

The (Near) Irrelevance of *Daubert* to Criminal Justice and Some Suggestions for Reform

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In the early morning hours of March 20, 1987, L.T., an 8-year-old girl, slept in her bedroom in the family's Billings, MT, home. An intruder pushed a swing set up against the rear of the house, climbed up, and entered the house through an open second floor bathroom window. Once inside, he quietly entered the little girl's room and raped her. After the assailant fled, L.T. woke her mom and dad, who then summoned the police. The police processed the crime scene, interviewed the victim, and collected the underpants stained with semen and a bed sheet covered with scattered hairs. L.T. gave a description of the perpetrator and worked with a police artist to create a composite sketch. An officer at the police station noticed the sketch and remarked to the case detective that the subject bore a resemblance to Jimmy Ray Bromgard, a 12th grader he had recently arrested for assault after a fight at the local high school. Bromgard volunteered to participate in a corporeal lineup and the girl identified him as the rapist.

The police collected reference blood and hair samples from L.T. and Bromgard to compare with the semen stains on the underwear and the hairs recovered from the sheet. As was often the case before the availability of forensic DNA typing, the attempt to identify the less-sensitive ABO blood type of the semen stain was unsuccessful. Therefore, corroboration of the victim's eyewitness identification depended solely on the microscopic comparison of hairs recovered from the bedding. Hairs from the bed sheet along with reference samples from L.T. and Bromgard were delivered to Arnold Melnikoff, the state's hair expert and Director of the Montana Department of Justice, Forensic Science Division.

Melnikoff was a charter member of the American Society of Crime Lab Directors (ASCLAD); held a master's degree in chemistry; and in an era of forensic generalists, his areas of "qualified" expertise included hair microscopy, toxicology, controlled substances,

Daubert v Merrell Dow Pharmaceuticals, Inc should have an extraordinary impact on criminal litigation, because there is rarely a criminal trial that does not rely on some form of expert testimony. In fact, it is almost irrelevant. Despite the frequency of prosecution proffered scientific and expert testimony in criminal cases, *Daubert* is rarely invoked to challenge it.

In civil cases, when expert testimony is challenged in criminal proceedings, the outcome could not be more different. Because most violent crimes are committed by the poor, their court appointed advocates—overworked and underfinanced—are not up to the challenge. In the absence of a system of effective representation, *Daubert* will not improve scientific evidence in criminal cases. The only way to guard against the misapplication of forensic science is to impose controls and reforms long before the cases come to court. (*Am J Public Health*. 2005;95: S107–S113. doi:10.2105/AJPH.2004.056333)

and arson. Melnikoff issued a report before Bromgard's trial in which he concluded that both a questioned head hair and a pubic hair collected from the victim's bedding had the same microscopic characteristics as the head and pubic hairs collected from Bromgard. At the criminal trial, Melnikoff testified that there was only a 1-in-10,000 chance that the hairs came from anyone other than Bromgard. In fact, there was no scientific basis for Melnikoff's statistical assertion.

No formal challenge to the admissibility of the statistics or to the "match" was ever made. Bromgard was convicted and sentenced to a lengthy prison sentence. On appeal, the Supreme Court of Montana affirmed the conviction citing the persuasive testimony of Melnikoff as overwhelming evidence of guilt.

Eventually, Bromgard contacted The Innocence Project (IP), where I am a codirector. We secured postconviction DNA testing on the semen-stained underpants; the test results excluded Bromgard as the source of the semen. In October 2002, his conviction was vacated and the indictment dismissed. Jimmy Ray Bromgard served 15 years for a crime he did not commit. Moreover, the perpetrator of the rape was not identified and brought to justice.

After Bromgard's exoneration, the IP requested that the questioned head and pubic hairs be microscopically re-examined by the Federal Bureau of Investigation (FBI). They

concluded that Bromgard was not the source of either hair; and that the head hair was microscopically similar to that of the victim.

A Lexis search identified two other cases in which the Montana Supreme Court viewed Melnikoff's hair evidence favorably and affirmed convictions. In both cases, postconviction DNA testing on the original semen samples excluded the convicted offenders, and the men were exonerated.

