Real life soon found it was able to imitate fiction. The idea of tracing and identifying an individual typewriter by peculiarities of type first appeared in Holmes' tale "A Case of Identity" in 1891. Three years later, such a process was invented to help authenticate documents. Doyle himself was later called upon to aid in the investigation of London's "Jack the Ripper" case.[1]

Several decades later, in 1919, Edward Oscar Heinrich, known as "the American Sherlock Holmes," opened the first modern laboratory devoted to crime detection in San Francisco, California. Heinrich, a chemist from Wisconsin, went on to solve cases that included the Roscoe "Fatty" Arbuckle affair.[2]

Despite such interest, development and adoption of criminal justice technology has been a slow process. There were scattered early attempts to update police technology. Some achieved notable success. For example, the first modern polygraph was constructed in 1921 by a medical student and a police officer.[3]

With the explosion of technology during and after World War II, law enforcement agencies were able to learn from developments in other organizations, particularly the military. Radio equipment and surveillance aircraft found their way into some large police departments. Few devices were, however, conceived and developed specifically for law enforcement applications. It was with this in mind that the U.S. Government began in the 1960's to assemble the resources to provide specific technical assistance to the Nation's State and local law enforcement agencies.

Speaking before an NIJ-sponsored conference in June 1994 on future law enforcement technology, New Orleans Mayor Marc Morial said, "During the Cold War, we put billions of dollars and our best minds to work. We've got to make the same commitment against crime."

Science and technology are a valuable source of knowledge and techniques for combatting crime.

Modern technology can, indeed, provide a vast array of devices beyond those now in general use to improve the operations of criminal justice agencies, particularly in helping the police deter crime and apprehend criminals.

Task Force on
Science and Technology 1967

The President's Commission

In 1966 President Lyndon Johnson chartered a President's Commission on Law Enforcement and Administration of Justice to respond to the rising frequency and sophistication of crime in the Nation. The Task Force Report on Science and Technology, one of nine areas studied by the Commission, contained findings similar to those reported 55 years earlier.[4] The report stated that although the natural sciences and technology have long been used to help police solve specific crimes, the professionals in those fields—the scientists and engineers—have had little impact on the operations of the criminal justice system.

The report noted that many technological devices already existed, some as prototypes and some as readily available commercial products. Others needing development were shown to be technically feasible and worthy of further exploration. But, for many reasons, even available devices had only slowly been incorporated into criminal justice operations. Procurement funds had been scarce, industry had only limited incentives to conduct basic development for an uncertain and fragmented market, and criminal justice agencies had few technically trained individuals on their staffs.

The President's Commission, through its reports, succeeded in galvanizing support for a wide variety of crime fighting programs, including a technology development effort. As part of its charge to encourage research and development to improve and strengthen law enforcement, the National Institute of Law Enforcement (NIJ) was to focus on technology. After its inception in 1968, NIJ also began making grants in key areas of law enforcement technology and began holding discussions on specific cooperative research projects with other Federal agencies.

Initial Activities in Technology

The Institute initiated outreach activities with other agencies. With the Defense Department, it discussed personal transceivers for police, riot control agents, night vision equipment, nonlethal bullets, second-chance enlistments to provide an alternative for certain offenders, and studies of military rehabilitation practices. The Institute began as observers at the regular meetings of the Federal Council on Science and Technology but participated formally in a Council study group to develop cooperative research projects with the Department of Defense. Other joint work was begun with the Department of Transportation, the Department of Housing and Urban Development, and the National Aeronautics and Space Administration.

The Institute began its long relationship with the Department of Commerce with a joint pilot study of the problems posed by defendants on bail. But their cooperation also had a technological component as the Bureau of Standards worked to provide reliable information on many crime-reducing items. One test determined that citizens could increase the safety of their homes if they replaced the 1-inch screws usually found on their door striker plates with 2.5-inch screws. The longer screws, a simple, inexpensive solution, made the doors almost impregnable to those who wanted to kick them down.

One of the Institute's first grants was to the Newton, Massachusetts, Police Department to assess the suitability of six models of night vision devices for law enforcement applications.[5] The study proved extremely useful. The equipment, which permitted unobtrusive observation even in starlight, was considered an aid to police safety and efficiency. It was especially useful in mobile patrol work and

on evidence-gathering surveillance missions. This study led directly to the widespread use of night vision gear by law enforcement agencies today.

The Seventies' Explosion

The 1970's began with NIJ's budget increasing 250 percent and its subsequent ability to fund many more projects. At the beginning of the decade, the Institute looked at improving such law enforcement equipment as "air mobility" hardware. Urban law enforcement use of fixed-wing STOL (short takeoff and landing) aircraft was studied in Dade County, Florida, and the use of helicopters was studied in Washington, D.C. Results were used to assess the effectiveness of air mobility systems in patrol, investigation, surveillance, and search tasks.

In developing a standard for police protective helmets, the Bureau of Standards and NIJ project discovered that most helmets did not protect the wearer from an impact equivalent to a 5-pound brick dropped 16 feet. More than 100 law enforcement agencies requested this information.

A major area of interest was weapons: using them and defending against their use. With Institute support, the International Association of Chiefs of Police (IACP) began a Police Weapons System Program to evaluate policies and practices in the acquisition and use of offensive and defensive weapons by law enforcement agencies. Data from press reports of police casualties were tabulated as part of this study. IACP evaluations also included available police weapons systems, protective masks, submachine guns, water cannons, body armor, bomb transport vehicles, and aerosol projectors.[6]

Evaluation of police equipment. Evaluating weapons and other police equipment involved establishing a long-needed comprehensive national program of standards for law enforcement equipment. In 1971, the Institute established the Law Enforcement Standards Laboratory under the auspices of the National Bureau of Standards, Department of Commerce. The laboratory's primary purposes have been:

In 1978, the U.S. Marshals Service put forth a bid proposal based on NIJ performance standards for special radios rather than rely on the GSA schedule of equipment.

- Establishment of scientifically based, voluntary commercial manufacturing standards so that police agencies could select high-quality, low-cost equipment.
- Certification of laboratories where equipment items could be evaluated according to those standards.

Institute staff were to develop operational requirements for equipment in consultation with law enforcement departments and leaders and then to field test the equipment to see if it met standards. The Institute also worked with IACP to test and disseminate information about police equipment throughout the decade.

In fiscal year 1972, with a $5 million budget, the Institute launched the Equipment Systems Improvement Program (ESIP), which tested and evaluated existing and new equipment and developed guidelines to foster appropriate use by criminal justice agencies. The technical work was done by three groups—the analysis group, the development group, and the standards group—performing under contract to the Institute, which set policy and provided overall supervision. Each group reported its findings to the Institute and made recommendations for action. For example, the standards group formulated standards for ballistic resistance of police body armor and for hearing protectors used on police target firing ranges. It issued reports on batteries used in police communications equipment, battery charging, and terms and definitions for communications equipment.

By 1973, the criminal justice community was demanding more and more information on evaluations of technology. The demands fell basically into two

The Army notified me that DuPont had a new fabric to replace steel belting for high-speed tires. When I saw it, I realized it might be a great improvement over nylon for personal armor.

Nicollas Montanarelli, then an Army Land Warfare technology specialist, and I took a piece of Kevlar to a gun range. We folded it over a couple of times and shot at it. The bullets didn't go through.

Lester Shubin
NIJ Technology Program Manager
1971–1991

categories: the need to know what was working and why and the need to know how an evaluation was designed, what performance measures were most useful, and how evaluations could be developed to ensure maximum usefulness of the results.

By 1975, the Institute's standards laboratory had completed performance standards for the following:

- Portable, mobile, and base station transmitters; mobile receivers; and batteries for portable radios.[7]
- Walk-through and hand-held metal weapon detectors.
- Portable x-ray devices for bomb disarmament.
- Communication equipment such as voice scramblers, car location systems, and radio transmitters, receivers, and repeaters.
- Active and passive night vision devices.
- Magnetic, mechanical, and mercury switches for burglar alarms.
- Handcuffs, riot helmets, crash helmets, police body armor, ballistic shields, and hearing protectors.

One of the Institute's program managers noted the importance of the ammunition standard. Quality control was so poor at one supplier's factory that muzzle velocity—and therefore, accuracy and stopping power—varied from round to round. The Institute's work on the ammunition standard led to large quantities of ammunition being returned to this manufacturer, who is no longer in business.[8]

The laboratory also developed standard materials for use by forensic scientists: a collection of 1,974 paint colors and a standard sample of automobile headlight glass. Reports were prepared on such diverse matters as emergency warning lights, sirens, patrol cars, police clothing, and institutional buildings. By 1978, the laboratory was surveying the technological needs of courts, corrections, and community crime prevention groups.

Body armor. Of all the equipment developed and evaluated in the 1970's by the Institute, one of the most significant achievements was developing body armor using DuPont's Kevlar material. A phone call from the U.S. Army about DuPont's new material, followed by a quick trip to a firing range (see sidebar), led to the Institute's interest in Kevlar being used for protection against bullets.

From that finding came a 1972 Institute-sponsored project with the U.S. Army's Land Warfare Laboratory to use Kevlar in a new body armor that would be lightweight, flexible, comfortable, and effectively protective. Institute researchers were concerned from the onset that the blunt trauma of the bullet's force through the Kevlar to the body could cause serious injuries. The Institute's researchers conducted the most extensive tests of blunt trauma that had ever been done, which were not only of use to the criminal justice community but also to the medical community.[9] A byproduct of the research on blunt trauma was improving tests to measure blood gases, which indicate the extent of injuries to the lungs.

In 1975, an extensive field test of the new Kevlar body armor was conducted, with 15 urban police departments cooperating in the test. Each department served a population larger than 250,000, and each had experienced officer assault rates higher than the national average. The tests involved 5,000 garments, including 800 purchased from commercial sources. Among the factors evaluated were Kevlar's comfort when worn for a full working day, its adaptability in extremes of temperature, and its durability through long periods of use. Equally important in

this test was the psychological effect of the garments on the officers—whether wearing them would enable them to be more confident or relaxed in their encounters with the public or might inspire them to take more chances with their lives or the lives of others. The tests showed that the armor could be worn without restricting the officers' ability to do their jobs, and more importantly, the vests worked.

