

Contextual Contamination of Forensic Evidence by Post-Conviction Litigators

John M. Collins and Jay Jarvis
Crime Lab Report, 1921 W. Wilson Street, Suite A-252, Batavia, IL 60510

May 12, 2009

NOTE: This is the pre-publication draft whose final and definitive form was published in the 2009 Journal of the Institute for the Advancement of Criminal Justice, an annual journal published in cooperation with the California District Attorney's Association.

ABSTRACT

This paper expands on research reported by the authors in a 2009 article titled “The Wrongful Conviction of Forensic Science.” Since that study, which was published in *Forensic Science Policy & Management*, additional convictions have been overturned as the result of post-conviction litigation and the use of DNA evidence. Since 1989, over 230 convictions have been overturned. Representatives in the innocence network continue to work diligently to identify wrongfully convicted prisoners and secure their immediate release.

The authors argue, however, that the intense activism surrounding post-conviction litigation introduces a potentially catastrophic form of contamination to post-conviction proceedings. The authors refer to this phenomenon as *contextual contamination*, which is the misapplication of circumstantial information during the legal and judicial interpretation of scientific findings. Because DNA exonerations, as they are commonly called, often occur so long after the original crimes were committed, newly acquired scientific findings, however accurate or valid they may be, can be improperly applied by litigators and judges who fail to consider the full significance and probative value of the forensic evidence.

“The authors argue, however, that the intense activism surrounding post-conviction litigation introduces a potentially catastrophic form of contamination to post-conviction proceedings.”

From the perspective of the forensic science community, contextual contamination has also caused a serious problem outside of the courtroom. An energetic and persistent public policy campaign has been fueled by post-conviction litigation activists who blame faulty forensic science for being a leading cause of wrongful convictions. In this paper, the authors will provide a historical background for this campaign and demonstrate through actual case studies how serious the threat of contextual contamination is to the American criminal justice system and the safety of the public.

AUTHORS' NOTE

The conclusions and opinions expressed in this paper are solely those of the authors and do not necessarily reflect the views of any persons or organizations with whom the authors are affiliated or employed. The authors also wish to emphasize that they have no

official opinion regarding the guilt or innocence of any individuals discussed in this paper. Readers are strongly encouraged to draw their own conclusions about a case only after they have independently researched all of the available information. The facts surrounding criminal cases such as the ones discussed here are complex and may not be entirely accessible to the public.

1989 – 2009: Twenty Turbulent Years

The year 2009 marked the end of what was possibly one of the most fascinating and compelling periods in the history of American criminal justice. It began twenty years ago on January 24, 1989 when one of the most infamous serial killers in United States history

“The year 2009 marked the end of what was possibly one of the most fascinating and compelling periods in the history of American criminal justice. It began twenty years ago on January 24, 1989 when one of the most infamous serial killers in United States history was executed.”

was executed. A crowd of nearly 200 people gathered outside the state prison in Starke, Florida to cheer when they learned that Theodore “Ted” Bundy had died in the prison’s electric chair.¹ His execution sent shock waves through a large community of death-penalty opponents whose efforts to convince public policy makers that capital punishment was inappropriate for criminals as violent as Bundy were losing their effectiveness. But only seven months later on August 14, 1989, the tide quickly turned when Gary Dotson became the first man to be released from prison after DNA tests were used to demonstrate his innocence.²

The realization that scientific evidence as robust and reputable as DNA could be used to prove the innocence of wrongfully convicted defendants was a new opportunity that eventually gave birth to the modern innocence movement. Until that time, public opinion over the death-penalty was divided along ideological lines. The resulting lack of a strong public consensus created a heavy burden on those seeking to abolish the death penalty for good. But in the face of new scientific evidence that revealed horrific errors committed by our justice system, it became evident that public support for the death penalty might eventually subside on its own. As a result, the vigorous movement to abolish the death penalty in the United States, which was so active during the decade of the 1980s³, quickly gave way to a new and more powerful campaign to identify wrongly convicted prisoners and advocate for their immediate release.

The Innocence Network

Beginning in 1993, specialized educational clinics affiliated with law schools and journalism schools throughout the United States (known as Innocence Projects) were established to review the cases of prisoners claiming to be innocent.⁴ This concept, made famous by well-known criminal defense attorneys Barry Scheck and Peter Neufeld in New York, has been a successful one. Young students eager to make a difference while learning the nuances of criminal law are able to study actual cases in significant detail within a clinical setting. Further action is taken when a case is identified as having evidence that could realistically demonstrate the innocence of the prisoner. In most

instances, this involves the existence of biological evidence that can be subjected to modern DNA testing techniques.⁵ Since the exoneration of Gary Dotson in 1989, over 230 convictions have been overturned due to the efforts of the Innocence Project in New York City and its affiliates throughout the United States.⁶

The authors recognize the overwhelming value of the innocence network and its focus on correcting the human tragedy of wrongful convictions. But in a 2009 article titled *The Wrongful Conviction of Forensic Science*, John Collins and Jay Jarvis chronicled what they described as erroneous public

policy rhetoric emanating from several high-profile activists within the innocence network.⁷ Much of this rhetoric disparaged the forensic sciences to the extent that reasonable people might be persuaded to distrust the work being performed in America's crime laboratories. But as Collins and Jarvis observed, another factor magnified the problem considerably:

“Since the exoneration of Gary Dotson in 1989, over 230 convictions have been overturned due to the efforts of the Innocence Project in New York City and its affiliates throughout the United States.”

“To the advantage of many within the innocence network, these statements were rarely, if ever, subjected to any serious examination and were quick to appear as front-page stories in major newspapers throughout the United States. With public enthusiasm for forensic science being so widespread, the notion that it could actually be contributing to the imprisonment of innocent citizens was a story too compelling to ignore.”⁸

The National Academy of Sciences Report of 2009

A dramatic close to these twenty turbulent years came in February 2009 when the National Academy of Sciences (NAS) in Washington, D.C. released one of the most anticipated reports in its history titled “Strengthening Forensic Science in America – A Path Forward.” Despite how it was characterized in the media, the report was largely the result of cries from the forensic science community calling for an objective evaluation of the profession and the identification of areas where resources were most needed.⁹ For years, leaders in the forensic science community advocated for the infusion of funds into the forensic sciences so that laboratories could keep pace with growing demand and research could be conducted to better demonstrate the validity of the most commonly practiced disciplines. Senator Richard Shelby of Alabama was a key proponent. In 2006, he urged the National Academy of Sciences to study the problems facing America's forensic science laboratories and develop ways to help solve them.¹⁰ The result was the creation of the *Committee on Identifying the Needs of the Forensic Science Community*.

Contrary to some perceptions, the committee's historic report did not claim or conclusively demonstrate that the most commonly practiced forensic disciplines were unreliable. In some instances, the report argued quite the opposite. “For decades, the forensic science disciplines have produced valuable evidence that has contributed to the successful prosecution and conviction of criminals as well as to the exoneration of innocent people.”¹¹ The primary concern raised by the report was the “substantial evidence indicating that the level of scientific development and evaluation varies substantially among the forensic science disciplines.”¹² In other words, the committee recognized the need for a more robust and accessible body of research that would allow the validity of these disciplines to be verified.

The reason, however, that the NAS report represented the end of such a tumultuous and contentious period was the necessity it created for collaboration and the establishment of good partnerships to ensure that the forensic sciences are given the support that they need. For the most vitriolic activists in the innocence network, this will not necessarily be good news. As forensic science practitioners expand their collaborations with reputable academic institutions, the authors argue that there will be a decreasing tolerance for public policy recommendations that are based on ideological propaganda.