A NATIONAL CRISIS IN FORENSIC SCIENCE

Forensic science can fail in two ways: (1) lacking reliability (i.e., the inability to reproduce valid results); and (2) bias, incompetence, or a lack of adequate internal controls for the evidence introduced by the forensic scientists and their laboratories. Examples of several problematic "sciences" or failed applications used routinely in forensics illustrate these points.

Hair Microscopy

In a recent FBI scientific paper entitled "Correlation of Microscopic and Mitochondrial DNA Hair Comparisons" the authors found that even the most competent hair examiners make significant errors.¹ In 11% of the cases in which the hair examiners declared two hairs to be "similar," DNA testing

revealed that the hairs did not match. To date, 158 innocents have been exonerated in the United States using postconviction DNA testing. In more than one-third of the cases, the misapplication of forensic science (other than DNA evidence) played a role in convicting the individual; at least 30 of the wrongful convictions relied, in part, on hair "matches."²

In some jurisdictions, hair microscopy is being phased out and replaced by the more sensitive and discriminating mitochondrial DNA typing test. Many local prosecutors continue to rely on the microscope; mitochondrial DNA typing remains relatively expensive and is offered in only a few laboratories. In Alabama, for example, a local prosecutor explained that because of resource constraints, he would continue to rely on the same hair microscopy expert who had previously given erroneous testimony. This expert had testified that hair recovered from a rape victim's pubic combings were not the victim's but were consistent with the defendant's hair. Later, DNA testing excluded the defendant and matched the hair to the victim.

Serology

Serology tests can be reliable, yet in 40% of the DNA exoneration cases, conventional serology had been used by the prosecutor to secure a conviction. The case transcripts reveal that in the vast majority of these cases, the crime lab serologist misrepresented the data to the advantage of the prosecution. The very first postconviction DNA exoneration is illustrative.

At trial, the state serologist testified that the semen found in the mixture of body fluids from the victim's underpants matched the blood type of the accused, Gary Dotson. What the serologist failed to disclose was that the type also matched the victim's blood type and that her own fluids could explain the results without implicating Dotson. (Gary Dotson was exonerated by the Cook County, Illinois Criminal Court on August 14, 1989.)

Scientific standards generally prohibit serologists from drawing inferences about the source of the semen when all of the observed genetic markers are consistent with the victim. In dozens of IP cases, however, state crime laboratory serologists ignored these

rules and engaged in prosecutorial bias. The misconduct involves at least 20 serologists in as many different states.

Fingerprinting

Wrongful convictions have also resulted from the misapplication of fingerprint evidence, yet law enforcement, especially the FBI, stubbornly resisted any challenge to this forensic sacred cow. Stephen Cowans was convicted in 1997 of shooting a Boston police officer. Two fingerprint experts told a jury during the trial that a thumbprint left by the perpetrator was "unique and identical" to Cowans' print because it matched at 16 points. In 2004, post-conviction DNA testing on several items of evidence excluded Cowans as the perpetrator.³

A new prosecutor assigned to the case wanted to resolve the apparent contradiction between the two most discriminating forensic sciences. The prosecutor had the thumbprint re-examined by state (rather than city) police experts who quickly concluded that Cowans was not the source of the print. (In the aftermath of the Cowans case, the Boston Police Department retained an outside auditor to review the case. The audit resulted in the department shutting down the latent fingerprint unit.)

In Spring 2004, terrorists bombed the railroad in Madrid, killing nearly 200 people. The Spanish National Police recovered a plastic bag of detonator caps inside a van parked close to the bombsite that were similar to those used in the railroad bombings. At least one sufficiently detailed latent fingerprint was observed on the plastic bag. A digital image of the print was forwarded to the FBI and run through the Bureau's Automated Fingerprint Identification System. The computer selected more than a dozen potential "matches," and a senior FBI fingerprint examiner compared the digital print visually to the numerous "hits." The fingerprint was matched to a Portland, OR resident, named Brandon Mayfield, who had converted to Islam, regularly attended a mosque, and married an Arab woman. Mayfield's fingerprints were contained in the Automated Fingerprint Identification System, database because he had served in the US armed forces. Two FBI fingerprint experts swore in affidavits that they

were 100% certain that the prints belonged to Mayfield. When the Spanish police ultimately arrested the real source of the fingerprint, the FBI initially defended their mistake as the result of a poor digital image.⁴ But if it was so poor, how could they have been 100% certain? And why would the FBI rely routinely on imprecise digital images to provide support for local police departments?