While the field testing continued in 1976, rigorous testing at the U.S. Army Land Warfare Laboratory found that Kevlar could protect against 80 to 85 percent of the then available hand guns. Further testing also showed it was effective against blunt trauma. In Portland, Oregon, Seattle, Washington, and Richmond, Virginia, officials credited the body armor with saving the lives of police officers.

The soft body armor introduced by the Institute has been credited with saving more than 400 police officers' lives within the first 6 years of its use and more than 1,500 police officers' lives as of 1993. Beyond the human factor, estimated savings in survivors' benefits and replacement costs are more than $1 million per officer, a total of $1.5 billion. The development of body armor has also created a new industry.[10]

Other aids to the police. At the beginning of the decade, the Institute noted that foot patrolmen were usually weighed down with about 14 pounds of equipment. The Institute developed a project aimed at lightening portable transceivers as well as improving their handling and performance characteristics and lowering cost. The Institute supported contracts for the design, development, fabrication, and testing of six prototype transceivers. This work has continued in various forms to the present time.

In 1974, the Institute evaluated Automatic Vehicle Monitors (AVM's) in one major city to determine the impact of the AVM [illegible] police operations and response time. The researchers selected the St. [illegible] Department for the study because it had equipped 25 patrol cars w[illegible] ch gave dispatchers a continuous flow of information about the stat[illegible] on of the car. The study was considered a measured success.

A 1974 survey conducted by the Institute also revealed police departments were primarily concerned about the performance of their patrol cars and radios. Several projects were initiated. The first, conducted by the MITRE Corporation, investigated two new communications systems: an automatic dispatching of patrol cars and a forerunner of today's fax machines, which could provide police departments with the ability to transmit hard copies of documents. This device made it possible for a police officer to obtain a judge's signature on a warrant without leaving the station house.

Tires on police cars became a major concern in 1975 following the death of an Alabama State trooper after a tire blowout; the patrol car had been equipped with steel-belted radial tires.[11] The Institute asked the Law Enforcement Standards Laboratory to conduct a "quick reaction" study, which found that dealers had been selling ordinary tires—rated only up to 85 mph— to police departments rather than high-speed tires rated to 125 mph, and these tires could fail at higher speeds. Hazard bulletins were issued by the Institute and the National Highway Traffic Safety Administration.

The Institute also looked into another type of police car death. Two Baltimore police officers died of carbon monoxide poisoning after they unknowingly blocked their exhaust by backing into a snow bank. In response, as part of many tests using

NIJ initiatives have made it safer for street police officers—bullet-resistant vests have saved lives of many officers since their introduction.

Darrell W. Stephens
Chief of Police
St. Petersburg, Florida

Results of the NIJ tests of soft body armor were published in the 1978 *Consumer Product Report*, which saved money and lives. For example, The New York City Police Department was scheduled to spend over $1 million on one soft body armor product. When they found the selected product did not comply with NIJ Technology Assessment Program standards, they sought a product that did...and which cost $35 less per vest.

Among the publications issued in the mid-1970's were:

- Guides to selecting hearing protectors and fixed surveillance cameras.
- Definitions for intrusion alarm systems and digital communication terms.
- Four reports on tests of night vision devices.
- Reports on police handgun ammunition, automatic vehicle location equipment, electronic surveillance equipment and techniques.

a police car as the testing device, the Institute developed an internal carbon monoxide sensor as part of the long-term project to help individual police departments better handle the task of procuring police vehicles. One of the Institute's first grants was issued to Wayne State University in 1969 to study vehicle performance required to meet police needs and the lowest-cost way of acquiring vehicles to answer those needs. The study also addressed the most cost-effective ways of maintaining police vehicles.[12]

Another focus in the mid-1970's was developing and evaluating less-than-lethal weapons. Stun guns, Mace, and other disabling weapons were becoming increasingly available to police officers. While less lethal than conventional firearms, such devices nevertheless had the potential to cause injury or death. The Institute sponsored the Army's Land Warfare Laboratory to undertake a major study of these weapons to enable researchers to develop second-generation weapons that combined acceptable levels of safety with enhanced effectiveness. The project built a foundation for later development and contributed to blunt trauma tolerance measurements.

While developing a process to individualize semen samples, Institute-sponsored scientists discovered the method to reliably detect prostate cancer. In 1978, the Journal of Forensic Science credited NIJ with helping to create this medical breakthrough.

Forensic science. Two of the most important advances in the forensic field in the early 1970's were carried out by the Institute through workshops for key forensic scientists from major crime laboratories from around the country. The first involved offender identification through analysis of minute particles of dried blood. This technique was brought from England to the United States through an Institute grant to John Jay College, City University of New York in 1970. Two university scientists were sent to the Metropolitan Police Forensic Science Laboratory in London to learn the technique. A second technique, introduced and developed by the Institute, was that of trace metal detection to determine whether a person recently had handled a pistol or other metallic weapon. After some inhouse development, the Institute awarded a grant to the Minnesota State Bureau of Criminal Apprehension to conduct a series of 1-day workshops on the new procedure. Senior investigators and technicians from major police departments attended. Within 3 months, half of the 82 attendees had reported to the Institute that they had taught the procedures to more than 2,000 other users.

Another key initiative in 1974 enabled forensic scientists to individualize semen samples, especially those that were over 24 hours old. A grant to the University of California produced a process to identify semen using protein markers in the sperm cell membrane. [13]

In 1977, the Institute conducted the crime laboratory proficiency testing program, which measured the analytical accuracy of evidence analysis nationwide. The program identified strengths and weaknesses in the capabilities of crime laboratories to analyze such typical physical evidence as bloodstains, firearms, paint, drugs, glass, soil, metal, hair, and wood. The test in more than 200 laboratories resulted in providing a sound basis for devising programs to improve evidence analysis.

Under a 1978 grant, more than 300 forensic laboratory specialists were taught how to analyze the types of evidence that posed the greatest difficulties for forensic examination. Twenty 1-week workshops on forensic microscopy were held throughout the country. In addition, with NIJ sponsorship, more than 100 forensic serologists learned recently-developed techniques for analyzing blood stains and ways to automate forensic laboratories.

Additional work in the forensic field during the decade included a program of certification for forensic science personnel and development and testing of a technique to detect gunshot residue on a suspect's hands. This method, which was able

to connect suspects with weapons used in crime and distinguish between homicides and self-inflicted wounds, was used in more than 100 cases to establish validity and applicability.

How to discover explosives. The 1970's also gave rise to increasing concern about terrorists and their weapons. In 1971 when terrorist bombs were increasing in cities and on college campuses, the Institute examined the need for technological advancement in the remote detection of explosives, examination of bomb containers, neutralization of explosives, and safe removal of dangerous devices.

Along with a review of remote heroin detection devices, military use of dogs was funded in two grants. One went to the U.S. Army to train a number of dogs to enter buildings and detect hidden explosives. The other went to the New York City Police Department to use two of these trained dogs in field tests of the animals' detection ability. The dog program had excellent results: almost any dog could be trained to sniff out drugs or explosives. Although German shepherds were favorites of the police, Chihuahuas were considered capable canine agents and could perform their investigations more inconspicuously than larger dogs.

We learned that basically any dog could find explosives or drugs, even very small dogs like Chihuahuas whose size could be an advantage. Who is going to look twice at someone in a fur coat carrying a dog? But that dog could smell a bomb as well as the German shepherd.

Lester Shubin
NIJ Technology Program Manager
1971-1991

The Institute also awarded another grant to the U.S. Army to do field tests of bomb vapor analyzing equipment. Once a clandestine package was located, the equipment could remotely examine the contents for any suspected explosive devices and could detect vapors given off by the bombs. In 1978 the Institute conducted a symposium to examine new techniques for detecting and identifying explosives.

Burglary/robbery prevention and detection. In 1975, burglaries accounted for almost half of the Nation's serious crimes. In many jurisdictions, the arrest rate for burglary was low—about 15 percent. Yet research showed that if entry could be frustrated for as little as 4 minutes, a burglar generally gave up the entry attempt and turned to a more vulnerable target. Thus, burglar-deterrent doors and windows were called citizens' first line of defense against this crime.

Initial skepticism over bomb-sniffing dogs changed in 1972. At the Democratic National Convention in Miami, one dog began tearing at a wall, revealing a spent cartridge from a rivet gun. Another dog found a bomb aboard an American Airlines plane in New York, while another working for the Bureau of Narcotics and Dangerous Drugs found $100 million in heroin.

The Law Enforcement Standards Laboratory, with Institute funding, developed standards aimed at helping the construction industry build safer homes. Those and other standards were translated into a layman's guide that enabled a homeowner or tenant to improve the security of an existing dwelling. The Institute found that such precautions did not have to be elaborate. For example, in addition to longer screws on door jambs to make homes safer, the laboratory found that nails driven into a window frame prevented the sash from being raised more than 5 or 6 inches, which was often a sufficient deterrent to forced entry.

A more sophisticated precaution is the home burglar alarm. Statistics have shown that such alarms are an effective aid in both deterrence and apprehension. Work by the Institute in the early 1970's led to burglar alarm systems being linked directly to police communication centers. One project in Cedar Rapids, Iowa, evaluated the impact of 350 alarms installed on commercial premises and connected to indicators at police headquarters. In 1974, the Institute sponsored a survey of available alarm systems and identified the technological advances that could make such alarms less costly and more sensitive. Development continued the following year to produce a low-cost, reliable system that would be able to distinguish between real and false intruder signals. Findings led to later work that advanced burglar alarm reliability.

The Institute's involvement with Operation Identification (O/I) projects around the Nation was designed to improve burglary prevention, detection of offenders,

and recovery of stolen property. In a typical project, the local police department provided an engraving tool for citizens to emboss their Social Security, driver's license, or other identifying number on valuable items. The numbers were to be registered with police. Decals were supplied to participants to advertise the fact that their property was marked and registered. In 1974, NIJ sponsored a survey to see how these projects were working nationwide. The analysis found that citizens participating in O/I projects experienced fewer burglaries than neighbors who did not participate. However, there was no reduction in overall burglary rates for O/I communities, perhaps because the typical project failed to recruit more than 5 percent of the target population.