Dr. Roger Kahn is the former president of the American Society of Crime Laboratory Directors and a practicing DNA expert in Texas.¹³ He recently remarked about the precedent for science to transcend ideology. According to Kahn, “this clearly happened with DNA after the second report by the National Research Council on DNA testing. It led to important research and publications that resolved a variety of statistical questions in a rigorous manner. In doing so it strengthened the underpinnings of forensic DNA.”¹⁴

Unfortunately, the NAS report of 2009 had a major flaw. Its authors lent credence to accusations that forensic science malpractice and invalid forensic methods are significant causes of wrongful convictions without any authoritative, objective research cited to support those claims. The report noted that “in some cases, substantive information and testimony based on faulty forensic science analyses may have contributed to wrongful convictions of innocent people.”¹⁵ It also claimed that “imprecise or exaggerated expert testimony has sometimes contributed to the admission of erroneous or misleading evidence.”¹⁶ But no attempt was made to evaluate the frequency and severity of these instances. In light of the fact that erroneous forensic science was presented in the report as a major reason to create a new federal bureaucracy to oversee the forensic science community, it is surprising that the NAS report did not demand a more objective and thorough review of cases where forensic science malpractice is blamed for wrongful convictions and other complications occurring in criminal trials.

“For the most vitriolic activists in the innocence network, this will not necessarily be good news. As forensic science practitioners expand their collaborations with reputable academic institutions, the authors argue that there will be a decreasing tolerance for public policy recommendations that are based on ideological propaganda.”

Contextual Contamination of Forensic Evidence

It is the opinion of the authors that the blame assigned to faulty forensic science for wrongful convictions is a myth perpetuated by a psychological phenomenon known as *contextual contamination*, which has been shown to complicate psychological experiments by creating inappropriate central-tendencies and anchoring effects.¹⁷ As it applies to the interpretation of forensic evidence, this means that certain circumstances and conditions can cause scientific findings to be misconstrued as confirming guilt or innocence when, in fact, they do not. It also means that forensic evidence and testimony presented at trial can be unfairly characterized as faulty when, in fact, it was not.

The Mischaracterization of Forensic Evidence as Being Faulty

It was a hot and humid evening in Burlington, N.C. on July 28, 1984. “Jennifer Thompson, then a 22-year-old college student, went to bed early in her off-campus apartment. As she slept, a man shattered the light bulb near her back door, cut her phone line, and broke in.¹⁸ Thompson awoke to find a man pressing a knife blade to her throat. When she offered the man credit cards, money, and even her car, he simply said ‘I don’t want your money.’”¹⁹

As she was being raped, Jennifer Thompson consciously focused on memorizing details about her attacker in the hopes that she would be able to identify him in the future. According to Thompson, she was “just trying to pay attention to a detail, [so] that if I survived, and that was my plan, I’d be able to help the police catch him.”²⁰

Eventually, she would identify 22-year-old Ronald Cotton, a local restaurant worker with a criminal history of pleading guilty to breaking and entering and sexual assault. Thompson was certain that Cotton was the man who had raped her and it would take only 40 minutes for a jury to agree with her and sentence Cotton to 50 years in prison. Two years later, Cotton would also be convicted of a second rape that occurred around the same time.²¹

After eleven years in prison, DNA evidence helped to reveal Cotton’s innocence. It also confirmed the real identity of Jennifer Thompson’s rapist, Bobby Poole, who was being held in the same prison as Ronald Cotton for a separate offense. In fact, their physical appearances were so similar that inmates frequently mistook Cotton for Poole and vice versa. But it was during the coverage of the O.J. Simpson murder trial in 1995 that Ronald Cotton learned about DNA evidence and began his own crusade to conclusively prove that his conviction was erroneous.²² Jennifer Thompson and Ronald Cotton, who are now friends, work collaboratively to help raise awareness about the risks of eyewitness identifications.²³

By all accounts, the conviction of Ronald Cotton was overwhelmingly fueled by the certainty of the victim in her identification of Cotton. During the trial, Thompson pointed to Cotton and affirmed “Cotton is the man who raped me.”²⁴ The only forensic evidence presented to jurors in the case, however, was “a piece of foam found [at the crime scene] that seemed to come from one of his shoes.”²⁵ Investigators later determined that the material was consistent with a pair of athletic shoes worn by Ronald Cotton – but inconsistent with material in Jennifer Thompson’s shoes.

Despite the fact that “the foam rubber could have come from any one of a thousand athletic shoes in Almanac County, the possibility that it might have matched one of Ronald Cotton’s shoes provided police reason to believe [that it may be a link] to the perpetrator.”²⁶ Perhaps this is why the Innocence Project, as in many other cases, lists “invalid or improper forensic science”²⁷ as a contributing cause of Ronald Cotton’s conviction.

What is troubling about those who blame faulty forensic science for Cotton’s conviction is their apparent lack of interest in whether the foam rubber was actually consistent with Ronald Cotton’s shoes. Indeed, from a scientific perspective, this would be the primary consideration in determining whether or not the forensic evidence was improper. It would also matter whether or not the significance of the evidence was exaggerated during the trial. But no indication was found in the public record that such an instance of malpractice occurred. This includes summaries of the Ronald Cotton case published by the Innocence Project²⁸, the Center on Wrongful Convictions at

Northwestern University²⁹, and the website for the Department of Justice’s DNA Initiative.³⁰ The fact that DNA evidence was eventually used to demonstrate Cotton’s innocence has no bearing on the validity of any forensic tests that were presented at his trial.

The Steven Barnes Case

Another high-profile case that became distorted by the Innocence Project was the conviction and exoneration of Steven Barnes. “Barnes was convicted in 1989 for the rape and murder of Kimberly Simon, whose body was found four years earlier near the Mohawk River in upstate New York.”³¹ He was released from prison on January 9, 2009 when DNA testing “yielded conclusive results on sperm cells from the victim’s body and clothing – none of which matched Barnes.”³²

Forensic evidence presented by the prosecution during Barnes’ trial included soil samples collected from the tires of Barnes’ truck, which were similar to soil samples collected from the crime scene.³³ “Expert testimony was also given that an imprint on the outside of the same truck was *similar* to the fabric pattern of a particular brand of jeans worn by the victim when she was killed.”³⁴ In a commentary published on February 18, 2009 by Crime Lab Report, it was noted that one of the lead forensic examiners who testified in Barnes’ trial stated emphatically “that the soil and fabric-pattern evidence were non-specific and could not be used to identify the perpetrator.”³⁵

“Sadly, Innocence Project cofounder, Barry Scheck, used the occasion of Barnes’ exoneration to blame wrongful convictions on bad forensic science.”

Sadly, Innocence Project cofounder, Barry Scheck, used the occasion of Barnes’ exoneration to blame wrongful convictions on bad forensic science. “This is the latest in a long line of wrongful convictions based on improper or invalid forensic science that were ultimately overturned through DNA testing,” Scheck noted. “Until there are clear national standards about what kind of forensic science can be allowed in court, more people like Steven Barnes will be wrongfully convicted while the actual perpetrators of violent crime remain at large.”³⁶

DNA Activism – An Emerging Threat to Public Safety

“It is critical to understand that DNA tests did not exonerate Ronald Cotton or Steven Barnes. In fact, DNA has never exonerated anyone.”