Compositional Analysis of Bullet Lead

Within a week of the Cowans' exoneration, the National Research Council delivered a stinging critique of another forensic method the FBI has relied upon for more than 20 years.⁵ The technique, Compositional Analysis of Bullet Lead (CABL), compares the quantity of various elements that comprise a lead slug recovered from a crime scene with the composition of the lead found in unused bullets seized from a suspect. In criminal cases, to say that two samples match or are similar is potentially relevant, but, unless the jury learns just how rare the match is, its probative value is minimal.

In Compositional Analysis of Bullet Lead cases where the FBI lab described the two bullet samples as indistinguishable, FBI analysts would routinely testify that the bullet from the body came from the same box of ammunition as those found in the defendant's possession. The problem, according to the National Research Council, is that there simply is no scientific basis for such a conclusion. (The FBI deserves credit for requesting the NRC study.)

The FBI never subjected its validation process for peer review or any meaningful internal review of the rigor of its results. Regrettably, the same criticisms can be directed at almost every forensic discipline which attempts to "match" or individualize crime scene evidence. The only difference is that the other forensic techniques have not been scrutinized by the National Research Council.

DNA Typing

In the past 10 years, state and local crime laboratories have been the focus of ad-hoc probes because of flaws and misconduct exposed by postconviction DNA exonerations. In contrast to most forensics, DNA testing has been carefully examined by the National

Research Council and its methods plainly validated. Yet even DNA typing, perhaps the most rigorous forensic discipline, has not been above the fray. The Virginia Division of Forensic Science, for example, issued a formal analysis in 2000, in the Earl Washington case, claiming that the sperm recovered from the deceased victim's vagina originated from an unidentified man. In reality, the semen originated from a known convicted rapist whose DNA profile had previously been matched to the semen recovered from the blanket where the victim was sexually assaulted and stabbed. Testing performed in 2004 by an independent laboratory proved conclusively that the vaginal sperm, like that found on the blanket, matched the convicted rapist.⁶ Sloppiness in the Virginia crime lab had produced an erroneous result but the supervisors refused to acknowledge error nor take corrective action.

Bad forensic science is bad law enforcement. Each time unreliable science, incompetent scientists or crime lab misconduct is used to arrest, indict, or convict an innocent person, the real perpetrator remains free to commit more crime. Faulty forensic science may wrongly exclude suspects. Guilty defendants can be wrongfully exculpated. In criminal cases that use forensic science during the investigation and trial, meaningful precautions must exist to guard against junk science and unreliable results.

THE UNEVENHANDED APPLICATION OF *DAUBERT*

Ten years after the United States Supreme Court decided *Daubert*,⁷ many in the judiciary, the legal academy, and the scientific community herald it as one of the most important decisions of the last century. It obligated trial court judges to assume the role of "gatekeepers" and to exclude proffered scientific evidence unless it rested on scientifically valid reasoning and methodology. Many thought *Daubert* would be the meaningful standard that was lacking in criminal cases and that it would serve to protect innocent defendants.

In *Kumho Tire*,⁸ the Court extended the holding of *Daubert* to all expert evidence, even if not based on hard science. But it is

not a coincidence that both of these cases and almost all of the post-*Daubert* federal appellate decisions that further defined the standard have been civil rather than criminal.

In theory, *Daubert* should have an extraordinary impact on criminal litigation. In 25 years, I have not tried a criminal case in which the prosecutor did not offer some form of expert evidence. Yet, despite the frequency with which scientific and expert testimony is proffered in criminal cases, there is a dearth of *Daubert* challenges and hearings. When the issue is raised in criminal proceedings, the outcome is vastly different than what occurs in civil cases.