Law enforcement has had to rely primarily on private industry to do their R&D, which is basically market driven rather than driven by the actual needs of law enforcement. For more than 15 years, NIJ and its Technology Assessment Program Advisory Council have been providing the only nationwide coordinated research and development program for law enforcement.

Harlin McEwen
Chief of Police
Ithaca, New York

Chair of TAPAC in testimony on July 21, 1994, before the House of Representatives Subcommittee on Crime and Criminal Justice

Other Institute work included a laboratory-controlled test of a cargo security system to prevent truck hijacking, a serious and increasing problem in the late 1970's. The system was later evaluated in a 400-square mile area in Los Angeles, where a control station operation and 40 trucks were examined to determine the cost-effectiveness of the system. The system proved to be too costly at the time; coincidentally truck hijacking rates dropped.

The Eighties' Reorganization and Expansion

The 1979 Justice System Improvement Act restructured the National Institute of Justice. To adhere to its new mandate, NIJ created the Office of Development, Testing, and Dissemination, whose role included assessing the technological needs of criminal justice agencies and developing standards for key equipment.

TAPIC and TAPAC. In the mid-1980's, NIJ established the Technology Assessment Program Information Center (TAPIC) to select laboratories to test equipment, oversee the testing process, and publish equipment performance reports documenting test results. One of TAPIC's first projects was disseminating results of 1986 police car testing to help departments make the best choices for fleet purchases. That year, many law enforcement agencies had online access to the Technology Assessment Program's findings and were receiving up-to-date information.

The Institute also established the Technology Assessment Program Advisory Council (TAPAC), consisting of more than 80 senior Federal, State, and local law enforcement officials from the United States and Canada, to ensure that all the Institute's technology efforts are well grounded in the real world of police officers.

Forensic science. Many important resources for laboratories around the country were funded during this period. The *Sourcebook of Forensic Serology, Immunology, and Biochemistry* became a standard.[14]

In 1986, NIJ began its support of developing DNA technology through a grant to one of the developers of a new method, the Polymerase Chain Reaction (PCR). This method promised improvement over the existing, acceptable Restriction Fragment Length Polymorphism (RLFP) method, which used dangerous radioactive materials to produce an image of the DNA on an x-ray film. Instead, PCR technology amplified DNA samples through molecular photocopying, thus allowing the resulting data to be digitalized manually or by computer. NIJ sought to help perfect the PCR technology and find ways to overcome problems when the DNA evidence is damaged.

NIJ awarded a grant to advance the science of identifying human remains in 1987. Hundreds of cases had been encountered in which skeletal remains or bone fragments were the only clues found. Determination of blood groups from the remain-

ing bone tissue was the focus of the grant, which was followed by a subsequent award to develop DNA testing of the bone. This is the current process for identifying skeletal remains.

Other important forensic science projects included:

- Developing tests to distinguish among various kinds of acrylic automobile paints.
- Identifying assailants through hair lost during struggles with victims.
- Using electron microscopes to examine gunshot residue collected from hands and clothing.
- Studying human speech patterns to develop technology that could identify individual "voiceprints."
- Preparing a data base for forensic anthropology.
- Detecting and analyzing substance abuse through hair analysis.
- Preparing a study of prison fires and methodologies to assess fire hazards in correctional institutions that resulted in a manual for prison administrators.
- Improving photographic image enhancement and restoration technologies to aid in criminal identifications.

DNA, the chemical dispatcher of genetic information, may be present in innumerable forms at crime scenes—as blood stains, semen stains, hair follicles, bone fragments—in materials such as rugs, clothing, and furniture fabrics. Because DNA is unique in virtually every person (except for identical twins), accurate testing could more positively identify a suspect or eliminate from suspicion an innocent person.

Less-than-lethal weapons. A 1985 court case led to intensified work in NIJ's less-than-lethal weapons program. The case, Tennessee v. Garner, 475 U.S. 1 (1985), held that use of deadly force to apprehend an apparently unarmed nonviolent fleeing felon is unreasonable seizure under the Fourth Amendment.

In 1987 the Institute provided a grant to the U.S. Army to determine if a suitable less-than-lethal weapon could be developed for police. The study focused on identifying chemicals that would inhibit action without injury for use in such situations as domestic disputes and stopping fleeing suspects. The study covered all known medical, biological, pharmaceutical, and Defense Department documentation for chemicals that were reported to be incapacitating and nontoxic, which could then be tested for safety and effectiveness. The report suggested that a compound was feasible and that the fentanyl (from the family of anesthetics) was most promising.

Other new technologies. During the 1980's, the expansion of technology into all aspects of the criminal justice system was seen in the range of NIJ projects. For example, by 1986, electronic monitoring devices were used in 10 jurisdictions. An NIJ study was begun to examine some questions about the monitors' performance and effectiveness: rates of false alarms and of false positive and negative reports. Other NIJ science and technology grants were awarded to conduct such projects as:

- Tests of riot helmets, handcuffs, crash helmets, transceivers, and drug test kits.
- A study of sources of electro-magnetic interference in police cars and ways to suppress that interference.
- Development of a calibration device for arson detectors to "sniff" for hydrocarbon vapors at the scene of a fire.
- Investigation into technologies to detect concealed handguns.
- A study on the validity of polygraph examinations in criminal investigations.
- Development of a computer sourcebook on firearms evidence information.

NIJ tests of riot helmets in 1982 revealed that only 6 of 15 helmets on the market could meet performance criteria for penetration, and only 4 of the 15 met impact requirements.

The Nineties' Focus on Multiple Applications

As the 1990's began, the need to develop less-than-lethal weapons became even more critical as well as the need to arrange partnerships with other agencies to pool financial and professional resources. One factor was the threatened elimination of a frequently used less-than-lethal device, oleoresin capsicum (pepper spray), to subdue suspects. The spray produces a blinding and choking effect and overpowers a person with a burning sensation that makes breathing difficult. The spray allows officers to bring violent suspects into custody with less chance of injury. But since 1990 at least 30 known suspects have died in custody situations where pepper spray was reportedly used. Critics charged that the spray was deadly and should be discontinued.

The "Magic Wand"—a small hand-held tool—is revolutionizing the process of gathering fingerprints at a crime scene. NIJ supported the development of this device in 1990, which dispenses cyanoacrylates (super glue) that are mixed with a dye. Suspected areas are fumed and fingerprints are then frozen and dyed in a matter of seconds.

Previously any nonporous item suspected of harboring fingerprints had to be transported to a laboratory for testing or be dusted. The act of dusting could miss critical fingerprints or destroy them. The wand overcomes these problems. It is now available commercially for less than $150.

In response, the Institute gave a small grant to the International Association of Chiefs of Police to conduct a study of known in-custody deaths where pepper spray was used. The study concluded that pepper spray was not a cause of any of the in-custody deaths. The major cause (80 percent of the cases) was positional asphyxia. Contributing factors appeared to include being placed hog-tied (and drunk or on drugs, or overweight) in the back of patrol cars, vans, or in other custody situations. The study has had a significant impact on the acceptance of pepper spray as a less-than-lethal alternative in custody/corrections situations.

The Institute currently has grants with five national laboratories under the Department of Energy to adapt and transfer or develop new less-than-lethal technologies for law enforcement, corrections, and the criminal justice system. The laboratories are already developing prototype equipment to:

- Apply nontoxic sticky foam to restrain subjects at distances more than 30 feet away.
- Use rear seat airbags to restrain uncooperative arrestees or prisoners in the back seat of police cars.
- Use aqueous foam to counter violence in prisons or jails.
- Stop fleeing vehicles with retractable spiked barrier strips.
- Develop "smart guns" that can only be fired by designated individuals to reduce instances where police officers on duty and civilians in their homes are shot with their own guns.
- Use pulsed light and other physiological responses to disorient suspects.
- Develop projectile launchers with impact velocity control for riot control situations or standoff confrontations with subjects who are not armed with firearms.

The increasing level of gun violence is expected to result in renewed interest in technologies that can detect concealed weapons. NIJ is also working aggressively to identify military and intelligence community technologies that might be candidates for dual-use, law enforcement applications. This program was initiated through the recommendation of an NIJ-funded Less-Than-Lethal Technology and Policy Assessment panel comprised of senior policy experts with law enforcement, defense, government and industry experience. The panel recommended that U.S. Attorney General Janet Reno formally request assistance from the Department of Defense (DOD) and the Intelligence Community Management Staff (CMS) to initiate a dual-use technology effort to support law enforcement.

The Attorney General did just that, and the response was positive. In fact, the initiative resulted in a Memorandum of Understanding (MOU) on April 20, 1994,

between the Attorney General and the Secretary of Defense to share and jointly develop technology and systems applicable to both defense and law enforcement. The MOU established a new Joint Program Steering Group to be manned by Defense and Justice Department personnel at the DOD Advanced Research Projects Agency to carry out the day-to-day tasks of identifying, developing, and transferring useful defense technologies to law enforcement.

The FY 1995 Defense appropriations bill provided $37.5 million to support the DOD/DOJ MOU for the development and transition of technologies applicable to law enforcement and military operations other than war, stipulating that such support may include support for national law enforcement technology centers of the National Institute of Justice.

Forensic science. In 1990 NIJ initiated several efforts to improve DNA testing. In one study researchers are identifying Short, Random Repeat (STR) DNA segments for forensic laboratories to use in PCR-based testing. This study has developed a standard set of STR's that are widely used by crime labs for DNA testing throughout the country. A 1993 grant is for development of capillary electrophoresis for application in DNA testing procedures. NIJ plans to focus on improving DNA testing throughout the decade to:

The NIJ/National Institute of Standards and Technology RFLP DNA testing standards was selected by the *R&D Magazine* as one of the 100 best technological products in 1993.

- Develop and disseminate standards for the RFLP and PCR testing methods.
- Identify and analyze statistical methodologies for calculating DNA profile matches.
- Validate and implement a PCR-based profile methodology for State and local crime laboratories.
- Develop a CD-ROM computer technology sourcebook for serology/DNA, fingerprint, drugs, and trace evidence.