It is critical to understand that DNA tests did not exonerate Ronald Cotton or Steven Barnes. In fact, DNA has never exonerated anyone. In the Barnes case, for example, it was the compelling arguments made by Innocence Project representatives, who first took on his case in 1993, that the DNA tests were proof of innocence.³⁷ The foundation of this argument necessarily rested on the assumption that the sperm cells recovered from the victim were deposited as a direct result of her rape. Any possibility that they were deposited prior to the rape as a result of consensual sex with another partner would have to be ruled out in order

for the DNA tests to be interpreted as evidence of factual innocence. In many cases, this may depend entirely on the word of the victim.

Forensic science is incapable of determining guilt or innocence. The term DNA exoneration, used so frequently by journalists who report on overturned convictions, is a misnomer. DNA does not exonerate innocent prisoners – people do. As the Ronald Cotton and Steven Barnes cases demonstrate, very critical and sensitive leaps of logic are needed to cross the line that divides a DNA test result from the confirmation of innocence. Even though DNA results may seem intuitively exculpatory, extreme caution must be exercised. For this reason, the use of DNA evidence to overturn previous convictions is a profoundly serious matter that should be left to the devices of equally serious professionals.

In a 2001 interview of Innocence Project cofounder Peter Neufeld, which was aired by University of California Television, host Harry Kreisler asked Neufeld what “kept him going” despite the toll that his civil rights work must take on his personal life. Neufeld’s answer was revealing:

“The real thing is a desire to see things change. And to the extent that [a] case can have an impact on affecting the minds of just twelve people, not just about this case, but perhaps prospectively changing their outlook on justice, on racism, on the drug wars, on sexism, and on all kinds of issues is something that’s terrific to be a vital part of.”³⁸

In professional environments where scientific thinking is deemed critical to achieving successful and reliable outcomes, the desires that Neufeld explained are considered to be a dangerous contextual bias. In the world of science, efforts to change the status quo simply for the sake of change are risky when such efforts are not guided by reliable research or the thoughtful consideration of alternative hypotheses.

In a 2006 article published in *Forensic Science International*, researchers Itiel Dror, David Charlton, and Ailisa E. Peron of the School of Psychology at the University of Southampton warned of the dangers of bias in searching for the truth. They explained that “professionals must be able to dissociate themselves from extraneous contexts and other influences that may interfere with their ability to examine, evaluate, and judge the relevant information.”³⁹

To the extent that the public policy tactics of the Innocence Project and its affiliates in the innocence network are haphazard and inconsistent, difficult questions should be asked about the capacity of post-conviction litigators to honestly and properly interpret the significance of forensic test results. Furthermore, intense desires to seek exonerations should be construed as a contextual bias that requires due caution to be exercised. As Judge Morris Hoffman pointed out in an article published by the Chicago-Kent Law Review in 2007:

“To the extent that the public policy tactics of the Innocence Project and its affiliates in the innocence network are haphazard and inconsistent, difficult questions should be asked about the capacity of post-conviction litigators to honestly and properly interpret the significance of forensic test results.”

“Sadly, the empirical literature on wrongful convictions is itself woefully infected with the mythology of factual innocence. Part of the problem, of course, is definitional. How does one determine factual innocence after the system—whose whole purpose is

supposed to be truth-finding—has determined, whether by plea or trial, that a defendant is in fact guilty? This is the mother of all confirmation bias problems.”⁴⁰

The Rape and Murder of Sharra Ferger

The potential injustices that can result from the misinterpretation of post-conviction forensic evidence were thankfully, by all accounts, avoided after the tragic death of a beautiful nine-year-old girl in Pasco County, Florida. “On October 3, 1997, nine year-old Sharra Ferger was lured out of her... home late at night and found murdered the next day. On the night she was abducted, she was wearing a green T-shirt she often wore to bed. She was stripped from the waist down. Two men then took turns raping her, one viciously biting her shoulder. They also scratched and beat her. She was then stabbed 46 times, 9 times in the head.”⁴¹

Garry Cannon, 17, was convicted for the murder but could not be executed due to his age at the time of the crime. According to a report in the *St. Petersburg Times*, Cannon was linked to the crime through DNA evidence. A second perpetrator, Sharra’s uncle, Gary Cochran, 39, would plead guilty a year later.⁴²

What makes this case so instructive was the potential for a wrongful exoneration if the circumstances had been just a bit different. The only forensic evidence linking Cannon to the murder was DNA evidence. Cochran’s role, on the other hand, was confirmed by the comparison of his dental impressions to a deep bitemark found on Sharra Ferger’s shoulder. But if DNA tests had not initially linked Cannon to the murder, and if Cochran had been convicted based on the bite-mark evidence, Cochran might later have been exonerated when subsequent DNA tests revealed that he, in fact, was not the contributor of biological evidence collected from Ferger’s body. Based on what is known now, this could have been a wrongful exoneration resulting from the contextual contamination of the forensic evidence.

One could argue that this scenario is unreasonable because Cochran would likely have snitched on Cannon. But if this case had occurred prior to DNA testing and if Cannon made a compelling claim of innocence, it may have been difficult to link Cannon to the crime, particularly if he was excluded as the contributor of the bitemark on the victim’s shoulder. All of these complex nuances illustrate that post-conviction forensic evidence must be treated with the same degree of care and caution as evidence used during trial. As the 2003 exoneration of Steven Avery in Wisconsin demonstrates, the stakes can be a matter of life and death.

From Exoneration to Murder – The Steven Avery Case

In 2003, eighteen years after he was convicted for “the brutal attack of a woman jogging on a beach near Two Rivers, Wis.,”⁴³ Steven Avery was exonerated when a judge determined that DNA tests were conclusive proof of his innocence. But in 2007, Avery would be convicted of murder and sentenced to life in prison with no chance of parole. “You are probably the most dangerous individual ever to set foot in this courtroom,” Judge Patrick Willis remarked. “From what I see, nothing in your life suggests that society would ever be safe from your behavior.”⁴⁴

Two years before his murder conviction, Avery became “the first Wisconsin prisoner freed by the . . . Wisconsin Innocence Project, which used DNA tests to link another man to the assault that put Avery in prison.”⁴⁵ But in considering his sentence

for the murder conviction, Judge Willis “reviewed Avery's history of convictions for burglaries, threatening a woman with a gun and dousing a cat with gasoline before throwing it in a bonfire, before sentencing him. The offenses escalated over time, Willis said, and the latest one – [the murder of Teresa Halbach] - was a ‘calculated’ case of premeditated murder.”⁴⁶

According to reports on the Teresa Halbach murder, Avery bound and gagged his victim and then invited his young learning-disabled nephew, Brendan Dassey, to sexually assault her:

“Dassey had told the investigators that, after getting off his school bus Oct. 31, 2005, he took mail to Avery's trailer. There, Avery invited Dassey to have sex with Halbach, who was handcuffed, shackled and screaming. Dassey went home briefly, then returned, stripped, raped Halbach, then, after a discussion with Avery, helped bind and stab her before the pair took her to a garage where Avery shot her. After that, according to the confession, the pair burned her body in a pit.”⁴⁷

In the rape case for which Avery served eighteen years before being exonerated, the victim, Penny Ann Beernsten, described what happened to her along a beautiful stretch of Lake Michigan beach in 1985. Beernsten would later identify Avery in a lineup.⁴⁸

“It happened in a beautiful place. I was out jogging when a man grabbed me from behind and pushed me into a wooded area. When I screamed, he choked my windpipe; when I fought back as he tried to rape me, he began beating and strangling me. Finally I lost consciousness. My last thoughts were: ‘I wish I'd kissed my son goodbye this morning’ and ‘my daughter’s last vision of me will be of my dead, beaten body.’”⁴⁹

Avery was eventually exonerated when his DNA was excluded as being the same as biological samples recovered from Beernsten.⁵⁰ But what if the DNA was not deposited during the initial attack? After all, Penny Ann Beernsten had been strangled and slipped into unconsciousness. What if Avery was, in fact, the initial attacker but failed to ejaculate? What if he then invited an accomplice to sexually assault Beernsten while she was unconscious – just like he allegedly did in the Teresa Halbach murder?

