Raising the Bar: The Impact of DNA Testing on the Field of Forensics

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Only 15 years have passed since DNA evidence was first introduced in a criminal trial in the United States, but in that remarkably short period of time DNA has revolutionized the criminal justice system. This impact goes beyond DNA's effect on investigating crimes, convicting the guilty, and exonerating the innocent. DNA testing has also brought about changes in unrelated fields by forcing laboratories and courts to rethink how they treat forensic evidence. These changes have consequences that we need to think about if we are to make wise policy choices in the future.

Reasons for DNA's Spillover Effect on Other Fields

Before we look at what happened, I'd like to consider briefly why it happened. What caused DNA testing to have such widespread repercussions? Two factors, I think, are primarily responsible: the nature of the DNA

forensic technique and the historical moment at which DNA entered the courtroom.

Enter Science

DNA profiling is an offshoot of science. It is a technique that exists beyond its forensic usefulness, such as ballistics, handwriting analysis, or fingerprinting. Forensic DNA is a fortuitous byproduct of some of the most highly regarded, cutting-edge research in the scientific community.

DNA's origins in the world of science meant that from the first, scientists whose work was far removed from the courtroom showed an interest in issues regarding the forensic application of DNA. I suspect this attention was due in part to scientists' fear that without adequate supervision, lawyers untrained in forensic techniques would misinterpret evidence. For instance, a number of eminent scientists, including Eric Lander of the Whitehead Institute, testified in the first New York legal case about the laboratory procedures needed to produce reliable results. In addition, distinguished scientists from a variety of fields were happy to participate when, at the request of various government agencies, the National Academy of Sciences empaneled committees to make recommendations aimed at improving laboratory work and the presentation of DNA evidence in judicial proceedings. The first of these book-length reports appeared in 1992—about 5 years after DNA evidence was first introduced. From the beginning, DNA testing was seen as part of the scientific endeavor and the participation of scientists brought new standards of professionalism into the forensic arena.

The Crusade Against "Junk Science"

DNA evidence made its debut at the same time that a very different kind of scientific evidence was coming under attack. Incensed by the huge damages

awarded some plaintiffs in toxic tort and product liability cases, critics claimed that plaintiffs' successes were attributable to venal expert witnesses who relied on "junk science" to prove causation. The allegations about junk science sparked considerable debate in the legal community about proper standards for scientific expert proof. In 1993, in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*,[1] the U. S. Supreme Court entered the controversy. It adopted a new relevancy and reliability test for the admissibility of scientific proof, set out nonexclusive factors that bear on whether a theory or technique was derived by the scientific method, and stressed the trial judge's obligation as "gatekeeper" to screen proffered expert testimony so as to keep unreliable evidence from the trier of fact. Since then, the Court has issued two additional opinions dealing with the admissibility of scientific and engineering expert proof in Federal courts.[2]

We can only speculate on whether the advent of DNA profiling played a part in persuading the Supreme Court to tackle the question of scientific proof. DNA profiling certainly illustrates how important scientific evidence can be. Furthermore, the contrast between the science in question and some of the proof being attacked as junk may have piqued some members of the Court's interest in defining the nature of scientific proof.

Judicial Scrutiny of DNA Evidence

Although we cannot know what effect, if any, the advent of DNA had on the Court, the Court's plunge into the debate on science undoubtedly led to a heightening of judicial attention accorded DNA profiling. Even if the jurisdiction in question had not adopted the *Daubert* test—which only binds Federal courts—judges in all jurisdictions were certainly put on notice that issues about the reliability of scientific proof were now in the spotlight. The result, recently noted by the Research and Development Working Group of the National Commission on the Future of DNA Evidence, was that DNA

evidence received "an intensity of scrutiny far greater than the other methods of criminal investigation" had ever received.[3]

In the beginning, DNA evidence was routinely admitted. But when defendants began to challenge the admissibility of DNA evidence, spurred by the growing insistence on the need for reliable scientific proof, some courts initially upheld these contentions. They found that insufficient scientific work had as yet been done to satisfy their jurisdiction's test for the admissibility of scientific evidence. The result was that DNA profiling was placed on a much more secure footing because of additional scientific input: The technical standards for DNA testing were strengthened, the databases used to generate probabilities of matching became larger and more representative, and laboratory performance was improved.