Other forensics work by the Institute included a grant for improving the electron PLM/Microprobe for trace evidence analysis and for a trace evidence identification project.

A new center. 1994 marked a hallmark year for law enforcement science and technology when the FY 1995 Justice appropriation bill mandated funds to assist NIJ in its efforts to adopt technologies for law enforcement purposes; it established a Technology Information Network in conjunction with the Regional Information Sharing System and an Office of Law Enforcement Technology Commercialization co-located with the National Technology Transfer Center.

The NIJ National Law Enforcement Technology Center (NLETC) was established in October to take over the functions of the Technology Assessment Program Information Center (TAPIC) and to become the virtual hub of a national organization of regional centers dedicated to supporting Federal, State, and local law enforcement, corrections, and criminal justice system science and technology requirements. Regional centers are planned for Charleston, Denver, San Diego (Border Research and Technology Center), and Los Angeles with others to be added as necessary.

The NLETC will function as the hub for hot-line services, standards, evaluations, data base development for the Technology Information Network (TIN), and for support to law enforcement technology assessment councils, panels, and committees. The regional centers will be centers of excellence for respective technologies and will act as regional interfaces for law enforcement agencies and the Technology Information Network.

A major effort was initiated to identify what it will take to get new technologies introduced to the community by creating a Liability Task Group charged with identifying liability issues and recommending efforts law enforcement agencies should undertake to address them. A Community Acceptance Panel was also created to help to identify critical community issues that might surround a newly-developed or developing technology.

If we could reduce crime by only 1 percent, it would mean 230 fewer murders, more than 1,700 fewer rapes, 60,000 fewer assaults, and at least 130,000 fewer property crimes. It could mean a savings of at least $700 million in economic costs.

David Boyd
Director
NIJ Science and Technology Division
1993 Testimony to Congress

A series of NIJ law enforcement technology exhibits was initiated to demonstrate to law enforcement, government, Congress, the general public, and the media some of the kinds of technologies that are under development. This highly successful initiative will continue on a national and regional basis.

The Violent Crime Control and Law Enforcement Act of 1994 authorizes funds for competitive grant programs for States and localities to develop or improve DNA identification capabilities.

What's ahead. A major NIJ national level conference on "Law Enforcement Technology for the 21st Century" was held in Washington, D.C., in June 1994 with major participation from Federal, State and local law enforcement, corrections and the criminal justice communities. The conference was a successful catalyst to advance the pursuit of technology for law enforcement. The conference expanded on themes of prior conferences to identify the need for new technology; however, it was specifically designed to respond to an existing "window of opportunity" that would accelerate the development of technologies for law enforcement. In addition to highlighting technologies, the conference provided the opportunity to educate the audience about the limitations of new technologies and ways to overcome them. Such conferences will continue to be instrumental in cultivating and maintaining the critical partnerships required to bring law enforcement capabilities into the 21st century.

In order to capitalize on past achievements and the present "window of opportunity," NIJ has identified at least seven major elements that should be undertaken to ensure that programs to transfer technology to law enforcement are effective:

- Draw attention to the advantages technology can offer so it will not only be funded, but also embraced by law enforcement.
- Identify a principal focus for law enforcement technology efforts to coordinate the development of new technologies.
- Eliminate duplication and ensure law enforcement involvement to avoid the costly mistakes made in other Federal research and development efforts.
- Create a mechanism to ease access to technological information by law enforcement and the criminal justice system.
- Build on the emerging DOD/DOJ Joint Steering Group to establish a way to ensure public safety needs are always taken into account in the earliest stages of research and development.
- Establish a process to ensure the safety of law enforcement technologies, both for the public and the officer.
- Address the fragmented buying power of law enforcement, and attract quality industry to participate in the development and production of new affordable technologies for Federal, State, and local agencies.

The basis exists for building the infrastructure, funding, and commitments required to meet these needs. The task ahead is to build upon the efforts of the past 25 years

and sustain the mid-90's "window of opportunity" to bring the benefits of modern technology to bear on the problems of law enforcement. The result must be affordable, reliable, and effective equipment and systems to support law enforcement in the 21st century.

Timothy S. McCune and Joan Alpert

Notes

1. Doyle, A. Conan, *The Complete Sherlock Holmes*, New York: The Literary Guild, 1936, p.47. Nash, Jay Robert, *Almanac of World Crime*, New York, Bonanza Books, 1986, p. 292.

2. Nash, p. 233.

3. John Larson, a medical student at the University of California; and a member of the Berkeley police department developed the first polygraph.

4. Institute for Defense Analyses, *Task Force Report: Science and Technology, A Report to the President's Commission on Law Enforcement and Administration of Justice*, Washington, D.C.: Government Printing Office, 1967, p. 1.

According to Nash, *Almanac of World Crime*, p. 233, in 1912, the Cleveland Bar Association, disturbed by the rapidly rising crime rate, requested that the privately funded Cleveland Foundation conduct a massive study of the city's criminal justice system. The Foundation's findings criticized the police for not keeping pace with modern demands and not developing effective techniques to address advanced social and industrial conditions.

5. LEAA, *Abstracts of Grants, Contracts, and Interagency Agreements*, Washington, D.C.: U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, October 1973.

6. Ibid.

7. U.S. Department of Justice, *Attorney General's Report on Federal Law Enforcement and Criminal Justice Activities*, Washington, D.C.: U.S. Department of Justice, 1975, pp. 22–23.

8. Interview with then-Institute Program Manager, Joseph Kochanski, October 6, 1994.

9. Kochanski interview.

10. Boyd. David G., "Finding and Applying New Technologies to Law Enforcement," unpublished speech delivered at Albuquerque, New Mexico, August 24, 1993.

11. Kochanski interview.

12. LEAA, *Abstracts of Grants, Contracts, and Interagency Agreements.*

13. Interview with Lester Shubin and Joseph Kochanski, October 6, 1994. The forensic scientist leading the project was George Sensabaugh.

14. This work was written by Robert E. Gaensslen, Ph.D., and published in August 1983. Other NIJ forensic publications included *Forensic Evidence and the Police: The Effects of Scientific Evidence on Criminal Investigations* by Joseph L. Peterson, Steven Mihajluvic, and Michael Gilliland, October 1984; *Procedures and Evaluations of Antisera for the Typing of Antigens in Bloodstains* by R.E. Gaensslen and Henry C. Lee, November 1984; *Death Investigation and Examination: Medicolegal Guidelines and Checklists*, edited by Kenneth S. Field and Beth Ann Lipskin, 1984; *The Laboratories' Role in Investigating Rape in Diagnostic Medicine*, by George F. Sensabaugh, Jan Bashinski, and Edward T. Blake, March 1985; and *Post-Coital Detection of a Male Specific Semen Protein by Elisa*, by H. Graves, George F. Sensabaugh, and Edward T. Blake, February 1985.

This Center is to be part of a new law enforcement information network that will make it easier for law enforcement to find useful products and assist industry in identifying law enforcement requirements.

Janet Reno
U.S. Attorney General

Turning Research Into Action

Criminal justice research provides new knowledge that can affect policies, yield new programs, and suggest new approaches to aid those on the front lines of the fight against crime. Yet this potential can only be realized if new knowledge is communicated effectively, to the right audiences and in a form that facilitates implementation. This is the task of the National Institute of Justice's research utilization program.

Through this program, the Institute analyzes research findings that have implications for public policy and day-to-day practice. Synthesizing results from several studies, NIJ formulates programs that can be tested to determine if wider implementation of a new approach is warranted. And, through training, conferences, and information services, the Institute fosters awareness of new knowledge within both the research and practitioner communities.

Its mandate to conduct these activities began with the Omnibus Crime Control and Safe Streets Act of 1968, which created the National Institute of Law Enforcement and Criminal Justice.[1] The Act directed the Institute to:

- Sponsor applied research to develop new approaches, techniques, systems, and equipment to improve law enforcement.
- Make recommendations for action to Federal, State, and local governments.
- Collect and disseminate information obtained by the Institute or other Federal agencies.

Further legislation enacted in the 1970's directed the Institute to conduct training programs for criminal justice professionals and establish a clearinghouse for the exchange of information about law enforcement and criminal justice. Thus the Institute had a clear mandate to give criminal justice policymakers, practitioners, and administrators tools needed to implement new knowledge in their own jurisdictions.

As you know, the Institute is not solely a research body. Its responsibilities also include evaluating criminal justice programs, disseminating information on research and progressive practices, training criminal justice practitioners, analyzing research for program possibilities, and designing and testing programs prior to wider implementation.

Blair Ewing
NIJ Deputy and Acting Director
Statement to House of Representatives Subcommittee
July 21, 1977

Studies on criminal justice policies that are not widely known are useful to no one.

James K. ("Chips") Stewart
Introducing the first issue of NIJ Reports
November 1983

The communication of practical information to the local level has been central in the Institute's planning, organizational structure, and operations from the beginning, when it established special units charged with using research findings to develop action agendas for State and local agencies.

Over the course of these first 25 years, new concerns—domestic violence and child abuse, the emergence of drugs on the crime scene, the criminal justice system's response to victims of rape and other crimes—as well as advances in communication technology have shaped both the content of criminal justice research and the means for its communication and use. Research utilization efforts during this period have involved four major sets of interrelated activities:

- Development of programs—including model programs, field testing, and demonstrations—that implement research findings at the local, operational level.
- Provision for training—through workshops, seminars, conferences, and fellowship opportunities that directly impart new knowledge about research methods, findings, and applications.
- Communication of new knowledge—through printed, audiovisual, and electronic materials tailored to the needs of different criminal justice audiences.
- Promotion of worldwide information sharing—through a central clearinghouse of criminal justice data, the National Criminal Justice Reference Service (NCJRS).

Of major importance to the American Correctional Association in recent years has been NIJ's increasing interest in the more practical aspects of criminal justice research and information dissemination.