Penny Ann Beernsten is now an advocate for reforming eyewitness identification procedures. But as is the case with all post-conviction DNA testing, the most defendants can hope for is to be excluded as the contributor of biological evidence. Science cannot confirm innocence. Thoughtful and knowledgeable people must look at the totality of the evidence and decide for themselves what the post-conviction forensic tests actually mean. We can only hope that the Avery exoneration was not the result of contextual contamination, but rather a careful and collaborative examination of the evidence.

Only Steven Avery knows if he attacked Penny Ann Beernsten on a Wisconsin beach in 1985, but one thing appears certain. Had he not been exonerated, Teresa Halbach might be alive today and young Brendan Dassey might not have gone to prison. It is possible that strict national standards and better professional oversight are needed to

“Only Steven Avery knows if he attacked Penny Ann Beernsten on a Wisconsin beach in 1985, but one thing appears certain. Had he not been exonerated, Teresa Halbach might be alive today and young Brendan Dassey might not have gone to prison.”

govern post-conviction litigation practices. But an even higher priority should be placed on providing specialized training to criminal justice professionals in the investigative interpretation of forensic evidence. Unlike the image portrayed by modern television programs, forensic scientists are rarely given access to all of the facts in criminal cases. For this reason, they cannot be relied upon to judge the relationships that exist between forensic testing results and circumstantial facts gathered by investigators. Scientists can certainly be helpful in the process, but ultimately judges and lawyers must fully and properly evaluate forensic evidence before and after a conviction.

The Innocence Project Changes its Strategy

After Steven Barnes was exonerated in 2008, Barry Scheck set the tone for a new approach that the Innocence Project would take in advancing its campaign to discredit the forensic sciences. According to Scheck, “Unvalidated and exaggerated science convicted Steven Barnes and cost him nearly two decades, but real science finally secured his freedom.”⁵¹ This statement represented a significant departure from the previous strategy of blaming wrongful convictions on what Scheck and his organization repeatedly termed *faulty forensic science* or *unreliable/limited science*. But after the authors reported on the Innocence Project’s mischaracterization of forensic science as often being faulty, there was a new effort by Barry Scheck and Peter Neufeld to characterize various forensic disciplines and practices as simply being *invalid*.

“After Steven Barnes was exonerated in 2008, Barry Scheck set the tone for a new approach that the Innocence Project would take in advancing its campaign to discredit the forensic sciences.”

This new tactic of blaming wrongful convictions on *invalid science* provided the Innocence Project with an escape hatch that did not exist before. Because their previous attempts to blame wrongful convictions on *faulty forensic science* were demonstrated to be erroneous, the more subjective interpretation of forensic evidence as being *invalid* would be easier for them to defend – not because forensic science disciplines are actually invalid, but because innocence activists could simply create a definition of *validity* that suited their own purposes.

As Barry Scheck’s comment following the Barnes exoneration suggested, the primary strategy now being employed by the Innocence Project is to hold DNA up as the standard for valid forensic science – or as Scheck opined, a “real science.” The basis for this strategy, however, is illogical and caters to the layperson’s lack of knowledge about DNA testing.

DNA Testing in Proper Perspective

Forensic DNA testing can be used effectively to demonstrate the innocence of wrongfully convicted prisoners when it is employed responsibly and case circumstances leave unanswered questions about the origin of biological evidence. In most overturned convictions, DNA testing was not feasible at time of the original trials. Therefore, DNA provides an opportunity to undue miscarriages of justice even years after they were committed. But the recent strategy of anointing DNA as a standard of science that other traditional forensic disciplines fail to meet is grossly unfair and not based in reality.

DNA results are statistical in nature, so they are often perceived as being more scientific. DNA profiles are sets of numbers that can be easily entered into a spreadsheet and lend themselves quite nicely to being searched through complex databases. Probabilities can then be established and reported to express the likelihood that a particular DNA profile will occur randomly in particular segments of the human population. Unfortunately, there is a common misconception that these probabilities represent rates of error, which was famously magnified in 1993 by the United States Supreme Court in its landmark decision in *Daubert v. Merrell-Dow Pharmaceuticals, Inc.*⁵² But in many ways, the testing of DNA is very similar to its other forensic cousins such as latent print identification or firearm identification (ballistics). Education, training, expertise, and professionalism are needed to properly interpret all scientific evidence – including DNA. The actual rate of error in the practice of forensic DNA testing is currently not known.

“DNA results are statistical in nature, so they are often perceived as being more scientific.”

Understanding Forensic Science Malpractice

Systemic failures in forensic science happen from time to time just as they do in other critical professions.⁵³ But the authors have come to learn through first-hand experiences as accreditation inspectors⁵⁴ and directors of internationally accredited forensic science laboratories⁵⁵ that they are almost always a symptom of an organizational deficiency, not junk science. These weaknesses can be repaired with improved management practices, improved levels of funding to meet demand for services, and better overall methods for managing quality. The 1996 National Academy of Sciences report on DNA testing acknowledged that a key element of quality assurance is “the responsibility of laboratory managers for all aspects of laboratory operations and performance, including definition and documentation of standards for personnel training, procedures, equipment and facilities, and performance review.”⁵⁶ When organizational cultures erode for any variety of reasons, the likelihood that employees will make mistakes or commit serious ethical infractions will increase.

Roughly three million cases are submitted to publicly funded crime laboratories each year costing taxpayers approximately 1.1 billion dollars.⁵⁷ The percentage of these laboratories that achieved accreditation status grew from 71% in 2002 to 82% in 2005.⁵⁸

“When organizational cultures erode for any variety of reasons, the likelihood that employees will make mistakes or commit serious ethical infractions will increase.”

“Of all laboratories currently accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB), 73 percent achieved accreditation for the first time after 1992.”⁵⁹ The vast majority of the 232 wrongful

convictions studied by the authors of this paper occurred prior to 1989 when forensic science accreditation had yet to revolutionize practices in forensic science laboratories.

Based on the current annual case volume, if publicly funded forensic science laboratories had an overall failure rate of 0.01%, which would be an impressive record of quality in any service industry, the total number of cases involving some sort of forensic science malpractice would still amount to a disturbing 300 cases each year. But consider a hypothetical scenario in which 1000 erroneous laboratory results go undetected by

laboratories, investigators, and trial courts – and – where the malpractice contributes directly to a wrongful felony conviction. Although this is a grossly unreasonable scenario in the opinion of the authors,⁶⁰ the chance that one of the 3 million cases worked by forensic science laboratories in the United States each year would directly result in a wrongful felony conviction would be approximately 0.0003% - or three ten-thousandths of a percent.

Recent Data in Overturned Convictions

Each wrongful conviction inflicts horrific pain on the victims and their families. For this reason, exonerations tend to elicit a prompt response from local journalists and strong emotional reactions from the relevant community. These emotions are to be expected; however, they do not necessarily allow for a clear and thoughtful examination of wrongful convictions or an accurate diagnosis of their causes.

