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## Book Reviews

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## BOOK REVIEW

### THE DNA STORY: AN ALTERNATIVE VIEW

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HARLAN LEVY, *AND THE BLOOD CRIED OUT* (New York: Basic Books, 1996) 223 pp.

Harlan Levy's book, *And the Blood Cried Out: A Prosecutor's Spellbinding Account of the Power of DNA*, traces the use of DNA evidence in criminal cases.<sup>1</sup> In 1985, Dr. Alec Jeffreys of the University of Leicester, England, recognized the utility of using DNA profiling in criminal cases.<sup>2</sup> The first use of DNA profiling in American courts came the following year.<sup>3</sup> The first appellate case, *Andrews v. State*,<sup>4</sup> was reported in 1988. By January 1990, forensic DNA analysis had been admitted into evidence "in at least 185 cases by 38 States and the U.S. military."<sup>5</sup> Today, DNA

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<sup>1</sup> HARLAN LEVY, *AND THE BLOOD CRIED OUT: A PROSECUTOR'S SPELLBINDING ACCOUNT OF THE POWER OF DNA* (1996). For a discussion of the admissibility of DNA evidence, see 2 PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, *SCIENTIFIC EVIDENCE* 1-39 (2d ed. 1993).

<sup>2</sup> See Peter Gill et al., *Forensic Application of DNA "Fingerprints,"* 318 *NATURE* 577 (1985); Alec J. Jeffreys et al., *Individual-specific "Fingerprints" of Human DNA*, 316 *NATURE* 76 (1985) [hereinafter Jeffreys et al., *Individual-specific "Fingerprints" of Human DNA*]; Alec J. Jeffreys et al., *Hypervariable "Minisatellite" Regions In Human DNA*, 314 *NATURE* 67 (1985).

<sup>3</sup> "First introduced into U.S. criminal proceedings in 1986." OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, *GENETIC WITNESS: FORENSIC USES OF DNA TESTS* 14 (1990) [hereinafter OTA REPORT].

<sup>4</sup> 533 So. 2d 841 (Fla. Dist. Ct. App. 1988) (holding DNA evidence admissible; no defense experts testified at trial).

<sup>5</sup> OTA REPORT, *supra* note 3, at 14.

evidence is admissible in every state and federal circuit—in one form or the other.<sup>6</sup>

These developments are remarkable. No other scientific technique has gained such widespread acceptance so quickly. No other technique is as complex<sup>7</sup> or so subject to rapid change. The change is so dramatic that during the 1980s, new DNA technologies were introduced as cases litigating the older procedures worked their way through the court system.<sup>8</sup> As Levy

<sup>6</sup> See, e.g., *United States v. Hicks*, 103 F.3d 837, 844-46 (9th Cir. 1996) (DNA-PCR evidence satisfies *Daubert*); *United States v. Beasley*, 102 F.3d 1440, 1448 (8th Cir. 1996) (DNA-PCR, DQalpha and Polymarkers held admissible); *United States v. Black Cloud*, 101 F.3d 1258, 1261 (8th Cir. 1996) (DNA for paternity admitted); *United States v. Davis*, 40 F.3d 1069, 1075 (10th Cir. 1994) (FBI method and statistical probability evidence admitted), *cert. denied*, 115 S. Ct. 1387 (1995); *United States v. Chischilly*, 30 F.3d 1144, 1153 (9th Cir. 1994) (FBI statistics based on its Native American database admissible, even though defendant's Navajo tribe may be underrepresented), *cert. denied*, 115 S. Ct. 946 (1995); *United States v. Bonds*, 12 F.3d 540 (6th Cir. 1993).