James A. Gondles, Jr.
Executive Director
American Correctional Association

The nature of these efforts mirrors the times. The first decade, when the Law Enforcement Assistance Administration (LEAA) was supporting local criminal justice programs with substantial block grants to the States, was one of intense concentration on field testing, training, and technical assistance to hasten the replication of locally developed, innovative approaches nationwide. This activity was fully consonant with a strong Federal role in improving the social and economic health of the country.

At the beginning of the second decade, NIJ developed research applications and forms of information dissemination appropriate to a period of budget constraints and at the same time responsive to serious new problems facing criminal justice, such as drug trafficking, victims' rights, and prisons filled to overflowing.

Now new communication technologies have further revolutionized NIJ's efforts to put research results in the hands of operating agencies. New challenges, such as the escalation of youth violence and other issues that led to passage of the Violent Crime Control and Law Enforcement Act of 1994, present additional opportunities for developing, recording, and transmitting information.

The 1970's—Ambitious Agenda

The National Institute during this period was instrumental in following through on LEAA's efforts to develop large-scale crime prevention and system improvement. The agenda was ambitious and involved a partnership between the Federal Government, which provided the funding, and State and local agencies that implemented the model programs. The National Institute provided the necessary linkages to accomplish the task.

The Institute communicated information on specific program models drawn either from Institute-funded research or from the promising approaches stimulated and initiated by LEAA's infusion of funds for innovations in local law enforcement,

courts, and corrections. Information reached the field through operational handbooks, field testing, training, full-scale demonstration, and site visits by interested local representatives to innovative programs.

At the same time, the Institute's Clearinghouse, the National Criminal Justice Reference Service, launched in 1972, began building a collection of criminal justice literature to respond to information needs of policymakers, agencies, and practitioners, and an inventory of materials for distribution to them in conjunction with the other facets of what came to be known as "technology transfer."

Technology Transfer

The Institute's technology transfer efforts built on earlier foundations and used numerous methods. Model criminal justice programs were developed and documentation was prepared in easy-to-use and widely disseminated program manuals. Training focused on key policymakers, local officials, and managers who

Technology Transfer in Operation: Managing Criminal Investigations

The issue of managing criminal invesigations is an example of how NIJ has operated its technology transfer program. The National Institute sought, through the various vehicles at its disposal—publications, training, field testing (demonstration), and its information clearinghouse—to put into practical operation the findings of the research it sponsored.

Two Institute-sponsored research studies, one by the Rand Corporation and the other by the Stanford Research Institute, concluded that information obtained at the crime scene by officers responding to the call was signifcantly more important in solving the crime than leads subsequently developed by the police in followup investigations. Other findings included a scale of "solvability factors," techniques for managing continuing investigations, and the importance of closer police--prosecutor relationships.

In addition to reports on this research, the Institute published a Prescriptive Package addressing these and other criminal investigation issues.

The program was field tested at five sites: Santa Monica, California; Rochester, New York; St. Paul, Minnesota; Birmingham, Alabama; and Montgomery County, Maryland. Project staff from the sites were trained in the theory and operation of the program. Each site received consultation and technical assistance during the field test, and periodically the key staff from all sites met to review progress and problems to date and share experiences and solutions. The Institute funded the Urban Institute to evaluate the program's operation and impact at the demonstration sites.

At the same time, Executive Training Seminars introduced the program to a particularly critical audience throughout the country—the senior administrators of metropolitan police departments. Invited agencies sent their chiefs of police, heads of patrol, and heads of their detective units so that those executives most directly involved would be exposed to the program concepts together. The experience of the field test sites was also discussed so that interested administrators could contact or visit them. All participants received the training handbook, research report summaries, and other materials. Eventually these materials found their way into each agency's operating program and training academy curriculum.

Concurrently, NCJRS made the information available to a wider audience of researchers, academicians, and law enforcement agencies of all sizes.

Together, these efforts had major implications for organization and resource allocation in police departments, as well as for the effective conduct of criminal investigations.

Steps in Technology Transfer

- Identify problem areas highlighted by research or experience.
- Select response strategies (e.g., additional research if more knowledge is needed) or ...
- Develop a program model based on the best available research and practical experience.
- Design a field test of the model program.
- Implement and evaluate the field test and incorporate the results in a refined model program, called a validated program design.
- If successful, market the program nationwide.

My perspective is that of a 20-year police officer who was fortunate to serve a 1-year fellowship with NIJ in 1988. In my mind, the NIJ mission is to help define problems, identify solutions, and then inform those affected about both.

John L. Buchanan
Police Captain
Maryvale Precinct Commander
Phoenix, Arizona

could implement and operate these new program techniques. NIJ sponsored field-testing and showcasing of the most significant new strategies in cities throughout the country. The Institute provided other forms of hands-on involvement by giving local officials opportunities to work with an agency using an advanced practice in preparation for initiating their own programs. Special conferences provided forums for exploring critical research findings or criminal justice issues for selected national audiences. NCJRS provided access to information on all aspects of the criminal justice system.

Des Moines Exemplary Project

The first Exemplary Project was a Des Moines, Iowa, community-based corrections program. When the State of Iowa condemned the Polk County jail for overcrowding, citizens of Des Moines and Polk County responded in 1973, not with a new jail, but with a community correctional system so successful that it safely reduced local jail population by 50 percent in the first 3 years. The program's four major elements were pretrial release screening, pretrial supervised release, county-based probation services, and a community correctional facility.

The Midwest press covered the program's selection as an Exemplary Project. Coverage in *The Christian Science Monitor, The New York Times. The Wall Street Journal, Time,* and *Newsweek* followed.

These efforts formed around a variety of topics including criminal investigative techniques, family crisis intervention, community-based corrections, community crime prevention, and neighborhood team policing. They resulted in an interrelated set of demonstration, training, and publication initiatives, which describes the Institute's first large-scale efforts at transferring the results of research into the practical administration of criminal justice at the local level.

Exemplary projects. The 1967 President's Commission on Law Enforcement and Administration of Justice had noted the lack of communication between different jurisdictions facing similar problems.[2] NIJ initiated the Exemplary Projects program as a systematic method to draw on the expertise of the criminal justice community nationwide. Candidate projects had to demonstrate measurable success in reducing a specific crime or improving a criminal justice operation. By the beginning of 1978, 25 Exemplary Projects had been chosen. For each project, NIJ prepared and distributed a descriptive brochure and detailed operational manual. Among the innovative local programs that merited the Exemplary label were:

- The computerized Prosecutor Management Information System (PROMIS) developed in 1971 by the District of Columbia Superior Court.
- A volunteer probation counselor program in Lincoln, Nebraska.
- The operations of King County (Seattle) and San Diego County Fraud Divisions, each of which employed different but successful methods to deal with economic crimes and consumer frauds.
- New York City's Street Crime Unit, which used decoys and plain-clothes backup teams to increase arrests for robbery, personal grand larceny, and assault.

Model Programs. State and local programs funded by LEAA focused on programs within operating agencies. The Institute analyzed and assessed what were then "new and innovative" programs, such as crime analysis units and burglary prevention programs. Then the Institute prepared and published Prescriptive Packages that spelled out the issues involved in creating and implementing these programs for other agencies that might be interested in starting similar ones. The packages served as operating manuals to guide agencies in constructing similar programs.

Training

The Crime Control Act of 1973 expanded the Institute's responsibilities for training State and local criminal justice personnel. The highly focused program the National Institute designed offered training to people in a position to act on the practices or techniques selected as being model programs to replicate. Recognized experts (the individuals who developed the techniques or nationally known authorities in the field) delivered the training in intensive workshops or seminars. Each training session focused on the concept and operation of a particular advanced criminal justice program such as full-service neighborhood policing. The

sessions were also organized by geographical areas: each Federal Region had a workshop or seminar training session on a particular program for approximately 50 of the senior criminal justice executives or policymakers in that field—decisionmakers who could implement the program when they returned home.

Training topics were selected from Institute research or evaluation studies that had resulted in models ready for operational application, as well as from Prescriptive Packages and Exemplary Projects. In a typical year, 1975, the Institute developed training materials and curriculums in several priority areas, then held regional workshops that trained more than 2,000 officials. Topics of these training sessions included how police can help settle citizen disputes and how to improve lower court case handling.

Nine workshops trained more than 450 judges, probation chiefs, sheriffs, county commissioners, and other corrections specialists in the Des Moines Community-Based Corrections programs, which had been chosen as an Exemplary Project. All participants received detailed manuals to assist i· local implementation.

Technical assistance. Beginning in the spring of 1976, the Institute, through NCJRS, developed Technical Assistance Packages for use by Regional Offices and State Planning Agencies in helping local jurisdictions mount new programs, such as Victim/Witness Assistance Programs, an early example. A typical Technical Assistance Package included core documentation (research reports, Exemplary Projects, Prescriptive Packages), bibliographies, referral directories, pamphlets and brochures, lists of ongoing LEAA projects in the area, and lists of individuals who could act as additional resources.

Conferences. In 1976 the Institute also initiated a program called Special Conferences to present significant research findings to a select national audience and to stimulate discussion of critical criminal justice issues. The first such conference brought together 120 members of the legal profession—judges, public defenders, prosecutors, and legal scholars—to communicate the results of Institute-sponsored research on the implementation of the Supreme Court's *Argersinger v. Hamlin* decision, which held that both misdemeanor and felony defendants had a right to free legal counsel. The researchers had found only token compliance with the decision. The conference sessions discussed these findings and the researchers' recommendations with respect to the appointment of counsel, the management of defender services, eligibility requirements, and ways to measure the effectiveness of court-appointed counsel.

By 1979, the number of events for special audiences multiplied. Workshops were held that year for more than 1,500 senior officials on the following topics: maintaining municipal integrity, managing the pressures of inflation in criminal justice, operating a defender's office, and improving probation strategies. Another series of workshops brought together researchers and policy officials to exchange views on major national issues such as dealing with career criminals and preventing and managing large-scale civil disorders.

Demonstration projects. From the topic areas developed in the training program each year, a few outstanding projects were chosen for demonstration in selected communities. Each community became a showcase for that criminal justice practice, acting as a host and training center for other interested communities. The Institute provided funding for the first 18 months of the project's operations; local funding took over thereafter. NIJ also sponsored an independent evaluation of each demonstration.