There are new signs that journalists are beginning to re-examine the complexities of wrongful convictions in the United States. In January 2009, the Richmond Times-Dispatch reported that the Urban Institute, “a 40-year-old organization that studies social and economic issues to promote sound public policy and effective government,”⁶¹ was awarded \$300,000 by the Department of Justice to examine the causes of wrongful convictions. In the *Times-Dispatch* report, a quote from Brandon Garrett, a professor of law at the University of Virginia, was included to put the complexity of post-conviction litigation in perspective. According to Garrett, “wrongful-conviction cases are harder to study, much less generalize about.”⁶²

With this in mind, the authors examined the 201st through 232nd convictions overturned by the innocence network. In keeping with the methodology and principles published in “The Wrongful Conviction of Forensic Science,” each case was studied to determine the role of forensic evidence at the original trial. In several instances, trial transcripts were available for review.⁶³ The following tables provide a summary of this examination:

Table 1: Original convictions attributed solely to witness misidentification

Number of Cases: 11 of 32
Percent of Cases: 34%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
Travis Hayes ⁶⁴	LA	1998	2007	Yes	X		
James Waller ⁶⁵	TX	1983	2007	Yes	X		
John Jerome White ⁶⁶	GA	1980	2007	Yes		X	
Gregory Wallis ⁶⁷	TX	1989	2007	Yes		X	
Marcus Lyons ⁶⁸	IL	1988	2007	No		X	
Steven Phillips ⁶⁹	TX	82-83	2008	No		X	
Andrew Gossett ⁷⁰	TX	2000	2007	No		X	
Patrick Waller ⁷¹	TX	1992	2008	No		X	
Robert McClendon ⁷²	OH	1991	2008	No		X	
Arthur Johnson ⁷³	MS	1993	2008	No		X	
Thomas McGowan ⁷⁴	TX	85-86	2008	No		X	

Summary of the Forensic Evidence: In two cases, the convictions of Travis Hayes and James Waller, the forensic evidence was exculpatory. Hairs recovered from bed sheets were shown to exclude James Waller. In 8 of the above 11 cases, the conviction was not supported by the forensic evidence. In the conviction of John Jerome White, forensic scientist Benny Blankenship testified that hair samples recovered from the crime scene “could have come” from White. But under both direct and cross-examination, he clearly explained that only similarities were observed and that he could not conclusively identify White as the contributor of the hairs. The

defense attorney questioned Blankenship repeatedly about the significance of the evidence which yielded testimony indicating the state of the art was not sufficient to make conclusive identifications.

Table 2: Original conviction attributed solely to an informant / snitch

Number of Cases: 1 of 32

Percent of Cases: 3%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
Chad Heins ⁷⁵	FL	1996	2007	Yes	X		

Summary of the Forensic Evidence: In the trial of Chad Heins, hairs recovered from the crime scene were eliminated as having come from Heins.

Table 3: Original convictions attributed solely to false / coerced confessions

Number of Cases: 2 of 32

Percent of Cases: 6%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
James Dean ⁷⁶	NE	1989	2007	No		X	
Debra Shelden ⁷⁷	NE	1989	2007	No		X	

Summary of the Forensic Evidence: Information regarding these two cases was limited. It appears, however, that false or coerced confessions were the primary contributing factors leading to the convictions.

Table 4: Original convictions with multiple causes – not supported by forensic evidence

Number of Cases: 5 of 32

Percent of Cases: 16%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
James Curtis Giles ⁷⁸	TX	1983	2007	Yes		X	
Ronald Gene Taylor ⁷⁹	TX	1995	2008	Yes		X	
Dean Cage ⁸⁰	IL	1996	2008	No		X	
Jerry Miller ⁸¹	IL	1982	2007	No		X	
Willie Williams ⁸²	GA	1985	2007	Yes		X	

Summary of the Forensic Evidence: In the above five cases, forensic evidence was limited and/or nonspecific to the point that it had no significant role in demonstrating the guilt of the defendant.

Table 5: Original convictions attributed to multiple causes – nonspecific forensic evidence presented by prosecution as evidence of possible guilt.

Number of Cases: 11 of 32

Percent of Cases: 34%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
William Dillon ⁸³	FL	1981	2008	No		X	
Charles Chatman ⁸⁴	TX	1981	2008	Yes		X	
Steven Barnes ⁸⁵	NY	1989	2009	No		X	
Rickie Johnson ⁸⁶	LA	1983	2008	Yes		X	
Nathaniel Hatchett ⁸⁷	MI	1998	2008	Yes		X	
Joseph White ⁸⁸	NE	1989	2008	No		X	
Ada Taylor ⁸⁹	NE	1989	2009	No		X	
Thomas Winslow ⁹⁰	NE	1989	2009	No		X	
Kathy Gonzales ⁹¹	NE	1989	2009	No		X	
Michael Blair ⁹²	TX	1994	2008	Yes		X	
Byron Halsey ⁹³	NJ	1988	2007	Yes		X	

Summary of the Forensic Evidence: With the exception of one case, the above convictions were associated with very weak or non-specific forensic evidence that could not conclusively associate or exclude the defendants. In the trial of William Dillon, dog scent

tracking evidence was presented at trial and may have been presented as being more reliable than it actually is. But because dog scent tracking is not a forensic science, it was dismissed for the purposes of this study. In the case of Steven Barnes, exculpatory fingerprint evidence was presented as well as nonspecific pattern and soil comparisons.

Table 6: Original convictions attributed to forensic science malpractice

Number of Cases: 2 of 32
 Percent of Cases: 6%

<i>Exoneree</i>	<i>State</i>	<i>Incident</i>	<i>Exonerated</i>	<i>Transcripts</i>	<i>EVALUATION OF FORENSIC EVIDENCE</i>		
					<i>Exculpatory</i>	<i>No Bearing or Nonspecific</i>	<i>Malpractice</i>
Curtis McCarty ⁹⁴	OK	86-89	2007	Yes			X
Kennedy Brewer ⁹⁵	MS	1995	2008	Yes			X

Summary of the Forensic Evidence: The malpractice cases shown in the above table are clear and convincing instances of forensic science malpractice. In the conviction of Kennedy Brewer, erroneous bitemark testimony was offered by Dr. Michael West, who at the time of the trial, had already been suspended from the American Board of Forensic Odontology for previous malpractice. But the court allowed his testimony despite his professional troubles. The conviction of Curtis McCarty, however, was one of several cases associated with the infamous Joyce Gilchrist who has been implicated in several instances of forensic science malpractice. It must be noted that neither of these convictions involved testimony from scientists who conducted their work in accredited forensic science laboratories.