See also *Harmon v. State*, 908 P.2d 434, 440-41 (Alaska 1995) (DNA evidence, both RFLP and PCR, satisfies the *Frye* test; statistical analysis accompanying each form of DNA testing also generally accepted); *State v. Johnson*, 922 P.2d 294, 300 (Ariz. 1996) (en banc) (DNA modified ceiling principle generally accepted); *Lindsey v. People*, 892 P.2d 281 (Colo. 1995) (en banc) (DNA statistics generally accepted); *State v. Sivri*, 646 A.2d 169, 189-92 (Conn. 1994) (while DNA evidence generally accepted, case remanded to decide if population frequency calculations are generally accepted); *People v. Miller*, 670 N.E.2d 721 (Ill. 1996) (RFLP statistics); *State v. Colbert*, 896 P.2d 1089, 1097 (Kan. 1995) (DNA profile statistics generally accepted); *Commonwealth v. Lanigan*, 641 N.E.2d 1342, 1349 (Mass. 1994) (DNA statistics based on ceiling principle admissible); *State v. Bloom*, 516 N.W.2d 159, 167 (Minn. 1994) (random match probability based of NAS interim ceiling method held admissible); *State v. Moore*, 885 P.2d 457, 471-72 (Mont. 1994) (RFLP analysis admitted); *State v. Vandebogart*, 652 A.2d 671, 675 (N.H. 1994) (DNA calculations based on interim ceiling principle satisfy *Frye* test); *State v. Marcus*, 683 A.2d 221, 231 (N.J. App. Div. 1996) (stating that the "product rule in DNA analysis is generally accepted in the scientific community"); *State v. Anderson*, 881 P.2d 29, 47 (N.M. 1994) (FBI random match probability statistics held admissible); *People v. Wesley*, 633 N.E.2d 451, 455-56 (N.Y. 1994) (Lifecodes DNA method generally accepted at time of trial (1988-89)); *Taylor v. State*, 889 P.2d 319, 328, 332 (Okla. Crim. App. 1995) (DNA-RFLP match and statistical calculations admissible); *State v. Lyons*, 924 P.2d 802 (Or. 1996) (DNA-PCR admissible); *State v. Copeland*, 922 P.2d 1304 (Wash. 1996) (en banc) (product rule generally accepted).

<sup>7</sup> Other scientific techniques such as voiceprints, hypnotically-refreshed testimony, and the polygraph did not involve the number of steps or the detailed procedures needed for DNA analysis.

<sup>8</sup> RFLP, which stands for Restriction Fragment Length Polymorphism, was the first DNA test used in criminal cases. Polymerase chain reaction (PCR) was the second DNA test. The original type of PCR involved the DQ-alpha loci; later types of PCR in-

observes, DNA evidence "raised issues at the cutting edge of modern law and science."<sup>9</sup> Indeed, important developments have occurred since the publication of Levy's book: the first judicial use of mitochondrial DNA;<sup>10</sup> RFLP chemiluminescence;<sup>11</sup> DNA from cats;<sup>12</sup> and DNA from trees.<sup>13</sup> In addition, Australian scientists have reported retrieving usable DNA samples from the inside of condoms worn as briefly as one minute without ejaculation.<sup>14</sup>

Finally, no other technique has been as potentially valuable to the criminal justice system.<sup>15</sup> One court called DNA evidence the "single greatest advance in the 'search for truth' . . . since the advent of cross-examination."<sup>16</sup> Even its critics acknowledged that "[a]ppropriately carried out and correctly interpreted, DNA typing is possibly the most powerful innovation in forensics since the development of fingerprinting in the last part of the 19th Century."<sup>17</sup>

involved "polymarkers," D1S80, and STRs (short tandem repeats). Levy recounts these developments throughout the book. See LEVY, *supra* note 1, at 138-41 (discussing PCR); *id.* at 144 (discussing D1S80); *id.* (discussing polymarker); *id.* at 144-45 (discussing STRs).

<sup>9</sup> *Id.* at 21.

<sup>10</sup> See Mark Curriden, *A New Evidence Tool; First Use of Mitochondrial DNA Test in a U.S. Criminal Trial*, 82 A.B.A. J. 18, 18 (1996) (the rape-murder of a four-year-old girl was solved from a small red hair found in the victim's throat). Previously, RFLP and PCR were used, both of which test for DNA in the cell nucleus.

<sup>11</sup> *United States v. Lowe*, 954 F. Supp. 401 (D. Mass. 1996).

<sup>12</sup> Marilyn A. Menotti-Raymond et al., *Pet Cat Hair Implicates Murder Suspect*, 386 NATURE 774 (1997) (STR genotyping used in Canadian case).

<sup>13</sup> *State v. Bogan*, 905 P.2d 515 (Ariz. Ct. App. 1995).

<sup>14</sup> Rolan A.H. van Oorschot & Maxwell K. Jones, *DNA Fingerprints from Fingerprints*, 387 NATURE 767 (1997).