An analysis of post-*Daubert* decisions demonstrates that whereas civil defendants prevail in their *Daubert* challenges, most of the time criminal defendants almost always lose their challenges to government proffers.⁹ But when the prosecutor challenges a criminal defendant's expert evidence, the evidence is almost always kept out of the trial. This is true in both federal and state courts. And even though *Frye*¹⁰ remains the test in more than a dozen states, criminal defendants fared no better under *Frye*. In the first 7 years after *Daubert*, there were 67 reported federal appellate decisions reviewing defense challenges to prosecution experts. The government prevailed in all but 6, and even among the 6, only 1 resulted in the reversal of a conviction. In contrast, in the 54 cases in which the defense appealed a trial court ruling to exclude the defendant's expert, the defendant lost in 44 cases. In 7 of the remaining 10, the case was remanded for a *Daubert* hearing.

One case is particularly revealing of the inadequacy of *Daubert* in criminal cases. An Oklahoma state hair expert matched 17 hairs found at the murder scene to two defendants, Ron Williamson and Dennis Fritz. A federal district court judge, in what may be the only successful post-*Daubert* challenge to hair microscopy, indicated that the expert's hair-comparison testimony failed to meet any of the requirements of *Daubert*.¹¹ After the conviction was vacated, the 17 hairs were re-examined using mitochondria DNA testing, and none of them matched either defendant. Nevertheless, in the next 7 years, no other court has concluded that expert hair comparison is not sufficiently scientific. In fact, when a

scandal involving another Oklahoma serologist/hair examiner exploded in the press and the State agreed to re-examine microscopically the hair evidence in dozens of closed cases, the same expert it used in the Williamson trial was enlisted by the State for the re-examination, with full knowledge that he had been wrong 17 times in 17 attempts.

The Fallacy of the "Crucible of the Court"

For years in the forensic science community, the dominant argument against regulating experts was that every time a forensic scientist steps into a courtroom, his work is vigorously peer reviewed and scrutinized by opposing counsel. A forensic scientist might occasionally make an error in the crime laboratory, but the crucible of courtroom cross-examination would expose it at trial. This "crucible," however, turned out to be utterly ineffective.

In not one of the half-dozen most sensational forensic-science scandals of the last 20 years, involving serial fraud and gross misconduct, were the transgressions of "experts" revealed by defense counsel at trial. Dr Ralph Erdman, a Texas state medical examiner, for example, conducted "zipperless" autopsies (without a single incision) and got away with it because the defense failed to seek independent autopsies or re-examinations of postmortem samples. West Virginia's chief serologist, Fred Zain, frequently "dry labbed" serology tests without conducting the actual laboratory experiment in order to produce reports helpful to the police. After a post-conviction DNA exoneration, 35 of Zain's cases were reviewed. In all 35 cases, his bench notes did not support the findings contained in his final reports.¹² His fabrications had not been exposed, because the defendants' lawyers never bothered to review the bench notes.

New York state troopers, in another example, framed more than a dozen defendants with phony fingerprints.¹³ Not until one of the troopers bragged about his exploits at a job interview with the CIA did the truth surface. An investigation by the special prosecutor revealed fabrication in more than three dozen criminal cases over a decade. Five troopers pleaded guilty. Similarly, the Montana State Crime Laboratory Director made up powerful,

albeit false, results for years¹⁴, and the scientifically illiterate Montana judiciary relied on those results to affirm convictions. Not a single defense attorney called in an opposing expert to challenge the data.

In one third of all postconviction DNA exonerations, unexposed scientific fraud, the criminalist's incompetence, or an expert's reckless disregard for the truth at the trial was a significant cause of the wrongful conviction. Regardless of the *Daubert* standard, without zealous investigation and cross-examination of the proffered expert evidence, many improper and even fraudulent uses of scientific data are not exposed.

Statistics substantiate the ubiquity of defense failure to initiate *Daubert* challenges, confirming the rarity in the trial courts of any defense challenge to a prosecutor's proffered expert testimony. State courts receive 200 times more criminal prosecutions than federal courts. Forensic science is used most commonly in crimes of violence, and most crimes of violence are tried in state court. In the first 7 years after *Daubert*, there were a mere 211 reported challenges to prosecution experts in state court, and the prosecution defeated the challenge 161 times. From August 1999 through August 2000, there were only 50 reported challenges to admissibility citing *Daubert* in state criminal cases; in 2000, nearly 15 million criminal filings were made in the State. If no one challenges the speculative science or scientist, there is nothing for a gatekeeper to tend to. Thus, the principal failing of *Daubert* is its misplaced reliance on a robust adversarial system to expose bad science. In reality the playing field is not level, and the system is anything but robust.