Updated Data Tabulations for 232 Exonerations

When the data collected during this study are added to the previous tabulations previously reported by the authors, the following breakdown of the role of forensic science in overturned convictions can be examined:

Table 7: The role of forensic science – by number and percent of cases ⁹⁶

Rank	Percent	Cases	Description
1	36%	83	Non-specific science failed to exclude the defendant
2	33%	76	Conviction was not supported by forensic evidence
3	17%	39	Forensic evidence was favorable to the defendant
4	15%	34	Forensic science malpractice
		232	

Table 8: Probable systemic failures in 232 convictions – by number and percent ⁹⁷

Rank	Percent	Instances	Description
1	55%	174	Eyewitness misidentification
2	15%	47	False confessions
3	11%	34	Forensic science malpractice
4	9%	30	Government misconduct
5	9%	28	Informant snitches
6	1%	4	Bad lawyering
		317	

Discussion

As discussed earlier, forensic science malpractice of a significant nature is rare and is unlikely to contribute to a wrongful conviction even when it does occur. At the time the authors wrote “The Wrongful Conviction of Forensic Science,” only one wrongful conviction had been associated with an instance of forensic science malpractice occurring in an accredited laboratory. As the authors observed:

“ . . . it was a false exclusion of a rape victim’s husband as being the contributor of semen found on a rape-kit swab and bedding from the victim’s home. The error did not directly incriminate the defendant. Also, the incident occurred in 1988 when crime laboratory accreditation was in its infancy.”⁹⁸

Forensic science methods applied in laboratories accredited by the American Society of Crime Laboratory Directors / Laboratory Accreditation Board (ASCLD/LAB) are subjected to so many checks and balances that the possibility that a catastrophic error or ethical violation would go undetected by both the laboratory’s quality management system and the adversarial scrutiny of a trial court is extremely low.

Unfortunately, critics seeking to micromanage the forensic sciences with new bureaucracies and politically charged oversight schemes are unwilling to accept accreditation as a reliable, stand-alone system of quality control. Even worse, evidence that accreditation *does* work - the enhanced ability of accredited laboratories to identify failures - is irresponsibly mischaracterized as

“When all types of evidence, scenarios, and potential failures in our criminal justice system are considered in the proper context, it is likely that forensic science is, and has been, a leading preventer of wrongful convictions.”

evidence that accreditation *doesn’t* work. A laboratory that is able to look critically at its own operations and identify problems is a cause for celebration, not punishment. The internal mechanisms of self-assessment combined with the external mechanisms of peer-assessment must be allowed to find and correct weaknesses without the risk of reprisal. If the basic principles of quality control and quality assurance in forensic science become contaminated by politics and the natural inclination of activists to punish what they perceive as wrongdoing, society can expect the forensic science infrastructure in the United States to collapse under its own weight.

When all types of evidence, scenarios, and potential failures in our criminal justice system are considered in the proper context, it is likely that forensic science is, and has been, a leading *preventer* of wrongful convictions. All criminal justice

“This is not a difficult concept to grasp and can be easily explained to a child. When organizations can’t keep up with demand, frustrations and incentives to take shortcuts will erode even the most robust organizational culture in any industry or profession.”

institutions have a certain capacity to process incoming cases with a finite number of people and resources to get the job done reliably. It is a mistake to think that these institutions operate differently than other types of organizations. If an automotive manufacturing plant, for example, attempts to keep pace with a level of demand that is unmanageable given its current rate of staffing and capitalization, it will be more likely to

assemble bad cars. If an accountant is faced with more tax returns than what he or she can handle in a given year, his or her filings to the IRS are more likely to have errors.

This is not a difficult concept to grasp and can be easily explained to a child. When organizations can’t keep up with demand, frustrations and incentives to take shortcuts will erode even the most robust organizational culture in any industry or profession. Certainly, this is not an excuse for gross malpractice or unethical behavior.

Such instances cannot be tolerated and must be met with severe consequences. But it is also unethical to deprive prosecutors, public defenders, forensic scientists, and police officers of the resources they need to do their jobs completely and reliably. Who steps in to confront this kind of negligence? Ultimately, it falls on our elected leaders and their constituents to ensure that our criminal justice system has the resources it needs to work reliably and efficiently.

“Eyewitness misidentifications continue to rank as the top factor contributing to wrongful convictions in the United States. No other factor comes close in terms of its collective impact on our justice system.”

Summary and Conclusions

Eyewitness misidentifications continue to rank as the top factor contributing to wrongful convictions in the United States. No other factor comes close in terms of its collective impact on our justice system. It cannot be underestimated how important it is to accurately and completely tabulate the causes of wrongful convictions before assigning a specific share of the blame to any of them. Future studies subjected to the proper kind of peer review with sufficient transparency must look closer at overturned convictions to determine exactly how they happen and if, in fact, apparent instances of forensic science malpractice can be fairly labeled as such.⁹⁹ It is hoped that the work of the Urban Institute and other independent researchers will succeed in this endeavor. But the authors warn that political wrangling and activism will contaminate the process and bring discredit to any useful conclusions that are rendered as a result of such studies.

Ultimately, the causes of wrongful convictions are really symptoms of a larger problem. It is the disease that needs to be cured. In the long run, public resources will be better spent on helping to improve the talent base and organizational cultures of our justice institutions. Strong organizations with strong leaders supported by talented, motivated employees are much less likely to make serious mistakes. In this regard, lawyers and judges should pay close attention to the management practices of crime laboratories serving their jurisdiction. Junk science is not a systemic problem in our criminal justice system. Struggling organizations, however, burdened by increasing demand and dwindling resources *are* a systemic problem.

The next twenty years will hopefully bring new solutions. And if all goes well, the entire criminal justice system will improve its competence at evaluating forensic evidence and ensuring that contextual distortions are not allowed to contaminate criminal proceedings or public policy discussions related to the use of science in our search for justice.

Acknowledgements

The authors would like to extend their sincere thanks to Lauren Hoshimoto for her invaluable efforts in compiling the news reports and contact information needed to complete this project. We would also like to thank our families – Mary, Debra, Kevin, Karen, John, and James - who, since 2004, have been patient in allowing us to serve the public by offering a more informative and accurate analysis of the issues facing the forensic science community.