<sup>15</sup> As Levy observes:

Of course, it is true that, over the long history of Anglo-American jurisprudence, courts have opened their doors to numerous new forms of scientific evidence. Many of these innovations have provoked controversy but few as much as DNA evidence, for never before have we seen a new form of scientific findings so persuasive that it often stands above all other evidence, or lack of evidence, and by itself spells the difference between conviction and acquittal.

LEVY, *supra* note 1, at 105.

<sup>16</sup> *People v. Wesley*, 533 N.Y.S.2d 643, 644 (N.Y. Co. Ct. 1988).

<sup>17</sup> R.C. Lewontin & Daniel L. Hartl, *Population Genetics in Forensic DNA Typing*, 254 SCI. 1745, 1746 (1991).

The DNA story is a tale worth telling—even if it were not so “spellbinding.”<sup>18</sup> Although *And the Blood Cried Out* was written for the general public, it is worthwhile reading for lawyers. Mr. Levy’s style is clear, concise, and readable. The book goes beyond DNA evidence; Levy describes other aspects of the criminal justice system, such as police interrogation techniques and trial strategy, and then explains how DNA fits into this system. In Part I, I address Levy’s general observations about the justice system, including comments on police interrogations, defense attorneys, and juries. Part II critiques Levy’s rendition of the DNA story. Part III addresses the lessons that I draw from this story. In my view, the criminal justice system was not prepared to deal with DNA evidence. As a result, a number of significant legal issues arose in the early DNA cases. They include: (1) use of improper scientific procedures; (2) insufficient pretrial discovery; (3) difficulty obtaining defense experts; and (4) lack of independent scientific studies. These issues are important and deserve more attention than Levy provides.

### I. THE CRIMINAL JUSTICE SYSTEM

Overall, Levy excels at explaining how the criminal justice system works. Several illustrations are noteworthy.

First, throughout his book, Levy tells the victims’ stories. Too often lawyers, including myself, talk about “rape cases” in the abstract.<sup>19</sup> Levy does not let us escape the real nature of rape. He is graphic in some of his descriptions but is not sensationalistic. His description of the brutality and degradation of the rape victims is palpable. For example, he reminds us that “the injuries to the Central Park jogger were so severe that they could not take the time to do a rape kit procedure until several hours after she was brought in.”<sup>20</sup> The reader is also introduced

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<sup>18</sup> Hopefully the subtitle was an agent’s or publisher’s idea.

<sup>19</sup> In addition to homicide cases, DNA evidence is most often used in rape cases.

<sup>20</sup> LEVY, *supra* note 1, at 80. The case was named for a rape victim whose anonymity has been protected; she was attacked on April 19, 1989. “In reality, the crime was more accurately [described as] the Central Park rampage, a series of attacks on many victims carried out over the course of about an hour by a pack of teenagers, apparently gone mad.” *Id.* at 61-62.

to the "East Side Slasher," Matias Reyes, a serial rapist who stabbed his victim's eyes so they could not identify him.<sup>21</sup>

Second, Levy's description of police interrogation techniques is quite informative. In explaining the questioning of the East Side Slasher, he writes:

When detective Mike Sheehan was brought in to question Reyes about the homicide, he had no hard evidence with which he could confront him. He had nothing to work with but his skill at what he did for a living, and some considerable charm. The rare ability to turn on the charm for a low-life who has raped someone just hours earlier is an important part of a successful detective's arsenal.<sup>22</sup>

Levy then explains how Detective Sheehan misled Reyes into confessing.<sup>23</sup> Later, he explains how other New York City detectives tricked a suspect in the Central Park Jogger case into making incriminating comments, falsely telling the suspect that there were "fingerprints on the jogger's pants or running shorts."<sup>24</sup>

Levy also relates how police respond to the *Miranda* decision. One of the contradictions of *Miranda* is that the police are entrusted with the responsibility of giving legal advice to a suspect.<sup>25</sup> Levy writes that the

*Miranda* warnings, advising the suspect that he need not talk, will have been read with the verbal equivalent of a wink, in a tone and cadence

<sup>21</sup> During the summer of 1989, three women were raped and stabbed in their eyes on Manhattan's Upper East Side. One died. *Id.* at 3.