The judicial demands for more stringent science, and the resulting response, provided a model of how scientists test a hypothesis, accumulate data, and seek to reduce error. All players in the legal system—judges, lawyers, law enforcement and laboratory personnel—observed and were educated by this process, which had not been used in evaluating other forensic techniques. Ultimately this development had a spillover effect into other forensic fields.

DNA Laboratories

The Problem

One aspect of DNA's impact has been its effect on laboratory practices. Critics had protested for decades about the sorry state of many American crime laboratories. Scientists involved with DNA testing observed that crime laboratory procedures fell short of standards to which scientists adhere in conducting research. It was readily apparent that the nature of DNA analysis lends itself to a wide variety of potential accidents and mistakes, including mislabeling and

mixing up samples, running the same sample twice instead of running the sample from a defendant against the crime scene sample, contaminating samples by exposure to other biological material, and misinterpreting results.

The Solution: Quality Assurance and Control and Accreditation

Quality assurance refers to a program conducted by a laboratory to ensure the accuracy and reliability of the tests it performs. Guidelines for quality assurance have been issued by two FBI-appointed groups—the Technical Working Group on DNA Analysis Methods and the DNA Advisory Board (DAB). DAB members include molecular geneticists; population geneticists; an ethicist; and representatives from Federal, State, and local forensic DNA laboratories, private-sector DNA laboratories, the National Institute of Standards and Technology, and the judiciary. The DNA Identification Act of 1994 provides that a forensic DNA laboratory may not qualify for Federal laboratory improvement funds unless it satisfies the quality assurance standards recommended by DAB and issued by the director of the FBI.

In addition, DNA forensic laboratories adopted stringent quality control protocols that require laboratories to monitor, document, and verify laboratory performance. These quality control programs aim to ensure and demonstrate that a laboratory is meeting its quality assurance objectives.

There is also some movement toward laboratory accreditation. Both New York and California require their forensic DNA laboratories to be accredited, a function that is performed by the American Society of Crime Laboratory Directors' Laboratory Accreditation Board (ASCLD/LAB), which audits labs to determine whether they are abiding by quality assurance standards. Some of the recent statutes that authorize inmate access to postconviction DNA testing require that such testing be done by an accredited laboratory.

Of course, even a laboratory that abides by the numerous provisions of the quality assurance guidelines may make a mistake. No system in which humans are involved can be error-free, but well-thought-out protocols will prevent many problems. Furthermore, when an error is made, it may be easier to detect and correct because the guidelines call for extensive documentation and records with regard to everything a laboratory does.

The Impact on Other Laboratories

The quality assurance guidelines have not only professionalized DNA forensic laboratories, but have had a spillover effect with regard to other services that crime laboratories provide. The ASCLD/LAB accreditation program requires that a laboratory be accredited only if it qualifies with regard to all of the services it performs—not just DNA testing. This means that as accreditation becomes more widespread, quality assurance is likely to increase in all types of crime labs.

Furthermore, the mere fact that a model exists on how to ensure quality assurance and control is influential. Of course blanket standards cannot be applied to other laboratories doing forensic work because guidelines need to address specific problems relevant to the particular discipline. But certainly the DNA laboratory experience has sensitized the forensic and legal communities about the need to improve all forensic laboratories. The degree to which that need is being met differs widely. That is hardly surprising. There are private laboratories, as well as public laboratories at the Federal, State, county, and municipal levels, all dependent on widely varying sources of funding. The extent to which laboratories have implemented reforms in procedures varies enormously, but the DNA accreditation process makes it more likely that other laboratory issues will be understood and addressed.