Poorly Funded, Unskilled Counsel; an Inadequate Pool of Experts

Why are there so few challenges from criminal defendants' lawyers? Most criminal defendants are indigent. They are represented by public defenders, contract defenders, and private lawyers paid minimal fees by the government. In most states, before an assigned counsel can retain an expert to educate him or her, review the opposing expert's data or conduct independent testing, counsel must secure approval from the presiding judge, an elected county official. The money

to pay for the expert comes from a strained county treasury, and judges are reluctant to authorize expenditures for experts. Unlike prosecutors with free access to government medical examiners and publicly funded crime labs, defense counsel must usually seek independent contractors, and then, if the client is indigent, only with the court's permission. The FBI supplies free services, but only for prosecutors and police.

Unlike the extremely well-litigated civil challenges, the criminal defendant's challenge is usually perfunctory. Even when the most vulnerable forensic sciences—hair microscopy, bite marks, and handwriting—are attacked, the courts routinely affirm admissibility citing earlier decisions rather than facts established at a hearing. Defense lawyers generally fail to build a challenge with appropriate witnesses and new data. Thus, even if inclined to mount a *Daubert* challenge, they lack the requisite knowledge and skills, as well as the funds, to succeed.

Lawyers are not the only problem—judges have to share some responsibility. In *Barefoot v Estelle*,¹⁵ the Supreme Court sustained the admission of psychiatric testimony during the penalty phase of a capital case from Dr James Grigson who, without ever examining Mr. Barefoot, opined under oath that there was "... a one hundred percent and absolute chance that Barefoot would commit future acts of criminal violence." Justice Blackmun, who years later authored *Daubert*, dissented: "In the present state of psychiatric knowledge this is too much for me. One may accept this in a routine lawsuit for money damages, but when a person's life is at stake ... a requirement of greater reliability should prevail. In a capital case, the specious testimony of a psychiatrist, colored in the eyes of an impressionable jury by the inevitable untouchability of a medical specialist's words, equates with death itself."

Justice Blackmun's principled critique of the adjudicative process is plainly correct. The reality is that if a corporation is sued for millions of dollars in a toxic tort case, plaintiffs' attorneys hire scientific experts because they stand to share in any settlement or award. The substantial legal fees paid by the corporation enable civil defendants to secure the services of equally well-regarded experts.

Judges consider the science with far greater scrutiny and caution.

If You Can't Discover the Underlying Data, There is Nothing to Challenge

The discovery available by statute and case law to a defendant who is sued for money greatly exceeds the discovery available for a defendant facing execution. In Texas, the state that leads the nation in executions, a criminal defendant is not by statute entitled to see before trial the laboratory bench notes for tests conducted on the case evidence. All that he gets is a conclusory report without the underlying notes. In Virginia, the state that is second to Texas in executions, the state's highest court has explicitly held that a defendant facing execution is prohibited from reviewing the bench notes of the state forensic scientist who will be providing the most inculpatory evidence at trial.¹⁶

In the 1999 rape prosecution of Josiah Sutton, a Houston Police Department Crime Lab DNA report furnished to Sutton's attorney was sparse. It merely stated that the DNA testing of Sutton's semen could not exclude him. Four years after his conviction, and once the notorious Houston Crime Lab scandal broke in the press,¹⁷ the bench notes were disclosed to Sutton's attorney for the first time. The notes revealed that in all likelihood Sutton was excluded as a source of the semen in the original testing. Additional DNA testing in 2003 confirmed Sutton's innocence in the case, and he walked out of prison.¹⁸

Beware of Experiments Conducted for Purposes of Litigation

Clinical laboratories deserve greater public confidence than crime laboratories because of the relatively extravagant validation studies and rigorous review by the Food and Drug Administration that precede the transfer of laboratory technology from research to clinical application. With the exception of DNA analysis and possibly a few other disciplines, no validation studies or "trials" exist for most forensic sciences before the technology is used in real casework. Professional fingerprint publications, unlike scientific publications, do not contain critiques and reanalysis by other scientists, but instead focus on how to lift prints.