Des Moines Exemplary Project (continued)

In the meantime, the Institute focused on techniques to reach and reinforce understanding among criminal justice professionals who could use the Des Moines approach. The Institute distributed brochures to practitioners, then followed with a detailed manual on Des Moines program operations, with information on staffing, training, and costs. More than 1,500 copies were mailed directly to corrections officials, and NCJRS distributed another 4,200 copies in response to individual requests.

In Executive Training Workshops between November 1974 and April 1975, more than 450 State and local officials—judges, senior probation officers, and corrections officials—attended 1 of 10 3-day workshops in different parts of the country. The training was conducted by the Des Moines project staff.

Even though no financial inducements were given for implementation, 6 months later 30 percent of the participants were already in the process of adopting all or part of the Des Moines approach in their own agencies.

The publication, Rape and Its Victims, which consolidated research findings with the program experience of successful projects throughout the country, stimulated 17,000 individual requests for copies. Eighty percent of those who received the package said no single better document was available in the field. Rape and Its Victims gave guidelines to police, hospital administrators, prosecutors, and citizen groups. Reports on use of the guidelines came in from police departments, prosecutors, and rape crisis centers in almost every State and from criminal justice officials in Canada, Sweden, and Brazil.

NIJ's publications provide solid information on timely topics, are easy to read, and keep me informed on issues, problems, and possible solutions in the criminal justice field. They help those of us at the local level target our limited resources so that we can be effective in the criminal justice system.

Michael D. Schrunk
District Attorney
Multnomah County, Oregon

Host program. Selected Exemplary Projects were also chosen for the Institute's Host Program. Officials seriously interested in adopting an innovative program could visit a host site for up to 2 weeks, gaining first-hand experience in how the project worked. Near the end of the 1978 grant period, 84 participants had visited 1 of the 14 host sites. A majority of the officials who visited the sites implemented all or part of the Host project's approach in their own jurisdictions.

Publications Program

The publications program was a key component of the technology transfer process. The first step in planning took place when the National Institute's Research Utilization Committee, comprising representatives from all Institute offices, convened at the conclusion of each research effort to identify target audiences and recommend the most appropriate means of reaching them, a concept that has continued with modifications to this day.

The Institute had several challenges to address in designing publications that would support the transfer of criminal justice knowledge to the field. Because research reports were often written in technical language and focused on study design and methodology, they rarely highlighted findings in such a way that policymakers could readily discern their policy implications or criminal justice administrators could apply them to their daily operations. Moreover, these professionals and practitioners lacked time to review all current research, extract findings, and translate them into operating procedure.

Prescriptive Packages synthesized available research information, operational experience, and program guidelines coming out of the Model Programs and Exemplary Projects into single, readable documents. The reports, tailored to the concerns of practitioners, included practical information on staff and budget, potential problems, and measures of effectiveness. Examples of Prescriptive Packages produced during the Institute's first decade show the practical nature of these tools for using research results:

- *Police Robbery Control Manual*
- *Police Crime Analysis Unit Handbook*
- *A Guide to Improved Handling of Misdemeanant Offenders*
- *Methadone Treatment Manual*
- *Correction Health Care Manual*
- *Grievance Mechanisms in Correctional Institutions*

Recognizing that no single program design was suitable for every jurisdiction, the National Institute then developed Program Models, publications that synthesized research data, empirical experience, and expert opinion and presented the advantages and the limitations of a variety of programmatic options in a topic area. Titles in this series included *Neighborhood Justice Centers*, *Police Warrant Services*, and *Prevention, Detection, and Correction of Corruption in Local Government*.

In 1979, a new series, Policy Briefs, was launched specifically for lawmakers and government officials. These documents briefly described a specific innovation or emerging trend in criminal justice, together with the particular approach and the actions officials could take to institute the approach. They included sample legislation and references to additional information on the topic. Early Policy

Briefs were prepared on administrative adjudication of traffic offenses, Neighborhood Justice Centers, and career criminal programs.

Annual research review. In 1979 the Institute launched the first of an annual series of volumes on "Crime and Justice," prepared under Institute auspices and published by the University of Chicago Press. The series, as the preface indicated, would "build bridges between islands of parochialism," a reference to the different and sometimes isolated worlds occupied by academic criminal lawyers, sociologists specializing in criminology, and systems engineers interested in criminal justice. Michael Tonry, University of Minnesota Law School, and Norval Morris, University of Chicago Law School, became the series' editors, and an advisory board of distinguished criminal justice researchers was chosen. Essays in the first and successive volumes consist primarily of summaries by leading scholars on the state of the art of a defined topic, together with their views on the policy and research implications of that knowledge. Topics in the first volume ranged from "Race Relations and the Prisoner Subculture" to "Longitudinal Research on Crime and Delinquency." The series is now in its 16th year, and the annual volumes have occasionally been supplemented by volumes devoted to a single topic, such as *Communities and Crime*, *Family Violence*, *Drugs and Crime*, *Modern Policing*, and *White Collar Crime*.

National Criminal Justice Reference Service

Congress had been clear in calling for the collection and dissemination of information that would serve as a knowledge base for other research and dissemination efforts and offer a nationwide (and later worldwide) resource for information on new policies and practices implemented in the field. Until 1972, no central criminal justice reference service existed. In that year the Institute created the National Criminal Justice Reference Service (NCJRS). By 1974, the computerized data base contained more than 7,000 documents. Each registered user (the number topped 20,000) had an" interest profile" on file with NCJRS. A Selective Notification of Information program was developed through which users regularly received abstract cards of newly acquired documents in their area of interest.

Specialists in police, courts, juvenile delinquency, corrections, and evaluation responded to telephone and mail requests for information or documents, searching the Document Data Base to retrieve the information the requester needed. Users could obtain free printed copies of NIJ publications or microfiche copies of uncopyrighted documents. They could also borrow documents in the collection through an interlibrary document loan program.

NCJRS' international focus was established by Congress in the Crime Control Act of 1973. The clearinghouse began to acquire materials produced in other countries, for which English-language abstracts were prepared.

NCJRS also developed information packages for both the academic and practitioner communities, as well as annotated bibliographies and other data base information products. The annotated bibliographies contained abstracts of up to 200 documents on specific topics such as methods to implement speedy trials, prevention and control of arson, and characteristics of female offenders. In 1975 NCJRS was annually publishing 50 different information products and distributing some 500,000 copies.

By the end of the Institute's first decade, this information clearinghouse had more than doubled the number of registered users, and the Document Data Base had increased sevenfold.

NIJ's publications and the National Criminal Justice Reference Service provide a "one- stop shop" for access to a tremendous wealth of information.

Timothy D. Crowe
Criminologist
Louisville, Kentucky

Researchers and teachers can pick up a telephone and call for the relevant research on a topic from NCJRS.

Richard H. Ward
Associate Chancellor
Professor of Criminal Justice
University of Illinois

In 1969, we began planning the National Criminal Justice Reference Service. No other accomplishment has been more important.

Irving Slott
Deputy and Acting Director
NIJ
1969-1971

NIJ's Visiting Fellowship program, initated in 1974, has brought talented individuals to Washington for 1 year to pursue research on a criminal justice issue while the Institute's Graduate Research Fellowship program has awarded grants to a limited number of doctoral candidates through sponsoring universities.

NIJ's Minority Fellowship Program for young masters degree students at historical black colleges is a first and should be continued.

Julius Debro
Associate Dean
University of Washington

I was in one of the first groups of visiting fellows at NIJ, class of 1974. Each of the early fellows made the most of his stay at the Institute. Peter Manning (now at Michigan State University) conducted his landmark study of narcotics investigations; Albert Alschuler (now at Chicago Law School) conducted a study of plea bargaining in Alaska; Mark Haller (now at Temple University) wrote a well-known article on the history of organized crime in Chicago. I got involved in the formation of the Institute's original data archive (to become the Data Resources Program) and organized a conference that for the first time brought together researchers doing local victim surveys.

Wesley Skogan
Northwestern University

1979—A Year of Major Change

In 1979 Congress restructured the Federal crime control grant program. This had both immediate and long-range effects on the information transfer that had accompanied Federal support for innovative programs at the State and local levels. LEAA funds had underwritten not only the initiation of most Exemplary Projects but also the required evaluation and covered many training expenses, both for trainers and trainees. The Justice System Improvement Act of 1979 restructured the Institute and created the Bureau of Justice Assistance. In the area of technology transfer, it directed NIJ to:

- Evaluate the effectiveness of federally funded justice improvement programs and identify programs that promised to be successful if continued or repeated.
- Test and demonstrate new and improved approaches to strengthen the justice system and recommend actions that could be taken by Federal, State, and local governments and private organizations and individuals to achieve this goal.
- Disseminate information from research, demonstrations, evaluations, and special programs to Federal, State, and local governments, and serve as an international clearinghouse of justice information.
- Train criminal justice practitioners in research and evaluation findings, and assist the research community through fellowships and special seminars.

Thus virtually all the responsibilities remained in place, but changes in funding and infrastructure led NIJ to find new ways to fulfill its continuing responsibilities.

The 1980's—Concentrating Resources

The 1980's saw major new challenges to criminal justice and the concentration of resources on a few new programs to deal with the drug-crime linkage and prison crowding. Both of these produced a new environment for NIJ's research and information dissemination.

The 1980's saw the rise of new approaches identifying innovative practices and communicating information about them to State and local criminal justice audiences. The National Assessment Program, for example, was developed to determine the needs of local police departments, courts, and correctional institutions. The information gained through national surveys helped to set the Institute's research agenda and the topics for Issues and Practices in Criminal Justice, a new series that highlighted emerging problems and documented the programs that various jurisdictions were developing.

Regional workshops, no longer financially viable as originally designed, underwent a transformation. NIJ supported the training teams and some other onsite expenses, but local hosts took responsibility for registration and logistics, and each participant's local agency underwrote travel expenses. This reduced total attendance. NIJ began to focus on national rather than regional training events.

NCJRS was growing in size and reach. By 1980 the clearinghouse was developing new ways to share the resources of the NCJRS document collection with a growing body of users, through bibliographies, a new bimonthly Selective Notification of Information (SNI) bulletin, and *International Summaries*, translations of summaries of selected foreign language documents entering the collection.