DNA's Impact on the Judicial Analysis of Forensic Evidence

The Probability of a Match

Is there a match? As with many forensic sciences, the essence of DNA analysis is determining whether two samples match—most important, a sample from the crime scene and a sample from a suspect or victim. Sometimes matching is all that is needed when, for instance, the investigator is trying to exclude samples at the crime scene that may have been left by persons who are not under suspicion. But when DNA evidence is offered to prove that the defendant was at the crime scene, or that the victim's blood was found in defendant's car, the enormous probative value of the evidence stems not from the bare fact of the match but on the statistical frequency of the match. We can be almost certain that a match means that the DNA at the crime scene must have come from the person with whose DNA the crime scene sample is being compared. The Research and Development Working Group of the DNA Commission on the Future of DNA Evidence recently concluded that, "Evidence that two DNA samples are from the same person is still probabilistic rather than certain. But with today's battery of genetic markers, the likelihood that two matching profiles came from the same person approaches certainty."[4]

With the help of scientists and tools such as the two reports from the National Academy of Sciences, judges became aware that they had to analyze two separate questions in determining the admissibility of DNA evidence: What is the scientific basis for concluding that accurate matches of DNA samples can be made and what is the scientific basis for providing reliable estimates of the frequency of a match? The first question raises a host of laboratory performance and biological issues; the second question requires consideration of population genetics. In order to calculate the probability that the crime scene sample came from the defendant or victim, data were needed about the frequency with which each of the loci being matched could be found in particular populations.

Numerous other forensic techniques rely on matching samples. Ballistics, fingerprinting, questioned document examination using such techniques as handwriting, ink, and paper analysis, and trace evidence evaluations of such materials as paints, fibers, and glass all have in common the assumption that it is possible to match samples. Courts had regularly admitted evidence derived from these disciplines without demanding scientific proof that accurate matches could be made and, for the most part, had completely ignored the need for a probabilistic analysis to convey the match's significance.

Erroneous Matches

We know that admitting proof of a match that is, in fact, erroneous can be devastating. In many of the more than 90 cases to date in which convictions were overturned on the basis of DNA testing, the prosecution had relied on expert testimony about matching hair, in addition to eyewitness testimony. Mitochondrial DNA testing has now established the inaccuracy of the hair comparisons that courts had previously admitted.

Misunderstanding the Significance of the Frequency of the Match

We also know that the significance of a match depends on its statistical frequency. For instance, in assessing the probative value of an expert's conclusion that shoe prints left at the crime scene match prints made by shoes found in defendant's closet, the value of the evidence will be much higher if the shoes were custom-made than if the shoes were mass-produced. And if the defendant's shoes had been repaired in a particular way, the prints may indeed have unique characteristics that serve to identify the defendant.

Prior to the advent of DNA evidence, lawyers often failed to analyze the probative value of testimony about a match. This could lead to improper inferences by jurors, especially when the match was obtained through an

impressive, seemingly infallible forensic technique, which was unaccompanied by any proof about the frequency of the match. For instance, in a 1970 case, *United States* v. *Stifel*,[5] the prosecution tied a defendant to a pipe bomb that had been sent through the mail and had killed the person who opened the package by proving that tape on the packaging matched tape found at the defendant's place of work. The samples had been compared by neutron activation analysis, then a new technique. The jury was told in great detail about this process and how it could detect and measure traces of elements in minute samples. All tape at the defendant's workplace was part of the same batch (defined as 1 day's production), and that batch had been distributed by the manufacturer to only two purchasers in different U.S. cities, one of whom was the defendant's employer. Very little other evidence, other than proof of a possible motive and the defendant's experience with explosives, was introduced.

The defendant was convicted and received a life sentence. It was not until 13 years later through a Freedom of Information Act request that the defendant discovered the government had failed to provide considerable exculpatory evidence—in violation of the Brady Act. Therefore, vacation of his conviction was necessary. The defendant further discovered that the government chemist, who had testified to the match between the crime scene and workplace tapes, had also, prior to trial, tested other samples of the same brand of tape, samples that had been manufactured after the pipe bomb exploded. Those samples from different batches, distributed to many locations, also matched the crime scene tape. Obviously, evidence of the match would have had much less probative value had the jury realized that neutron activation analysis of all the tape manufactured by Proctor & Gamble over an extensive period of time showed an identical composition.

The court that vacated the defendant's conviction held that the prosecution expert had not committed perjury because defense counsel never asked him about testing other batches. Therefore, he answered truthfully when he stated

that the samples matched. Clearly, counsel did not understand that a match and the probability of a match raise two different sets of issues, and the trial judge and appellate court that affirmed the conviction may not have understood this either. This is a mistake that I hope lawyers will be less likely to make now that DNA testing has educated us about probabilities.