When *Daubert* was remanded to the 9th Circuit, Judge Kozinski warned of the dangers of giving too much credence to scientific tests conducted for purposes of litigation. Whereas he favored greater deference to findings derived from academic research, he cautioned that the objectivity of the scientist and, thus, the results generated were compromised whenever the experiment is conducted for a specific case.¹⁹ In writing his *Daubert II* opinion, Judge Kozinski eliminated criminal litigation from his caution about science conducted for litigation purposes. He reasoned that in criminal cases, *all* scientific experiments are conducted for the purpose of litigation. Instead of realizing the inherent danger of bias in the experiments conducted during criminal investigations, Judge Kozinski, without proper justification, dismissed this concern altogether.

The danger is neither abstract nor hypothetical. The "examiner bias" phenomena is well known in most applied sciences. In clinical medicine, for example, studies have documented unintended bias resulting from the examiner's exposure to irrelevant case information, increasing the likelihood of a false positive.²⁰ In criminal investigations, it is routine for police to offer a detailed narrative of the crime and an inventory of whatever other inculpatory evidence they have against the suspect on the request form used to order a particular scientific test. A 1997 Department of Justice Inspector General's investigation of the FBI revealed that examiners in some units knew of the conclusions of examiners in other units and tailored their own conclusions to be consistent. (The Stacey Report found that examiner bias—and not the quality of the digital image—was the primary cause of the false match in the Madrid train bombing case. Moreover, the panel found that independent verification is likely to fail and examiner bias is of greater danger in high profile cases.)

The truth is most crime labs work hand-in-glove with law enforcement agencies and prosecution services. Examiner bias is systemic. Prosecution "team" identification is chronic. Thus, even the logical constructs imposed by *Daubert* on trial courts are not evenly applied to the forensic and clinical sciences.

REFORMS UPSTREAM OF THE COURTHOUSE

The IP's detailed examination of police and expert investigations, prosecutions, and trials of the first 138 of 158 postconviction DNA exonerations provides unprecedented insight into the most prevalent causes of wrongful convictions. Because of the conclusive, objective nature of DNA exonerations, these cases offer a unique window into systemic flaws that lead to unjust results. In more than 33% of the DNA exonerations, material misstatements of fact by forensic scientists played a significant role in the wrongful convictions.² Most common were (1) conclusions without any scientific basis; (2) reports that ignore data or deliberately distort data; (3) testimony that ignores or deliberately distorts the report; and (4) testimony and report writing clearly beyond the competence of the examiner. None of these material misstatements of fact were adequately revealed and remedied during the trial or appellate process, and but for the fortuitous DNA exoneration, they would have remained obscured.

The judicial process has failed to provide obligatory controls to ensure the fairness of the proceeding. If the courts cannot be relied on for this protection, other remedies must be found further "upstream" so that the disreputable evidence is never proffered. Below I describe possible reforms: systems of audits, accreditation and quality assurance, and validation. The suggested reforms start from the premise that although greater judicial oversight would be welcome, in the absence of a meaningful, well-funded, and well-staffed indigent criminal defense system, the courts will be unable to provide effective relief no matter how rigorous the standard for admissibility of scientific evidence. The sequence of reforms, similarly, is prioritized according to which is most doable in the shortest time.

Reform 1: Independent External Audits to Investigate Instances of Misconduct or Gross Negligence

To enhance the integrity of forensic science results, Congress might encourage a simple yet fundamental program: external independent audit and investigation. Congress has provided generous support for forensic DNA

typing, but experts estimate that only 20% of violent crime investigations will benefit from evidence suitable for DNA testing. Because other forensic disciplines lack the heightened scientific dimension of DNA, measures are needed to raise their standards of performance. There is simply no better way than external audits to investigate the scope of a problem and to remediate, thus reducing the risk of it happening again.