End Notes

- ¹ Nordheimer, Jon. “Bundy is put to death in Florida after admitting trail of killings.” *The New York Times*, January 25, 1989.
- ² Northwestern Law – Bluhm Legal Clinic. Exonerations. Gary Dotson. Accessed 22 Apr 2009, available from <http://www.law.northwestern.edu/wrongfulconvictions/exonerations/iIDotsonSummary.html>
- ³ Death Penalty Information Center. Limiting the Death Penalty. Accessed 22 Apr 2009, available from <http://www.deathpenaltyinfo.org/part-ii-history-death-penalty>
- ⁴ The Innocence Network. Innocence Network Member Organizations. Accessed 22 Apr 2009, available from <http://www.innocencenetwork.org/members.html>
- ⁵ The Innocence project. Mission Statement. Accessed 22 Apr 2009, available from <http://www.innocenceproject.org/about/Mission-Statement.php>
- ⁶ Eligon, John. “New efforts focus on exonerating prisoners in cases without DNA evidence.” *The New York Times*, February 7, 2009
- ⁷ Collins, John M. and Jay Jarvis. 2009. The Wrongful Conviction of Forensic Science. *Forensic Science Policy & Management*. 1:17-31
- ⁸ Collins & Jarvis. p. 19
- ⁹ United States, National Academy of Sciences (NAS), Strengthening Forensic Science in America: a Path Forward (Washington: 2009)
- ¹⁰ Proress, Ben. The DNA Debacle: How the federal government botched the DNA backlog crisis. *ProPublica*, May 5, 2009
- ¹¹ United States, National Academy of Sciences. 2009. p. S-3
- ¹² United States, National Academy of Sciences. 2009. p. S-5
- ¹³ Forensic Magazine. Leadership in the forensic sciences – An Ohio perspective. Accessed 23 Apr 2009, available from <http://www.forensicmag.com/articles.asp?pid=10>
- ¹⁴ Crime Lab Report. National Academy of Sciences Report – Legacy of historic document depends on good-faith collaboration. Accessed 23 Apr 2009, available from <http://www.crimelabreport.com/library/pdf/3-09special.pdf>
- ¹⁵ United States, National Academy of Sciences. 2009. p. S-3
- ¹⁶ United States, National Academy of Sciences. 2009. p. S-3
- ¹⁷ Osgood, Charles E. 1957. *The Measurement of Meaning*, p. 84. Champaign, IL: University of Illinois Press
- ¹⁸ Stahl, Lesley. “Eyewitness: How accurate is visual memory.” *CBS News/60 Minutes*, March 8, 2009. Accessed 30 Jan 2009, available from <http://www.cbsnews.com/stories/2009/03/06/60minutes/main4848039.shtml>
- ¹⁹ Stahl. 2009
- ²⁰ Stahl. 2009
- ²¹ Stahl. 2009
- ²² Stahl. 2009
- ²³ Innocence Project. Browse Profiles. Ronald Cotton. Accessed 20 Apr 2009, available from <http://innocenceproject.org/Content/72.php>
- ²⁴ Death Penalty Information Center. How DNA became a perfect witness. Accessed 23 Apr 2009, available from <http://www.deathpenaltyinfo.org/node/589>
- ²⁵ Stahl. 2009
- ²⁶ Stack, Richard A. 2006. *Dead Wrong*. p. 72. Westport, CT: Praeger Publishers
- ²⁷ Innocence Project. Browse Profiles. Ronald Cotton. Accessed 20 Apr 2009, available from <http://innocenceproject.org/Content/72.php>
- ²⁸ See note 27
- ²⁹ Northwestern Law. 2009
- ³⁰ United States. DNA Initiative. Exonerations. Ronald Cotton. Accessed 20 Apr 2009, available from http://www.dna.gov/postconviction/convicted_exonerated/cotton
- ³¹ Crime Lab Report. Yet another wrongful conviction misattributed to faulty science. Accessed 31 Mar 2009, available from <http://www.crimelabreport.com/library/pdf/2-09.pdf>
- ³² Innocence Project. Browse Profiles. Steven Barnes. Accessed 23 Apr 2009, available from <http://innocenceproject.org/Content/1775.php>
- ³³ North Country Gazette, 2008. See also LaDuca, Rocco. “DNA tests may shed light on 20-year old Whitestown murder.” *Utica Observer-Dispatch*, December 1, 2008

-
- ³⁴ Crime Lab Report. Yet another wrongful conviction misattributed to faulty science. Accessed 31 Mar 2009, available from <http://www.crimelabreport.com/library/pdf/2-09.pdf>
- ³⁵ See note 34
- ³⁶ North Country Gazette, 2008.
- ³⁷ Innocence Project. Browse Profiles. Steven Barnes. Accessed 23 Apr 2009, available from <http://innocenceproject.org/Content/1775.php>.
- ³⁸ “A Passion for Justice,” with Harry Kreisler and Peter Neufeld, Conversations with History, University of California at Berkeley (UCTV), April 27, 2001, 58 minutes.
- ³⁹ Dror, Itiel E. et al. 2007. Contextual information renders experts vulnerable to making erroneous identifications. *Forensic Science International*. 156: 74-78
- ⁴⁰ Hoffman, Morris B. 2007. The Myth of Factual Innocence. *Chicago-Kent Law Review*. 82:2. p. 668
- ⁴¹ Wordpress. Remember the Innocents. Sharra Ferger. Accessed 21 Apr 2009, available at <http://remembertheinnocents.wordpress.com/category/sharra-ferger-murdered/>
- ⁴² Thalji, Jamal. “Slain girl’s agony laid out in Cannon trial.” *St. Petersburg Times*, Sep 15, 2005.
- ⁴³ University of Wisconsin Law School. News. Innocence Project wins 2nd exoneration. Accessed 23 Apr 2009, available at http://www.law.wisc.edu/fjr/whats_new/news/127.html
- ⁴⁴ WISCTV. Avery sentenced to life in prison. Accessed 23 Apr 2009, available from <http://www.channel3000.com/news/13426711/detail.html>
- ⁴⁵ Kertscher, Tom. “Avery found guilty of killing woman.” *Milwaukee-Wisconsin Journal Sentinel*, March 19, 2007
- ⁴⁶ GM Today. The Avery Trial. Accessed 23 Apr 2009, available from http://www.gmtoday.com/news/special_reports/Halbach_murder/avery_trial.asp
- ⁴⁷ Nunnally, Derrick. “Dassey found guilty of murder.” *Milwaukee-Wisconsin Journal Sentinel*, April 26, 2007
- ⁴⁸ Northwestern Law. Steven Avery. Accessed 24 Apr 2009, available from <http://www.law.northwestern.edu/wrongfulconvictions/exonerations/wiAverySSummary.html>
- ⁴⁹ The Forgiveness Project. Penny Beernsten. Accessed April 24, 2009, available from <http://www.theforgivenessproject.com/stories/penny-beernsten>
- ⁵⁰ Northwestern Law. Steven Avery.
- ⁵¹ North Country Gazette. “DNA frees wrongfully convicted Oneida County man.” November 25, 2008.
- ⁵² Bohan, Thomas L. and Erik J. Heels. 1995. The Case Against *Daubert*: The New Scientific Evidence Standard and the Standards of Several States. *Journal of Forensic Sciences*. 40:6. p. 1030-1044
- ⁵³ The most publicized and infamous instances of malpractice were associated with a small number of individuals (Fred Zain, Joyce Gilchrist, Pamela Fish) who did not work in accredited laboratories.
- ⁵⁴ The authors are both trained and practicing volunteer accreditation inspectors serving ASCLD/LAB.
- ⁵⁵ John Collins is the Director of the DuPage County Crime Laboratory in Wheaton, IL. Jay Jarvis served as the director of the Georgia Bureau of Investigation laboratory in Summerville, GA. Both laboratories are accredited under the international ISO 17025 standard for calibration and testing laboratories. The opinions and views expressed in this paper do not necessarily reflect those of any organizations or persons with whom the authors are affiliated.
- ⁵⁶ United States, National Academy of Sciences (NAS), The Evaluation of Forensic DNA Evidence (Washington: 1996) p.78
- ⁵⁷ United States, Bureau of Justice Statistics, Census of Publicly Funded Forensic Crime Laboratories, 2005 (Washington: 2008)
- ⁵⁸ United States, Bureau of Justice Statistics. 2008
- ⁵⁹ Collins and Jarvis. 2009. p. 28
- ⁶⁰ According to Judge Morris Hoffman in his article “The Myth of Factual Innocence,” the federal plea bargaining rate is 96.3%. The state plea bargaining rate is 95%. To have 1000 cases in one year in which forensic science malpractice directly contributes to a wrongful conviction is statistically unreasonable.
- ⁶¹ Green, Frank. “Va. cases shed light on false convictions.” *Richmond Times-Dispatch*, January 12, 2009
- ⁶² Frank Green. 2009
- ⁶³ A compilation of trial transcripts documenting scientist testimony was accessed by the authors during the preparation of this manuscript, available from http://www.law.virginia.edu/html/librarysite/garrett_exoneree.htm