Matches in Forensic Fields Other Than DNA

To date, the insistence on stringent standards governing scientific proof has been more pronounced in civil cases involving money than in criminal cases involving life and liberty. However, that is beginning to change as criminal defense counsel absorb the lessons about assumptions that must be validated when proof is offered that samples match. Defense counsel are beginning to challenge some traditional forms of forensic expertise.

Handwriting Analysis

One of the earliest attacks on scientific evidence began in 1989 when four law professors wrote an article criticizing handwriting analysis as a species of junk science.[6] A dozen years later, this challenge is beginning to bear fruit. A recent NIJ publication concluded that "Questioned document examination, which encompasses forgeries, tracings, and disguised handwritings, is currently in a state of upheaval."[7]

Courts have begun to cite weaknesses in scientific reliability, such as "no known error rate, no professional or academic degrees in the field, no meaningful peer review, and no agreement as to how many exemplars are required to establish the probability of authorship."[8] Consequently, some courts have expressed doubt about the ability of a document examiner to reach an accurate conclusion about a match between writings that a defendant is known to have authored and the writings in question, which the defendant denies

having written. Although judges will allow the expert to point out similarities and differences in the handwriting, some will not allow the expert to express an opinion about authorship. One court has gone so far as to exclude a prosecution expert as a witness on the ground that no scientific studies established that an expert could match samples of block printing under the circumstances of that case in which the defendant had learned to print in English as a second language.[9]

Few defense counsel are as yet moving to exclude testimony by document examiners, but this will undoubtedly change as they become aware of the newer cases.

Fingerprints

Until very recently, it would have been heretical to suggest that an expert might be prevented from testifying that a fingerprint at a crime scene could have come only from the accused. The uniqueness of fingerprints was assumed, and indeed early commentators on DNA often stressed that fingerprinting could conclusively establish identity, while DNA profiling had the capacity to yield only a probabilistic conclusion. Now, we have been told that this assumption about the uniqueness of fingerprints has never been validated. Nobody really thinks there is a problem when full sets of fingerprints are compared. But what if the crime scene sample is only a partial, latent print? Although an expert may be able to match such a print to a print from a defendant, virtually no scientific work has as yet been done on the significance of such a match. How likely is it that only the defendant and no one else could leave such a partial print?

Defense counsel have begun to challenge the admissibility of testimony by fingerprint experts who claim that they can conclusively identify the defendant on the basis of a partial print. Thus far all court challenges have been unsuccessful. But the issue is unlikely to disappear because the academic

community and the media have become interested and public defenders are well aware of this controversy. It may be, however, that DNA will have the final word. It is becoming possible to extract DNA from latent fingerprints, and it may be that a shift to DNA analysis rather than fingerprinting will mean that issues relating to fingerprint validation can be bypassed. Other forensic matching techniques will undoubtedly be questioned as well.

Policy Implications for the Future

I hope you can see the impact DNA has had on producing more accurate laboratory results and more reliable evidence in the courtroom. All this, of course, has a cost. Even though the cost of running a DNA test may be decreasing, quality assurance and control programs require hiring additional personnel. Ultimately, improving laboratory performance costs more money—whether the laboratory in question is doing DNA analyses or other types of forensic testing. It is also expensive to devise and implement studies designed to validate the accuracy with which various kinds of samples can be matched.

Although DNA testing has helped us see deficiencies in forensic proof, priorities will have to be set in funding laboratories and research. Decisions will have to be made about the relative importance of different forensic techniques, and choices will have to be made even within the field of DNA testing. For instance, how much DNA must be collected at a crime scene? Does every piece of evidence have to be checked to determine whether DNA is present, regardless of the other evidence in the case and the nature of the crime? Will defendants be able to claim that they were deprived of a valid defense because insufficient evidence was subjected to DNA testing?

Murder and rape, the two crimes we probably fear the most, are particularly likely to result in evidence that is susceptible to DNA analysis. But what about other crimes? The British, whose databanks are more extensive than

ours, claim that DNA is solving many of their property crimes because perpetrators leave items such as cigarette butts at crime scenes. However, as criminals become more sophisticated about DNA analysis, will they avoid leaving any biological samples behind, just as they now know to wear gloves to avoid fingerprint analysis? These and numerous other questions will play a role in how we expend resources on training law enforcement personnel and in how we choose to allocate funding for the development of new forensic techniques.