The US Department of Justice Inspector General delivers independent oversight to the FBI crime laboratory. When it was revealed that a FBI crime lab scientist failed to follow a required control in casework, instead of relying on the Bureau's internal affairs mechanism, the Inspector General (IG) opened an independent investigation to assess the scope of the failure, the potential impact on prosecutions, the reason existing quality controls failed, and to recommend remedial action to reduce the risk of recurrence.²¹ Although the FBI lab is accredited by the American Society of Crime Laboratory Directors–Lab Accreditation Board (ASCLD/LAB), the routine internal audits and external inspections currently mandated by ASCLD/LAB do not (nor are they meant to) address these special circumstances. As a consequence of the IG investigation, the Bureau retested evidence in more than 100 cases assigned to the reckless scientist. The reality in most states is strikingly different. Generally, the states have no established and readily accessible independent forensic auditors. All too frequently, local officials with a stake in the outcome of the investigation refuse to give up control of the inquiry to independent experts. In Montana, in the aftermath of the Bromgard exoneration, a peer-review committee comprised of the nation's top hair examiners urged the Montana Attorney General to establish an external independent audit committee to re-examine the hairs in the few hundred felony cases in which Melnikoff provided hair analysis. Montana's Attorney General, who had supervisory responsibility for several of the prosecutions that relied on Melnikoff and who personally relied on Melnikoff when he was a local prosecutor, refused to appoint an independent investigator and refused to order the re-examination of Melnikoff's Montana casework. The ongoing scandal at the Houston

Police Department Crime Laboratory reveals that erroneous results were produced in several cases and in more than one forensic discipline. But the investigation had been obstructed by a local county prosecutor who, as a matter of routine, relied on the lab in thousands of criminal prosecutions. Despite the protest of elected state and local officials demanding that the district attorney's conflict of interest mandates his recusal, he refused to step down. Ultimately, responding to a tidal wave of bad press, the city government contracted with an independent auditor with extensive expertise.

Congress might require independent external investigations into allegations of serious negligence or misconduct committed by employees or contractors of the forensic laboratory, as a condition of federal funding to state and local crime labs. Ultimately, the audit function should illuminate what went wrong and how to make it right, thereby reducing the risk of future mishaps. The essential elements of the certification would include:

- (1) Investigators must be independent of the entity being investigated. Investigators do not report to or depend on the laboratory for any resource or benefits. Investigators do not rely on the results of the laboratory in a professional capacity.
- (2) Investigators must have adequate experience and qualifications and be trained in conducting similar reviews.
- (3) Resources must be adequate to conduct a professional and thorough investigation.
- (4) Protocols must be established for conducting investigations.
- (5) Adequate quality control for the investigation must be established.

A standard format for the report must be established, with a presumption that the report will be made public. The report shall address the individual conduct and scope and, where appropriate, make systemic recommendations for improvement and order re-examination of casework. The report should contain adequate documentation and support for the findings.

It makes more sense to delegate this investigatory responsibility to the states than centralize it with the Department of Justice IG. The expansive and extensive oversight neces-

sary to monitor adequately all forensic disciplines in all state and local laboratories receiving federal funding could overwhelm the IG. The load is lightened considerably if spread among the states. Moreover, there is broad concern that state criminal justice systems should have the freedom and flexibility to implement their own integrity controls. A concern for federalism can be satisfied if Congress delegates to the states the responsibility of creating or identifying a pre-existing independent investigative mechanism but at the same time requires that the state system be certified by the Department of Justice IG. (One week before the 2004 election, the President signed into law the Justice For All Act (Public Law 108-711). Section 311(4) of the law provides that as a condition of receiving Coverdell federal grant money to aid state and local crime labs, states are required to certify that "... a government entity exists and an appropriate process is in place to conduct independent external investigations into allegations of serious negligence or misconduct substantially affecting the integrity of the forensic results ...")²²

Reform 2: A National System of Accreditation and Quality Assurance, and Independence from Law Enforcement

Forensic science is to criminal justice what clinical laboratory science is to health care. Health and public safety depend on the integrity of the product. The consumer of clinical medicine receives a measure of protection through government-imposed and -regulated quality assurance and quality control. Defendants, victims, and the public would derive comparable protection from government-imposed oversight to ensure the integrity of forensic science before it gets to court. But whereas a national regulatory scheme has been in place for clinical laboratories since 1968, there is simply no national or, with one exception, meaningful state regulation of forensic science. Instead, the protections to avoid compromised evidence are few, and the measures to investigate and address abuses once they are discovered are virtually nonexistent.