<sup>22</sup> *Id.* at 7. Matias Reyes confessed to two of the rapes but not to the rape-murder. Detective Sheehan later obtained a confession on the murder from Reyes. *Id.*

<sup>23</sup> Levy does not discuss the legality of these confessions. See 1 WAYNE R. LAFAYE & JEROD H. ISRAEL, *CRIMINAL PROCEDURE* § 6.2, at 447 (1984) (observing that in *Frazier v. Cupp*, 394 U.S. 731, 739 (1969), the "Court concluded that the 'fact that the police misrepresented the statements that Rawls made is, while relevant, insufficient in our view to make this otherwise voluntary confession inadmissible.' Similarly, lower courts have held confessions admissible when they were prompted by such misrepresentations as that the murder victim was still alive, that nonexistent witnesses have been found, that the murder weapon had been uncovered, that defendant's prints were found at the crime scene, and that an accomplice had confessed and implicated the defendant.") (footnotes omitted).

<sup>24</sup> LEVY, *supra* note 1, at 77.

<sup>25</sup> See STEPHEN A. SALTZBURG & DANIEL J. CAPRA, *AMERICAN CRIMINAL PROCEDURE* 542 (5th ed. 1966) ("The educational aspect of *Miranda* has its own problems. The Court was depending on the very police officers about whom it was concerned to give the warnings. How effective could the Court have expected police officers to be as teachers of constitutional rights?").

suggesting that all in the room know that this is simply a formal legal nicety to be gotten past before they get down to business.<sup>26</sup>

Third, perhaps Levy's most insightful points concern his courtroom adversary—the defense counsel. In the context of the O.J. Simpson trial, he tells us that:

The best criminal defense attorneys are often distinguished from the lesser lights by their focus on broad themes and their ability to marshal facts to support those themes. A less qualified lawyer will simply quibble with the prosecution's case, nitpicking every small inconsistency or contradiction, reminding the jury at every opportunity that the burden of proof is on the prosecution, that the defense has to prove nothing; when the case is done, the lawyer takes his bows for a good try, and the client is lead off to a jail.<sup>27</sup>

Levy goes on to state that the "best defense lawyers, from the celebrated to the obscure, know that no matter what the law says about who bears the burden of proof, they must pose a theory or theories that the jury will see as supporting the client's innocence and then develop facts that support this theory."<sup>28</sup>

My only complaint concerning Levy's explanation of the justice system is a statement that he makes about Bronx juries. He writes that "Bronx juries are notoriously friendly to defendants in criminal cases, much more so than those in Manhattan, where I worked as a prosecutor."<sup>29</sup> This is a startling statement, one that cries out for an explanation. None is given. Are we to read "race" between the lines?<sup>30</sup> The reader needs more.

#### A. PROSECUTION VIEW

Mr. Levy served as a prosecutor, and he writes from that perspective.<sup>31</sup> This is neither unexpected, nor is it necessarily a criticism. I would be surprised if his perspective was otherwise, but it does manifest itself in some striking ways. For example, in explaining plea bargaining, Levy writes:

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<sup>26</sup> LEVY, *supra* note 1, at 2.

<sup>27</sup> *Id.* at 158.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.* at 34.

<sup>30</sup> In describing the O.J. Simpson case, Levy mentions that "the case was being tried before a largely minority group jury in a city where the police had a well-established reputation for abuse of minority men." *Id.* at 160.

<sup>31</sup> Levy served as an Assistant District Attorney in the Manhattan D.A.'s office for several years, commencing in 1987.

There are few decisions a prosecutor must make as difficult as the choice between offering a defendant a lesser sentence on a plea bargain and going to trial. After a trial, a convicted defendant will likely get an extremely lengthy sentence, something close to what he deserves. But if he is not convicted at trial, the defendant is a free man, free to go out and prey on society again.<sup>32</sup>