The economic realities that had transformed other aspects of the research utilization task likewise transformed the operation of NCJRS. Agencies throughout the Government sought to recover some of the costs of imparting information by charging user fees for what had formerly been distributed free. NIJ's clearinghouse was no exception and indeed quickly adopted new practices for recovering some costs while still continuing to meet the field's information needs.

Identifying the Top Issues

In 1983, NIJ launched the National Assessment Program (NAP), a program that continues today. This survey of criminal justice professionals in law enforcement, the courts, and corrections finds out their most urgent or pervasive problems so that priorities for NIJ's research and information dissemination agenda can be determined. The NAP ensures that NIJ programs respond to the needs of agencies, identifies emerging issues so that new programs can be developed quickly to address them, and informs criminal justice professionals about the issues that concern their colleagues nationwide. Results of the National Assessment Program inform NIJ's annual *Program Plan*, which outlines the Institute's solicitations for research and invites applications from the field.

Developing Information Bases To Solve Problems

Information dissemination efforts in the 1980's took a new direction, seen in two major NIJ programs: the Construction Information Exchange and the Drug Use Forecasting program. Each of these programs focused on a single problem identified by States and localities across the country and developed an information gathering and dissemination strategy specific to that program. Both applied new technologies to develop information that could be analyzed and converted to a form people in the field could use.

Corrections construction initiative. When NIJ asked criminal justice officials in the early 1980's to name the most serious problems facing the entire system, police, courts, and corrections officials were virtually unanimous in citing prison and jail crowding as the number one concern. In 1986, to respond to this need, NIJ launched a corrections construction initiative to spur the development and exchange of information among local, State, and Federal officials about ways to provide more prison and jail space quickly and inexpensively. The linchpin of this effort, the Construction Information Exchange, is a computerized data base that permits local, State, and Federal officials to share lessons learned from recent jail and prison construction projects. A sheriff, for example, who is planning to build a combined jail and court facility may contact the Exchange to obtain a special search of the data base describing facilities of this type. The computer printout the sheriff receives provides a wealth of detail on projects similar to the planned facility, together with the names of persons to contact for more information.

NIJ has been working with the American Institute of Architects to conduct periodic surveys of correctional administrators and architects for information to be entered into the data base. At regular intervals, the data base information is downloaded and reformatted to produce the *National Directory of Corrections Construction*, a compendium of designs, construction methods, and costs for recently built jails and prisons. NIJ has also published a series of Construction Bulletins, each explaining a different construction or financing approach and describing its implementation in a specific locality.

Privatization of corrections emerged as a "hot topic" in the 1980's. NIJ sponsored a national assessment of privatization efforts, published *The Privatization of Corrections*, and then convened a national conference in February 1985 to examine with participants their experiences with privatization and other options. Nearly 300 State and local correctional administrators, sheriffs, criminal justice analysts, and private business representatives gathered to hear the views of the Chief Justice of the United States Warren E. Burger and others on this controversial subject and to sort realistic, feasible options from the less practical ones. The initial report framed the issues and the conference represented an important step in expanding the discussion on concepts that challenged traditional practice.

NIJ invited more than 300 officials from around the country to Washington in 1990 for a national conference on ways "to fill the void between prison and probation, as keynoter Norval Morris termed the purpose of the new intermediate sanctions that were developed during the 1980's. Roundtable discussions allowed participants to explore incorporating intermediate punishments in their criminal justice systems. NIJ played a major role in identifying, evaluating, and promoting information sharing on electronic monitoring, boot camps, intensive supervision probation, and other intermediate punishments.

Those of us on the front lines in the attack on drugs and crime—police chiefs, sheriffs, prosecutors, judges, corrections administrators—appreciate NIJ for furnishing some of the most carefully crafted programs and up-to-date information available to aid law enforcement in stemming the flow of crime and drugs in our society.

Elizabeth Watson
Chief of Police
Austin, Texas

The Drug Use Forecasting (DUF) program. Similarly, NIJ looked for ways to provide useful information to help cities respond to escalating drug problems. In the early 1980's, pioneering research on arrestees' drug use in Washington, D.C., and New York City had revealed a level of abuse far exceeding what many had assumed. Urinalysis testing of some 14,000 persons arrested in both cities showed that more than half had been using dangerous, illegal drugs such as cocaine, PCP, or heroin during the 48 hours preceding the test, and that up to a third of these had used more than one drug.

Previous NIJ-sponsored research had shown that multiple drug use is one of the most salient characteristics of serious, habitual offenders. Moreover, high-risk individuals such as heroin addicts commit four to six times more crime when they are on drugs than when they are relatively drug free.

In Washington, the D.C. Pretrial Services Agency used this knowledge and an NIJ grant to develop a program that used state-of-the-art urinalysis tests of arrestees to give judges a means of deciding which arrestees could be released before trial and under what conditions.

The program provided objective, useful information for making pretrial release decisions. NIJ saw that the information about arrestee drug use could have wider use as well. Since the offender population had higher and more long-standing levels of drug use than the general population, their drug-using habits—what drugs they took and how frequently—could warn local law enforcement and other local officials about drugs that might soon become widespread. Thus the Drug Use Forecasting program was born. In 1987, NIJ launched the program in a dozen sites across the country, obtaining voluntary urine samples and self-report information from samples of male arrestees in these cities. By 1991 the number of sites had grown to 24, and adult females and juvenile males were added to the population tested in half the sites.

In the years since, the information regularly provided through DUF has allowed local officials to allocate drug control resources and to gain a continuing measure of the extent and nature of drug use by the arrestee population. NIJ publishes quarterly and annual reports of DUF results by city. This information has had other uses as well. It has helped advocates of more and better prevention and drug treatment programs obtain needed support, and it has provided a rich source of information for researchers exploring specific aspects of drug use.

NIJ has been exploring ways to disseminate the DUF data more widely and more quickly in order to get maximum benefit from the findings. An NIJ study is examining preparation of print and electronic products to facilitate local analysis of DUF data files, including statistical software programs, codebooks to describe the data, and a guide to help law enforcement officers analyze the data.

Researchers also need to report and disseminate their results effectively. Practitioners commonly complain that research reports are difficult to read and fail to make their relevance to operations explicit. Policymakers want policy-relevant research results distilled and clearly related to their concerns. The NIJ's Research in Brief series was cited by many practitioners as an exemplary model of how this could be accomplished.

Joan Petersilia
June 1987

Communicating the Results of Criminal Justice Research

New technologies opened new avenues for disseminating information. Videotape technology enabled the Institute to provide college instructors and community advocates with visual presentations of criminal justice issues. A bimonthly magazine available in print and electronically through the NCJRS Bulletin Board increased the visibility of NIJ's research efforts as noted researchers and professionals contributed articles describing new research findings. Through these means and through conferences, a network of criminal justice editors, and an invigorated fellowship program, NIJ continued in the 1980's to pursue the technology transfer task begun many years earlier.

From 1985 to 1994, 54,000 Crime File tapes have been distributed to private individuals, public agencies, and schools.

Crime File. In 1985 NIJ commissioned the first series of 30-minute videotapes called Crime File to develop awareness and communicate information on critical issues in American criminal justice. The videotapes, moderated by James Q. Wilson, each opened with a documentary section, followed by an unrehearsed, spontaneous discussion between front-line practitioners and leading researchers on a specific topic. Prominent criminal justice researchers, professors, officials, and practitioners participated in each Crime File segment, bringing the results of research and experience to new audiences. The videotapes, designed to increase public awareness, reached widely into American communities when they were broadcast on public television. They have also been purchased by police training academies and for use at workshops as training tools. Highly popular, the 32 Crime File tapes (three series were eventually produced and marketed under the NCJRS cost recovery program) have met a need for clear, up-to-date information about issues just reaching public consciousness and concern.

McGraw Hill publishers continues to offer free copies of Crime File to university professors as a bonus with purchases of their criminal justice textbooks.

World Affairs Television (Canadian public broadcasting) requested 20 Crime File titles in the fall of 1994 in researching production of its show, "The Police Beat."

Issues and Practices in Criminal Justice. This series evolved into a new means of bringing to the criminal justice policymaker and practitioner the practical information about issues that were emerging and practices that were being tried out in individual localities. NIJ used several criteria to select the topics of Issues and Practices reports. First, the series was guided by the results of NIJ-funded research and formed a key means of communicating findings. Second, the series reflected concerns of the field, as identified through the National Assessment Program or that posed pressing challenges such as AIDS and privatization. The priorities of the Attorney General and the NIJ Director played a role as well.

NIJ's dissemination of research, policy analyses, "think pieces," and "state-of-the-art" materials puts both important NIJ and other work readily into the hands of busy policymakers and police leaders.

Robert B. Kliesmet
International President
International Union of Police Associations, AFL-CIO

The Issues and Practices report, *AIDS in Correctional Facilities*, is an example of a quick response to a critical new issue, that of HIV-infected offenders in custody. For correction agencies, AIDS was a pressing, formidable challenge. A complex health problem for inmates and corrections staff, it required decisions about prevention, institutional management, and equitable methods for identifying and treating inmates with AIDS. NIJ commissioned a survey of all State prisons, Federal Bureau of Prison facilities, and large urban area jails to find out how these agencies were responding to these issues. The Issues and Practices report not only informed the criminal justice community of the range of responses around the country but also explained the facts about AIDS: how it is transmitted and how it can be prevented. Subsequent NIJ efforts included publications on AIDS and law enforcement and probation and parole officers, a conference on AIDS and the courts, and development of an information clearinghouse on AIDS and criminal justice.

When the Victim Is a Child, published in 1985, was one of the most significant and influential titles in the Issues and Practices series. Written by Debra Whitcomb, the principal investigator for an NIJ study on the problems faced and posed by child victims in the criminal justice system, the report described new laws, local reforms, and new techniques then taking place in the United States to alleviate these problems.