In brief, DNA testing has shown us ways to raise the bar so that the forensic sciences can better withstand scientific scrutiny. But we have not yet come to terms with the consequences of this heightened sensitivity in how we allocate resources. This hesitation is understandable because we do not yet know how far courts will go in rejecting proffered prosecution expertise. In the case of questioned document examiners, we can see that the "handwriting" is on the wall. The number of judges who are restricting the use of such evidence as not satisfying scientific standards is gradually increasing. Although challenges to fingerprint evidence are currently being rejected, they will undoubtedly be renewed, particularly because the issues are being discussed more intensely. These are probably only the forerunners of future attacks on other forms of traditionally admitted forensic evidence. At this point, what we can say with confidence is that DNA testing has raised a host of questions for the future. It has also greatly improved the prospects of justice in the criminal justice system.

Question-and-Answer Session

Ted Gest, Senior Fellow, Criminal Justice Journalists, University of Pennsylvania: Professor Berger, could you bring us up to date on jurisdictions that have considered taking DNA samples from every felony arrestee? I think that

has been proposed in many jurisdictions. Could you summarize the arguments for and against that?

M.B.: I think I am going to field that question to Chris Asplen, whom I see sitting right there, who I am sure has a more accurate count than I do.

Chris Asplen, National Commission on the Future of DNA Evidence, Washington, D.C.: I am the executive director of the National Commission on the Future of DNA Evidence. The national trend is certainly toward the inclusion of a greater scope of offenses. By now, there are well over 20 States (probably closer to 30 or 32) that either have, or are considering, felony legislation including all felons. It literally changes weekly as different legislatures grab hold of the idea. In terms of pending legislation regarding arrestees, there are probably well over 12 by now that are actually considering that kind of approach. New York, Michigan, and California entertain the idea every now and then. But I can get you a specific list afterwards if you can give me your card.

Daniel A. Cunningham, Counsel, Office of Legislative Affairs, Administrative Office of the U.S. Courts, Washington, D.C.: When requests are made for postconviction forensic DNA testing, could you give us your opinion as to how courts, both State and Federal, are dealing with those requests and whether or not there is a need for legislation such as the Innocence Protection Act of 2001 (H.R. 912 S.486)?

M.B.: That is a very difficult question to answer because we really have very little empirical evidence on how many requests have been made in the past. Until very recently, only New York and Illinois had statutes that allowed one to make a request for access to DNA testing postconviction, without some kind of a time bar being applied. Most States, if you asked them formally, would tell you that this was governed by their statutes on access to newly obtained evidence and those statutes had time bars in them.

That didn't mean, however, that judges in those States didn't grant requests for DNA testing. They did. They found all kinds of mechanisms for doing so. Sometimes it was done simply because the prosecutor cooperated with the defense counsel. In other words, there was an unofficial way of doing things that obviously led to results in many cases.

At this point something like 30 or 40 States have either passed, or are thinking of passing, legislation that would regulate this area of requests for postconviction DNA testing. Some of those statutes have stringent requirements. Tennessee and Washington, for instance, basically limit their statutes to people who are on death row. Under those statutes someone like the person in Oklahoma who was sentenced to 65 years would not have had a right to apply for DNA testing. Would that have meant that if he had been imprisoned in those States, he would have been helpless to get testing done? Not necessarily. There might well have been a judge who said, "I've got inherent powers; this is an absolute injustice. I am going to order the prosecutor to look for the sample and test." So I think it is very hard to answer this question.

What I do think is very useful about such legislation, as opposed to the informal system that we have had, is that it is generating public attention to the issue and making people aware of how arbitrary and impossible, at times, the legal system has been about correcting errors. It is focusing attention on the factors that are important and need to be taken into account. I think we need to educate people about the issues out there. A legislative initiative does that better, probably, than piecemeal judicial adjudications.

Manuel B. Suber, Metropolitan Police Department, Washington, D.C.: In the Oklahoma case, was the problem with the technician who was conducting the hair analysis or with the recovery of hair from the scene?