The possibility that the "free man" might be an "innocent man," a fact buttressed by the lack of evidence (at least in the eyes of the acquitting jury), never seems to occur to Levy. A newly released Department of Justice report discusses the exoneration of twenty-eight convicts through the use of DNA technology—some of whom had been sentenced to death.<sup>33</sup> The report supports Levy's DNA argument, but it also raises other issues. Prosecutors tried almost all of these cases (one was a guilty plea); these prosecutors helped convict innocent people. This ought to give prosecutors pause when automatically assuming the guilt of a defendant. Indeed, Levy discusses one of these cases, the Honaker case, in which prosecutors misused hair evidence to obtain a conviction.<sup>34</sup> Levy notes that "[t]here was no question that the state hair expert [at Honaker's trial] had overstated the distinctiveness of the hair recovered from the victim's shorts in his trial testimony."<sup>35</sup> This comment is a gross understatement. According to Levy, the expert testified: "It is unlikely that that hair would match anyone other than the defendant, but it is possible."<sup>36</sup> At best, the expert could have testified that the hairs were "consistent," which means that they could have come from Honaker or thousands of other people.<sup>37</sup>

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<sup>32</sup> LEVY, *supra* note 1, at 33.

<sup>33</sup> EDWARD CONNORS ET AL., CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL (1996) [hereinafter EXONERATED BY SCIENCE]. See generally Elizabeth V. LaFollette, *State v. Hunt and Exculpatory DNA Evidence: When Is a New Trial Warranted*, 74 N.C. L. REV. 1295 (1996).

<sup>34</sup> LEVY, *supra* note 1, at 150-55. See also EXONERATED BY SCIENCE, *supra* note 33, at 57 (discussing the Honaker case).

<sup>35</sup> LEVY, *supra* note 1, at 153.

<sup>36</sup> *Id.* at 152.

<sup>37</sup> One court has ruled that even the "consistent with" language goes too far. See *Williamson v. Reynolds*, 904 F. Supp. 1529, 1558 (E.D. Okla. 1995) (excluding hair comparison while observing that the court had "been unsuccessful in its attempts to locate any indication that expert hair comparison testimony meets any of the requirements of *Daubert*," further, "[a]lthough the hair expert may have followed pro-



A competent prosecutor should have known this.<sup>38</sup> In addition, the fact that the victim had been hypnotized prior to trial was not revealed until the post-trial proceedings.<sup>39</sup> This is a patent constitutional violation.<sup>40</sup> Honaker spent ten years in prison.

Levy's prosecution perspective manifests itself in other contexts as well. In another passage, he observes that: "[C]riminal juries often show a remarkable ability to make subtle distinctions, sometimes to a fault, as they pore over and dissect evidence."<sup>41</sup> Here, Levy is criticizing juries for being conscientious. Yet, the law often requires the jury to make "subtle distinctions" and demands that "they pore over and dissect evidence." Indeed, the jury in the O.J. Simpson trial was criticized for not pouring over the evidence.<sup>42</sup> Moreover, the jury serves other purposes. As the United States Supreme Court has noted, defendants in criminal cases are accorded the right to jury trial "in order to prevent oppression by the Government" and that "[p]roviding an accused with the right to be tried by a jury of his peers [gives] him an inestimable safeguard against the corrupt

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cedures accepted in the community of hair experts, the human hair comparison results in this case were, nonetheless, scientifically unreliable."), *rev'd on other grounds*, *Williamson v. Ward*, 110 F.3d 1508, 1522-23 (10th Cir. 1997).

<sup>38</sup> There were other inconsistencies. "Honaker had a vasectomy in 1977, but the vaginal swab recovered intact sperm . . . . The rapist spoke obsessively about Vietnam; Honaker had never been there. Both the victim and her fiance were sure that the rapist held the gun in his left hand, and Honaker was right-handed." LEVY, *supra* note 1, at 153.

<sup>39</sup> *Id.*

<sup>40</sup> *E.g.*, *Orndorff v. Lockhart*, 998 F.2d 1426 (8th Cir. 1993) (prosecution's failure to notify the defense that a witness had been hypnotized constituted a confrontation violation because it deprived the accused of the opportunity to cross-examine the witness on this issue), *cert. denied*, 510 U.S. 1060 (1994); *United States v. Miller*, 411 F.2d 825 (2d Cir. 1969) (new trial was granted because the prosecution failed to inform the defense that a key witness had undergone hypnosis); *Brown v. State*, 426 So. 2d 76, 80 (Fla. Dist. Ct. App. 1983) ("[D]ue process demands that counsel be afforded a fairer means by which to prepare his defense to this critical evidence."); *State v. Armstrong*, 329 N.W.2d 386, 395 (Wis. 1983), *cert. denied*, 461 U.S. 946 (1983); *Gee v. State*, 662 P.2d 103, 105 (Wyo. 1983).