Research in Brief and other publications. NIJ sought other ways to communicate research findings to busy criminal justice agency executives and lawmakers. The first vehicle, the Research in Brief bulletin, generally summarized the findings of a particular research study and pointed to their application for local policy or practice. The NIJ Research in Brief bulletin series continues to be a leading source of public and practitioner information on advances in criminal justice research, with about 25 titles appearing annually. It was followed by AIDS Bulletins, Construction Bulletins, and a special series titled Perspectives on Policing, produced in conjunction with Harvard University's John F. Kennedy School of Government. This series of bulletins was drawn from policy discussions at the Kennedy School's Executive Session on Policing.

NIJ also produced an entirely new vehicle, a bimonthly magazine, *NIJ Reports*, featuring one or two articles on the application of research findings and also

containing announcements of the most important additions to the NCJRS Document Collection. *NIJ Reports* evolved into the prime and most visible communication vehicle between NIJ and its various user constituencies. Over the years, issues of the magazine brought to the fore discussions of research on such emerging criminal justice issues as drugs and crime, intermediate sanctions (including electronic monitoring and boot camps), sentencing guidelines, and computer crime. As cost recovery became an ever more important feature of NCJRS, *NIJ Reports* developed into a key vehicle to promote fee-for-service products.

Conferences. NIJ's conference program was a national one during the 1980's, bringing together key criminal justice professionals to share their views and experiences in dealing with critical issues then facing the system. An example was the AIDS and the Courts conference, jointly sponsored with the State Justice Institute, held in April 1989 in Miami. The conference brought together medical and legal experts with a group of judges and other officials to consider the legal challenges posed by the AIDS epidemic. Other conferences dealt with drugs and crime, state-of-the-art policing, and sentencing and judicial issues.

New components of NCJRS. The 1980's were also a period of vast growth for NIJ's information clearinghouse. At the end of the decade, NCJRS comprised five clearinghouses, each sharing the NCJRS information base and reference and referral capabilities and disseminating information on the programs and publications of all the Office of Justice Programs (OJP) agencies—the Office of Juvenile Justice and Delinquency Prevention, the Bureau of Justice Statistics, the Bureau of Justice Assistance, and the Office for Victims of Crime, as well as NIJ. Toll-free 800 lines and a variety of print, audiovisual, and electronic products were enlarging both the audiences and the scope of services available to them. At the same time, in its direction of NCJRS, NIJ encouraged the building of an information network among public and private agencies to share in both the gathering and dissemination of information in an increasingly interdependent world. As OJP and its clearinghouse entered the 1990's, the pace of technological advances, together with increased public concern for drugs, crime, and violence, brought new sets of challenges.

We hope to continue enhancing our cooperation with the National Institute of Justice and the National Criminal Justice Reference Service since projects carried out under the aegis of your organization are extremely relevant to the work objectives of the United Nations crime prevention and criminal justice programs.

Eduardo Vetere
Chief, Crime Prevention and Criminal Justice Branch
United Nations
Vienna, Austria

Each year, an estimated 67,000 individuals contact NCJRS by mail, telephone, fax, or the electronic bulletin board service.

During the 1980's, the number of users registered with NCJRS grew to over 100,000.

The 1990's and Beyond

The emergence of new forms of violence, including killings related to drug trafficking and violence among youths, together with the proliferation of new communications technologies, have had a great impact on the Institute's efforts to

Data Resources Program

With the widespread use of computers as a means to record and analyze data, it became an NIJ priority to ensure that research data, once captured in electronic form, could be shared with other researchers. To encourage future analyses of data gathered under the auspices of the Institute, in 1984 NIJ established the Data Resources Program.

More than 200 data sets covering a wide range of criminal justice issues are deposited with the National Archive of Criminal Justice Data, Inter-university Consortium for Political and Social Research at the University of Michigan. NIJ's Data Resources Program not only makes them available to the research community, but encourages investigation of policy questions and additional research using the data.

translate the fruits of research into action on the front lines. The content of NIJ publications is shaped by the concerns that are at the top of the Nation's criminal justice agenda, and ever greater emphasis is placed on the newest form of technology transfer, Internet, the information superhighway.

PAVNET (Partnerships Against Violence Network). A consortium of six Federal Government agencies[3] created through an NIJ initiative begun in late 1993, PAVNET aims to integrate information on programs and other resources addressing violence prevention and control—with a focus on youth at risk—and to remove all barriers to sharing that information across the Nation. State jurisdictions and local communities wishing to create programs to address issues of violence can benefit from information about other programs already under way and from knowing where they can obtain research data, technical assistance, curriculums and other information sources, and funding. The net is broad; for example, PAVNET contains information on parent education to prevent child abuse and raise healthy children, on interventions for high risk adolescents, and on alternative sanctions for youthful offenders. In 1994, this information was gathered into an online search and retrieval system of approximately 1,000 entries, PAVNET Online, which can be accessed as of November 1994 through Internet by gophering to pavnet.esusda.gov. A printed two-volume directory of the same PAVNET information is scheduled for publication in December 1994.

To ensure that this new source of information and its availability is known across the Nation, NIJ is spearheading a nationwide campaign. The Corporation for Public Broadcasting has initiated contacts with the Institute to explore linking its campaign against violence with PAVNET, using its media resources to both publicize specific local activities and the wealth of information PAVNET can provide. NIJ is also working with the other Federal participating agencies and clearinghouses to prepare articles and press releases in both electronic and printed formats for particular audiences.

In the future, PAVNET is expected to be administered on an interagency distributed platform, which will permit continuous independent updating and expansion by the participating Federal agencies and their clearinghouses and resource centers. The Department of Justice will serve as the host for justice-related information, and NCJRS will serve as collector and verifier of justice-related information. All participating agencies will establish Internet technical resources similar to the format online today that will be linked together. The user will thus continue to access PAVNET as a single resource.

NCJRS online. In 1994, NCJRS began development of its Internet gopher site, ncjrs.aspensys.com 71. Users can now directly access information about all Office of Justice Program agencies, directly connect to PAVNET and the U.S. Department of Justice, and use the NCJRS Bulletin Board through Internet. Users will soon be able to order NIJ and NCJRS publications online as well as by keying in their orders on a touch-tone telephone.

Other efforts to communicate up-to-date information. NIJ's effort to communicate useful information based on criminal justice research and development projects not only uses technological advances to widen dissemination efforts but also looks to continue and expand its resources for information useful to policymakers, professionals, and practitioners. Thus, major programs developed in the 1980's, such as the Construction Information Exchange and the Drug Use Forecasting program, have continued into the 1990's, and are updated to meet new information needs of State and local agencies.

PAVNET Online promises to leverage government services by centralizing and coordinating information access on the Internet. Without PAVNET, officials of a local government agency wishing to create a drug abuse prevention project would need to check multiple Federal, State, and local agencies and communities to answer such questions as:

- What programs are being tried in other jurisdictions?
- What methods appear to be working and why?
- What problems have other jurisdictions encountered?
- What are sources for funding outside local resources?
- What resource materials can be found?
- Are there any sources for hands-on technical assistance?

PAVNET offers a single gopher and e-mail site for initial answers to these questions with the names, addresses, and phone/fax/Internet numbers for additional information.

NIJ stimulated and supported practical research on innumerable crime control issues, promoted assessment and discussion of findings to make them more rigorous, and widely disseminated useful conclusions....

Just as the Industrial Revolution changed production from hand to machine in the Western world, NIJ has produced an information revolution for justice agencies, a revolution that is still in progress...."

Daniel Glaser
Senior Research Associate
and Professor Emeritus
University of Southern California
Past President American Society of Criminology

NIJ's publications agenda has included such issues as the emergence of large numbers of cocaine and crack abusers, the accompanying violence of drug traffickers, and the risks of HIV infection from intravenous drugs, which have led to a host of anti-drug programs in the United States, some focusing on prevention and others focusing on treatment. Consequently, NIJ has published documents on anti-drug programs, like the Maricopa County, Arizona, "Do Drugs. Do Time." initiative and Miami's Drug Court, to encourage other jurisdictions to try similar innovations.

To reach different types of audiences, NIJ's publications program has expanded to encompass new bulletin series, including Program Focus, with attention on successful programs developed within individual jurisdictions. In addition, NIJ developed two new publication series, Evaluation Reports and Evaluation Bulletins, to present the findings of NIJ program evaluations, which have primarily focused on anti-drug programs funded by the Bureau of Justice Assistance, in response to a congressional mandate. Each year NIJ summarizes the results of these evaluations in an annual report to Congress. The most recent series, begun in 1994, are two-page Updates that summarize recently released, individual NIJ-sponsored research projects.

The *National Institute of Justice Journal*, launched in 1992, devoted its premiere issue to a major new effort to root law enforcement in community life—the development of community policing and problem-oriented policing. Its second issue was devoted to the topic of drugs and crime—still at or near the top of the agenda in city after city.

Increasingly, all NIJ publications are available in two forms: printed and electronic. The contents of the NCJRS Document Data Base has for several years been available on CD-ROM; an updated version is issued annually. For the past couple of years, all NIJ publications have been available online; with the expansion of gopher technology, users can access them today through the Library of Congress, the U.S. Department of Justice, or the NCJRS gophers on the Internet.

The Institute will continue its efforts to use emerging formats for information dissemination to bring research results and their implications into the hands of the policymakers, professionals, and practitioners who can make our communities safer and stronger. The past 25 years have been ones of enormous growth and change for NIJ's communication of new criminal justice knowledge to the field. The task throughout has remained the same even though the resources and the means of accomplishing it have been transformed several times over. The constant has been this change, together with the commitment to turn the findings of research into new and better ways to administer criminal justice.

Monique Smith and Virginia Baldau

Notes

1. In this chapter, this entity is referred to interchangeably as NIJ, the National Institute, or the Institute.

2. President's Commission on Law Enforcement and Administration of Justice, *Challenge of Crime in a Free Society*, Washington, D.C.: President's Commission on Law Enforcement and Administration of Justice, 1967.

3. The coalition of Federal agencies that have contributed to building PAVNET are the U.S. Departments of Agriculture, Education, Health and Human Services, Housing and Urban Development, Justice, and Labor. Over 30 clearinghouses and resource centers operated by these agencies assisted in the initial efforts.