M.B.: From what I have read in two articles from the *New York Times*, it sounds as though the problem may well have been with the technician because the articles quote from a number of people who say that they knew there was a problem for years with some of the results in her cases. The *Times* reported that when the FBI investigated, it couldn't come up with the kinds of matches she had come up with using the techniques that she allegedly was using at the time. This case goes back 15 or 16 years. The defendant has served 15 years of his sentence.

But I think that this case points out what has happened since *Daubert* and since DNA. That defense counsel 15 or 16 years ago could have challenged some of these forensic techniques on the basis of "what makes you think that you can match?" After all, the four professors who challenged handwriting analysis in their piece 15 years ago did. But that somehow wasn't being done. I think we have all become more sophisticated. Not just, as I said, with regard to DNA testing, but with all kinds of forensic testing. We are living in a different climate now.

Ellen J. Goldberg, Editor, Bureau of Justice Assistance, U.S. Department of Justice, Washington, D.C.: Last night on "60 Minutes," Dan Rather interviewed the technician in Oklahoma City. One of the things brought up that I had never thought about was the role of the forensic scientists when labs are linked with police departments, and how the scientists viewed themselves as working as extensions of the police department rather than as scientific investigators maintaining their objectivity. I was wondering what you thought about that.

M.B.: Well I think that is certainly a problem. I think it is very difficult at times for the police to retain objectivity when they are investigating a horrendous, horrendous crime and are convinced that they know who did it. And that conviction conveys itself to everyone else working on the case. It is very hard to think of ways to divorce the crime labs from their interaction

with the police. Obviously, independence is needed in many instances, but it has been hard to achieve. With regard to proficiency testing of DNA technicians, I've been told that it is very hard to develop proficiency tests because when you give a lab a made-up sample that purports to come from a case, the first thing that the technician will do is call up the police and ask, "Is there such a case around?" In other words, it's very hard to keep walls between them because they discuss ongoing cases among themselves. I think this issue needs to be studied. One possibility might be to have more than one lab working on a crime to validate the techniques that are used, but, of course, that would cost more money.

This is one of the questions that we are going to have to consider in the future.

Victor Stone, General Counsel, Office of the Corrections Trustee of the District of Columbia, Washington, D.C.: One case that you haven't mentioned, that attained more public renown than any other case is the O.J. Simpson case. I would like to know your views on whether or not the challenges made to the DNA evidence in that case were appropriate and something you think we will see more of, or whether you think there were inappropriate obfuscations that the judge let get out of hand and that other judges will attempt to contain. What are your views as to how that fits in with the future of DNA's admission at trial.

M.B.: Of course, the attack in that case was not on the validity of the DNA evidence or on the validity of the laboratory analysis. It was really on how the evidence was gathered at the crime scene, and everything else followed from that. If the evidence had been planted or moved then even though the analyses were correct, you were going to have error. This is going to be a problem on both the prosecution and the defense sides. I had mentioned a Texas murder-rape case where the prosecution argued that although the semen found on the victim did not contain the defendant's DNA but that of

someone else, that did not prove that the defendant was innocent, because the victim might have had consensual sex with another man, and the defendant might not have ejaculated.

This tactic on the prosecution side is very similar to tactics on the defense side in the O.J. Simpson case. We have very ingenious lawyers in the United States. I think that we increasingly are going to see attempts by both prosecution and defense to come up with scenarios like, "But if this happened, it doesn't prove what the DNA evidence purports to prove." And don't forget that finding the defendant's DNA evidence at a crime scene means only that something associated with that person at some point in time arrived at the crime scene. It does not mean that that evidence was not planted; it does not mean that it wasn't dropped there 6 months earlier. All it means is that at some point that person had contact with that object. I think that the possibility that sophisticated burglars will plant their enemies' cigarette butts at a crime scene is something that we will see. Which is why I think that we really need to beware of putting all of our resources into DNA profiling as if it were a magic bullet and to think as well about other techniques for proving crimes.

The O.J. Simpson case also points out that we have to give careful attention to police training and perhaps to developing more specific protocols of what has to be documented at a crime scene. Certainly we know that all kinds of things went wrong in that L.A. investigation, and we know that all kinds of things seem to have gone wrong with the L.A. police department. Just as one can develop standards for the labs, I think that one could develop better standards at the crime investigation scene, which might eliminate some of these problems. But I do not think that we can ever have a failsafe system that will make everything that investigators do wrong, accidentally or deliberately, go away.