<sup>41</sup> LEVY, *supra* note 1, at 11.

<sup>42</sup> See Paul Reidinger, *Squeezing the Juice Out of O.J.*, 82 A.B.A. J. 92, 93 (1996) ("[Prosecutor Christopher] Darden knew the jury's swift decision was bad news because '[t]welve people could not make an honest assessment of nine months of testimony in just four hours.' The jurors apparently had made up their minds long before the final arguments and possibly before the opening arguments.") (quoting CHRISTOPHER DARDEN, IN CONTEMPT (1996)).

or overzealous prosecutor and against the compliant, biased, or eccentric judge."<sup>43</sup> Levy fails to mention this point.

Levy's prosecutorial bent again surfaces in his discussion of police interrogations. As noted above, Levy's realistic description of interrogation practices is a strong point of the book. But Levy seems to overlook several contradictions. In describing the Central Park Jogger case, he anticipates the defense counsel's attacks on an accused's confession:

Once again, the police had a devastating confession. But once again, there was a problem, for the defendant's statement included a major inaccuracy, grist for the defense argument that these statements were not firsthand accounts by people who had actually been there but recycled stories fed to the defendants by the police.<sup>44</sup>

It does not occur to Levy that if the police had taped this interrogation this "problem" would not have arisen. Levy even informs us that taping occurs only when the prosecutor arrives and records a statement *after* the suspect has confessed to the detectives.<sup>45</sup> There is a reason that the police do not tape confessions. Many suspects do not understand that oral, as well as written and taped, confessions are admissible.<sup>46</sup> Instead of focusing on defense tactics, perhaps Levy should have addressed this police tactic.

Levy also fails to connect the issue of false confessions to police interrogation techniques. In explaining the first DNA case in Leicestershire County, England,<sup>47</sup> Levy notes that the police

<sup>43</sup> *Duncan v. Louisiana*, 391 U.S. 145, 155-56 (1968).

<sup>44</sup> LEVY, *supra* note 1, at 76.

<sup>45</sup> "It is only after a suspect has committed himself firmly to a story that an assistant district attorney is called in and the suspect interviewed by the assistant district attorney on videotape." *Id.* at 72.

<sup>46</sup> In *Connecticut v. Barrett*, 479 U.S. 523 (1987), the suspect said he would not provide a written statement without an attorney but was willing to talk with police. The Supreme Court found a valid waiver as to the oral statements even though the suspect's ambivalence about having an attorney indicated, at the very least, a limited understanding about the significance of oral statements. The Court stated that a suspect's ignorance of the full consequences of his decision does not vitiate the voluntariness of his decision.

<sup>47</sup> See JOSEPH WAMBAUGH, *THE BLOODING* (1989) (discussing the investigation and capture of Colin Pitchfork for the rape-murders of Lynda Mann in 1983 and Dawn Ashworth in 1986).

obtained a false confession from a suspect, Richard Buckland.<sup>48</sup> In 1986, Buckland confessed to one of two rape-murders that had occurred in a small English town, which was a short distance from Dr. Jeffreys's laboratory. Buckland, however, would not confess to the second murder, which the police believed was so similar to the first murder that it had to have been committed by the same person. The police sought out Jeffreys in an attempt to tie Buckland to the second murder through DNA analysis. Jeffreys surprised the police when he concluded that both murders were committed by the same person but Buckland was not the assailant.<sup>49</sup> Levy apparently does not see a relationship between Buckland's false confession and the deceptive interrogation practices that he favorably described in the previous chapter.

False confessions are an inherent risk of such high pressure interrogation techniques.<sup>50</sup> In a taped interview made for a NOVA television documentary on DNA evidence, Buckland was asked why he had confessed to a crime that he did not commit. He responded: "They just say too much to you. Like you won't get out of here. . . . No chance. No way. Then the pressure began getting really hard. You just didn't have a chance."<sup>51</sup> Based on audiotapes of the interview, the writer, Joseph Wambaugh, described the interrogation in the following terms:

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<sup>48</sup> LEVY, *supra* note 1, at 28. For some reason, Levy refers to the suspect as George Howard. Other sources, including the NOVA tape which includes an interview of the suspect, *see infra* note 51, identify the suspect as Richard Buckland. *See also* OTA REPORT, *supra* note 3, at 8 ("After prolonged questioning, [Buckland] made a graphic confession to killing Ashworth.").