There is an excellent model for the regulation of government crime laboratories: The Clinical Laboratories Improvement Act of

1967, amended in 1988. The Act established a system of accreditation and proficiency testing for clinical laboratories that service the medical profession. In contrast, with the exception of New York, no state or local crime laboratory is actively regulated by any government agency. The problem is exacerbated by the lack of any formally enforced objective criteria for interpreting, reporting, and testifying about forensic data.

Most of the crime laboratories are resistant to any oversight. Additionally, in an effort to fend off a Clinical Laboratories Improvement Act-type regulatory approach, some public crime lab directors have urged their colleagues to voluntarily seek accreditation through their private professional organization, ASCLD/LAB. Paul Ferrara, chief of Virginia's Bureau of Forensic Science, told Congress that just as doctors and lawyers regulate themselves through professional associations, so should crime labs. This is simply not true. (In part, as a result of laboratory's errors in the Earl Washington case, Virginia enacted legislation that, for the first time, will provide some measure of scientific oversight of the state's crime labs.)

Although unquestionably, ASCLD/LAB fulfills a critical role in the overall improvement of the delivery of forensic services, they cannot be the final arbiter. When lawyers or doctors engage in misconduct, there are government institutions that intervene. When matters of public health and safety are at stake, the American Medical Association and the American Bar Association do not have the last word. How would consumers react to selecting meat at the grocery if the label read "Certified by the Meatpackers Association," instead of the US Department of Agriculture?

Many of the forensic abuses are indicative of prosecution bias. These laboratories should be independent of police control. The government, not private laboratories, produce almost all of the forensic evidence offered by prosecutors. Of the government labs, 80% are controlled by police; most, if not all, will only examine evidence submitted by the police or a district attorney. The Josiah Sutton exoneration precipitated a broader review of the Houston Police Department Crime Laboratory. One of the more serious lapses revealed in a superficial investigation is that the

underlying data do not support the conclusions of the forensic scientist in the official report or in courtroom testimony. In both DNA and ballistics cases, Houston police criminalists misrepresented the data to advance the prosecution theory of guilt. This can be prevented, in part, by "blind" testing and prohibiting examiners from receiving crime data extraneous to the specific scientific test. Laboratories need to control the flow of information from police to the forensic scientist. They can continue to assist law enforcement and prosecutors without performing as subordinates. In some jurisdictions, the office of medical examiner serves this purpose. But unfortunately, all too frequently, the medical examiner also sees itself as a member of the prosecution team.

Reform 3: A National Institute to Validate Technologies, Methodologies, and Set Standards for Interpretation of Data

Basic research for medicine is underwritten by the National Institutes of Health. Both Clinical Laboratories Improvement Act and the Food and Drug Administration provide essential controls for the interpretation of clinical laboratory data. There is nothing comparable for forensic science. Truly independent forensic research does not exist. Most of the studies are commissioned by the Department of Justice and carried out by the crime labs with a significant bias in the outcome. For most forensic science, there are no enforceable standards for individual interpretation of data. The President's DNA and Forensic Science initiative announced during the summer of 2003 acknowledges the seriousness of the present deficiencies and calls for the establishment of a National Forensic Science Commission to spearhead the effort to improve the delivery of forensic services. That commission is included in the Justice For All Act.

These problems could be remedied by the creation of an institute of forensic science, jointly operated by a medical school and law school or as a necessary extension of the National Academies of Science. It could provide the necessary conflict-free environment augmented by rigorous academic policies and procedures. Federal grants to the institute could finance objective research, necessary

validation studies, and peer review. Moreover, the synergy of law and medicine would enhance the development and implementation of appropriate standards and controls for reporting scientific results in writing and in court. The effort will fail, however, unless it is managed jointly by scientists and legal scholars who are independent of as well as those who work with law enforcement.

CONCLUSIONS

Although scientific evidence is often more reliable than other types of evidence, not all that purports to be "science," is. Rules of admissibility promulgated by courts and legislatures do not function well in a criminal justice system devoid of effective defense for indigent defendants. Thus, intervention and quality control must occur further upstream in the process. The easiest quality control would be to institutionalize external investigations. But more is needed. Government oversight and the creation of independent academic centers to validate technologies and techniques, encourage best practices, and enforce appropriately cautious standards for the interpretation of data could dramatically enhance the reliability of forensic science and engender greater public confidence in the outcome. ■

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