-
- ⁶⁴ Innocence Project. Browse Profiles. Travis Hayes. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/174.php>. See also The Associated Press. "Judge overturns murder conviction in DNA case." *International Herald Tribune*, December 19, 2006.
- ⁶⁵ Innocence Project. Browse Profiles. James Waller. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/439.php>. See also Williams, Tuala. "The James Waller Story: When being black was a crime." *The Louisiana Weekly*, March 2, 2009, and The Associated Press. "Dallas County records 12th DNA case." *USA Today*, January 19, 2007.
- ⁶⁶ Innocence Project. Browse Profiles. John Jerome White. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1068.php>. See also Turner, Dorie. "DNA test clears man after 27 years." *The Associated Press*, December 11, 2007.
- ⁶⁷ Innocence Project. Browse Profiles. Gregory Wallis. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/279.php>. See also Tharp, Robert. "DNA frees man jailed 18 years." *The Dallas Morning News*, March 21, 2006.
- ⁶⁸ Innocence Project. Browse Profiles. Marcus Lyons. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1249.php>. See also Smith, Gerry. "Rape conviction gone, stigma isn't." *Chicago Tribune*, October 22, 2007, and Patterson, John. "Governor pardons man cleared of DuPage rape." *Daily Herald*, December 20, 2008.
- ⁶⁹ Innocence Project. Browse Profiles. Steven Phillips. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1614.php>. See also Jennings, Diane. "Dallas man freed from prison after 25 years." *The Dallas Morning News*, August 6, 2008.
- ⁷⁰ Tharp, Robert. "Inmate freed after DNA test." *The Dallas Morning News*, January 5, 2007. See also Caldwell, Cliff. "DNA evidence sets another man free from prison." Accessed 31 Mar 2009, available from <http://nacdl.org/public.nsf/DefenseUpdates/Texas023>
- ⁷¹ Ellis, Tiara M. "DNA exoneree Patrick Waller grateful for time with family after prison release." *The Dallas Morning News*, November 26, 2008.
- ⁷² Innocence Project. Browse Profiles. Robert McClendon. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1551.php>. See also Majors, Stephen. "Judge frees convicted Ohio rapist after DNA test." *The Associated Press*, and "DNA test frees convicted Ohio child rapist." *The Associated Press*, August 11, 2008.
- ⁷³ Innocence Project. Browse Profiles. Arthur Johnson. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1628.php>.
- ⁷⁴ Innocence Project. Browse Profiles. Thomas McGowan. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1402.php>. See also McGonigle, Steve. "DNA evidence clears another Dalls County inmate." *The Dallas Morning News*, April 15, 2008, and Carlton, Jeff. "DNA sample identifies attacker from 1985 rape case." *The Associated Press*.
- ⁷⁵ Innocence Project. Browse Profiles. Chad Heins. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1052.php>. See also Pinkham, Paul. "After 13 years in prison, Chad Heins is a free man." *The Florida Times-Union*, December 5, 2007.
- ⁷⁶ Huddle, Catharine and Joe Duggan. "Pardoned." *Beatrice Daily Sun*, January 27, 2009. See also Michels, Scott. "State seeks pardons for defendants wrongfully convicted in 1985 Nebraska murder." *ABC News*, January 26, 2009.
- ⁷⁷ Ellis, Tiara M. "DNA exoneree Patrick Waller grateful for time with family after prison release." *The Dallas Morning News*, November 26, 2008.
- ⁷⁸ McGonigle, Steve. "Judge backs man's exoneration in '82 rape case." *The Dallas Morning News*, April 10, 2007. See also McGonigle. "DA: '83 case mishandled, but man not cleared yet." *The Dallas Morning News*, March 10, 2007.
- ⁷⁹ Innocence Project. Browse Profiles. Ronald Gene Taylor. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1124.php>. See also Patterson, Randall. "Ronald Taylor is one of perhaps hundreds of innocent people Harris County has sent to prison." *HoustonPress.com*, October 9, 2008.
- ⁸⁰ Innocence Project. Browse Profiles. Dean Cage. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1376.php>. See also "Innocent man cleared of rape charges." *CBS News*, May 28, 2008.
- ⁸¹ Innocence Project. Browse Profiles. Jerry Miller. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/533.php>. See also Possley, Maurice. "Cleared by DNA after 26 years." *Chicago Tribune*, April 22, 2007.

-
- ⁸² Innocence Project. Browse Profiles. Willie Williams. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/367.php>. See also Patterson, Thom. "Innocent man shares his 20-year struggle behind bars." *CNN.com*, October 25, 2007, and Bigg, Mathew. "DNA proves lifeline for falsely convicted in U.S." *Reuters*, February 5, 2007.
- ⁸³ Innocence Project. Browse Profiles. William Dillon. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1761.php>. See also Wangrin, Mark. "Charges dropped against Fla. Man imprisoned 27 years on murder conviction." *Associated Press*, December 10, 2008.
- ⁸⁴ Innocence Project. Browse Profiles. Charles Chatman. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1216.php>. See also McGonigle, Steve. "Dallas man cleared, freed after 27 years in prison." *The Dallas Morning News*, January 4, 2008.
- ⁸⁵ North Country Gazette, 2008. See note 65
- ⁸⁶ Innocence Project. Browse Profiles. Rickie Johnson. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1120.php>. See also Welborn, Vickie. "Past year an adventure for Leesville man." *Shreveport Times*, January 15, 2009
- ⁸⁷ Innocence Project. Browse Profiles. Nathaniel Hatchett. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1294.php>. See also Hunter, George. "Man exonerated after 12 years in prison." *The Detroit News*, April 15, 2008
- ⁸⁸ See note 79
- ⁸⁹ See note 79
- ⁹⁰ See note 79
- ⁹¹ See note 79
- ⁹² Innocence Project. Browse Profiles. Michael Blair. Accessed 31 Mar 2009, available from <http://innocenceproject.org/Content/1545.php>. See also Ball, Linda S. "D.A.: Conviction in Ashley's Law case can't stand." *The Associated Press*, May 24, 2008.
- ⁹³ Innocence Project. Press Releases. Byron Halsey is fully exonerated in New Jersey after DNA proves his innocence in 1985 child rapes and murders. Accessed 10 Feb 2009, available at <http://www.innocenceproject.org/Content/689PRINT.php>. See also Kelley, Tina. "DNA in murders frees inmate after 19 years." *The New York Times*, May 16, 2007. Also see Fox News. "DNA evidence clears former inmate of rape and murder charges after 22-year sentence." July 9, 2007.
- ⁹⁴ Innocence Project. Browse Profiles. Curtis McCarty. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/576.php>. See also Weinstein, Henry. "Murder charges dropped in 1892 slaying." *The Seattle Times*, May 12, 2007, and Weinstein. "Judge frees man facing execution." *Los Angeles Times*, May 12, 2007.
- ⁹⁵ Innocence Project. Browse Profiles. Kennedy Brewer. Accessed 10 Feb 2009, available from <http://innocenceproject.org/Content/1176.php>. See also Dewan, Shaila. "Despite DNA test, a case is retried." *The New York Times*, September 6, 2007, and Mills, Steve. "DNA voids murder conviction. 2nd man also freed in cases in Mississippi." *Chicago Tribune*, February 16, 2008, and also see Francescani, Chris and Marcus Baram. "Did bitemark expert fabricate evidence." *ABC News*, February 20, 2008.
- ⁹⁶ For the purposes of this table, the Steven Barnes case was listed as a conviction with non-specific science although exculpatory forensic evidence was presented at his trial. Additional research is underway to look more carefully at the cases being attributed to forensic science malpractice. Significant uncertainty exists regarding the number of cases that should actually be labeled as such.
- ⁹⁷ Additional research is underway to look more carefully at the cases being attributed to forensic science malpractice. Significant uncertainty exists regarding the number of cases that should actually be labeled as such.
- ⁹⁸ Collins & Jarvis. 2009. p.28
- ⁹⁹ Collins & Jarvis. 2009. p.26