<sup>49</sup> "Not only was he innocent of the first murder but he had falsely confessed to the rape and murder of [the second victim]." LEVY, *supra* note 1, at 29. Another person, Colin Pitchfork, later confessed to both crimes and his DNA matched the crime scene evidence.

<sup>50</sup> *See generally* Peter Brooks, *Storytelling Without Fear?: Confession in Law and Literature*, 8 YALE J.L. & HUMAN. 1 (1996); Richard A. Leo, *Criminal Law: The Impact of Miranda Revisited*, 86 J. CRIM. L. & CRIMINOLOGY 621 (1996); Gisli H. Gudjonsson, *The Psychology of False Confessions*, 57 MEDICO-LEGAL J. 93 (1989) (discussing coerced-complaint confessions and coerced-internalized confessions); Arye Ratner, *Convicted But Innocent: Wrongful Conviction in the Criminal Justice System*, 12 LAW & HUM. BEHAV. 283 (1988).

<sup>51</sup> NOVA, MURDER, RAPE AND DNA (1988) (Films For The Humanities & Sciences).

The kitchen porter was getting so upset he was answering in non sequiturs.<sup>52</sup>

But by then, the boy had back-pedaled and was denying he'd had prior sexual experience . . .<sup>53</sup>

And the boy looked from one to the other and answered, "I can't remember. I probably really went mad, and I don't know it!"<sup>54</sup>

Then he became angry and cried out, "I never *touched* her! Why should I get blamed?" . . . And suddenly, in the midst of a confession that was confused, disjointed, bizarre, the boy said something eminently sensible: "I want a blood test!"<sup>55</sup>

Despite these events, Buckland was charged based upon his confession.

Buckland was not the only case of this type. David Vasquez, who was later exonerated by DNA, was also convicted based upon a false confession.<sup>56</sup> Indeed, Vasquez, who was borderline retarded, pled guilty. His confession was based on a dream,<sup>57</sup> and "his account was incoherent and inconsistent."<sup>58</sup> First, the police convinced Vasquez that his fingerprints were found at the scene, and then they fed him the details of the crime:

- [Detective]: Tell us how you did it.  
 Vasquez: I grabbed the knife and just stabbed her, that's all.  
 [Detective]: Oh David. No David! Now if you would have told us the way it happened we could believe you a little bit better.  
 Vasquez: I only say that it did happen and I did it, my fingerprints were on it.  
 [Detective]: You hung her.  
 Vasquez: What?  
 [Detective]: You hung her!  
 Vasquez: Okay. So I hung her.<sup>59</sup>

<sup>52</sup> WAMBAUGH, *supra* note 47, at 125.

<sup>53</sup> *Id.* at 129.

<sup>54</sup> *Id.* at 131.

<sup>55</sup> *Id.* at 132.

<sup>56</sup> See EXONERATED BY SCIENCE, *supra* note 33, at 73 (discussing Vasquez case).

<sup>57</sup> PAUL MONES, *STALKING JUSTICE: THE DRAMATIC TRUE STORY OF THE DETECTIVE WHO FIRST USED DNA TESTING TO CATCH A SERIAL KILLER* 54 (1995) ("I can't help you guys," David said softly. "I'm here because of what I said to the police about a dream I had . . .").

<sup>58</sup> *Id.* at 80.

<sup>59</sup> *Id.* at 81.

The trial judge suppressed two of Vasquez's statements, noting: "Here, we have a two-on-one situation at the police station, the use of the good guy/bad guy methods of interrogation and the careful use of factual misstatements of evidence."<sup>60</sup> In addition, "[a]fter several minutes of cajoling the [defense psychiatrist] was able to persuade David that two plus two was three."<sup>61</sup>

## II. THE DNA STORY

Levy's clear explanation of DNA evidence is the strongest part of the book. By using actual cases, Levy provides valuable context for the reader as well as an interesting story. To explain DNA evidence and how it fits into the criminal justice system, Levy uses a number of high profile cases—the World Trade Center bombing, the East Side Slasher, the Central Park Jogger, and the O.J. Simpson case. Some cases are used to show the power of DNA profiling. For example, in the World Trade Center prosecution, an FBI expert matched saliva on an envelope sent by the terrorists to the *N.Y. Times* with the DNA of one of the defendants.<sup>62</sup> Many of the cases that Levy discusses would not have been solved or successfully prosecuted without DNA evidence. In contrast to these cases, the Central Park Jogger prosecution is used to illustrate a case where DNA evidence was missing and how the prosecution dealt with this problem.<sup>63</sup> Levy

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<sup>60</sup> *Id.* at 60.