Chris Asplen: Professor Berger, we now have a number of elected district attorneys who are proactively investigating postconviction cases, for example, elected DA's in San Diego, Texas, Minnesota, New York, and the Attorney General's office in Michigan. Even the U.S. Department of Justice has reviewed its death row cases. Given the advent of DNA evidence becoming the predominant focus of these investigations and given the extent to which the adversarial nature of our system is its bedrock, do you see any downsides to prosecutors taking ownership of postconviction review?

M.B.: I see some. I know, of course, the DA in San Diego, Woody Clark, who was on the National Commission, and his staff have been reviewing all the cases in San Diego of people who were convicted and incarcerated before 1992—the time when they really started doing DNA testing actively. They are reviewing those convictions to see whether any of them might be cases in which DNA testing of biological evidence (if they can find it) can possibly clear the person who is convicted.

One thing has disturbed me about these case reviews—although I really don't know to what extent his staff is insisting on the following factor—Clark has said that his office screens only those cases in which the inmate has made a continual claim of innocence throughout the entire period of being incarcerated. That worries me, because we have a fair amount of evidence of false confessions to crimes in the United States. We have a lot of people (as we can see from many of these cases) who are of borderline intelligence who are arrested in these cases. We have enormous pressures at times being brought to bear on suspects. We have confessions that are taken and not recorded. And for all of those reasons, I am a little suspicious that because someone may have said at one point, "OK. OK. I did it," and then has recanted or has never said anything again that that confession should preclude review. Because we know that in some cases there have been vacations of convictions when there were previous confessions or self-incriminatory statements.

I don't know if there are other issues like that that might affect DA review; perhaps someone outside the office of the DA should look at these cases as well.

Thomas M. MacLellan, Policy Analyst, Center for Best Practices, National Governors' Association, Washington, D.C.: With the cost of DNA testing decreasing, a number of States are looking at testing not just felonies but misdemeanors, and some States are considering testing all arrestees. Could you talk about the difference between doing DNA testing at time of arrest and fingerprinting? They are both fairly intrusive but I understand with swabs, DNA testing is a fairly quick procedure; it is not drawing of blood. Could you talk about some of the legal differences or potential differences that you see?

M.B.: In terms of maintaining these huge databanks?

Thomas M. MacLellan: Yes, in terms of databases, if I were arrested for DWI, I'm fingerprinted and my information is uploaded. Police can obviously do the same with DNA evidence.

M.B.: That is a huge issue that I don't think we have time to get into, but certainly one of the differences is, at the moment, there have been huge backlogs in analyzing the DNA that has been taken from convicted felons. Adding arrestees to that backlog would obviously overload the system even more. There are many other concerns about privacy, about racial profiling's impact on who gets arrested in the United States, and what those databanks would then look like, which raise a host of very important issues that need to be kept in mind. But we really do not have time to touch on all of this today.

Notes

1. 509 U.S. 579 (1993).

2. *General Electric* v. *Joiner*, 522 U.S. 136 (1997); *Kumho Tire Co.* v. *Carmichael*, 526 U.S. 137 (1999).

3. National Commission on the Future of DNA Evidence. 2000. *The Future of Forensic DNA Testing: Predictions of the Research and Development Working Group 7.* Washington, DC: U.S. Department of Justice, National Institute of Justice, NCJ 183697.

4. *Id.* at 1.

5. 433 F.2d 431 (6th Cir. 1970).

6. Risinger, D. Michael, et al., 1989. "Exorcism of Ignorance as a Proxy for Rational Knowledge: The Lessons of Handwriting Identification 'Expertise.'" *University of Pennsylvania Law Review* 137: 731.

7. National Institute of Justice. *Forensic Sciences: Review of Status and Needs.* Issues and Practices. 1999. Washington, DC: U.S. Department of Justice, National Institute of Justice, NCJ 173412.

8. *United States* v. *Van Wyk*, 83 F.Supp. 2d 515, 523 (D.N.J. 2000), aff'd, ___ F.3d ___ (3d Cir. 2001).

9. *United States* v. *Fujii*, 2000 WL 1468736 (N.D.Ill. 2000).