<sup>61</sup> *Id.* at 58.

<sup>62</sup> Andre Blum, *Trade Center Case Turns On Forensics*, NAT'L L.J., Oct. 25, 1993, at 8 ("Prosecutors said [Mr. Nidal Ayyad's] saliva was found on the envelope containing a letter to the *New York Times* proclaiming the Liberation Army, 5th Battalion, had bombed the WTC in response to U.S. aid to Israel."). See LEVY, *supra* note 1, at 144 (discussing this case).

<sup>63</sup> A news account of the Central Park Jogger case commented: "Among the defense's strongest points in attacking the prosecution's case was the surprising absence of physical evidence—no weapons, no blood stains, no strands of hair, no pieces of skin, no footprints link any of the teenagers to the crimes." Rorie Sherman, *Technology, Emotion Key in Jogger Case*, NAT'L L.J., Aug. 20, 1990, at 8. See also Tim Golden, *Jurors in Jogger Trial Remember a Relentless Period of Testing*, N.Y. TIMES, Aug. 20, 1990, at B4 ("The youths claimed not to have penetrated the jogger, and there was no clear physical proof that they had.").

also discusses cases in which DNA analysis exonerated the innocent,<sup>64</sup> sometimes after defendants had spent years in prison.

Levy uses another case to demonstrate the power of DNA databanks. Jean Ann Broderick was sexually assaulted and murdered on November 17, 1991 in Minneapolis.<sup>65</sup> There were no suspects until the police entered a DNA profile extracted from crime scene evidence into the state DNA databank.<sup>66</sup> It was the "first case in American history in which the new tool of DNA data banking was used to solve a rape or murder case."<sup>67</sup> While the capability to solve a "cold hit" case, one without a suspect, is an important development, it also raises serious privacy issues that Levy does not address.<sup>68</sup> This is unfortunate because more and more states are enacting legislation to obtain samples from convicted prisoners for DNA databanks. Moreover, the DNA

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<sup>64</sup> See LEVY, *supra* note 1, at 96 ("On January 9, 1991, the prosecutors went to court and dismissed the case against John Davis. In doing so, they based their decision on the DNA evidence."); *id.* at 150-55 (describing Edward Honaker's release from prison).

<sup>65</sup> *Id.* at 125-28.

<sup>66</sup> *Id.*

<sup>67</sup> *Id.* at 128.

<sup>68</sup> Challenges to DNA databank statutes on constitutional grounds have been unsuccessful. See *Boling v. Romer*, 101 F.3d 1336, 1340 (10th Cir. 1996) ("[W]hile obtaining and analyzing the DNA or saliva of an inmate convicted of a sex offense is a search and seizure implicating Fourth Amendment concerns, it is a reasonable search and seizure. This is so in light of an inmate's diminished privacy rights; the minimal intrusion of saliva and blood tests; and the legitimate government interest in the investigation and prosecution of unsolved and future criminal acts by the use of DNA in a manner not significantly different from the use of fingerprints.") (citations omitted) (also rejecting Fifth Amendment, due process, equal protection, and cruel and unusual punishment claims); *Rise v. Oregon*, 59 F.3d 1556 (9th Cir. 1995) (upholding an Oregon statute that required all persons convicted of murder or a sexual offense to provide blood samples for a DNA databank); *Jones v. Murray*, 962 F.2d 302 (4th Cir.) (same result but under a different Fourth Amendment analysis—the diminished privacy rights of convicted persons), *cert. denied*, 506 U.S. 977 (1992); *Sanders v. Coman*, 864 F. Supp. 496, 499-501 (E.D.N.C. 1994) (forcible drawing of blood for DNA databank violates neither the Fourth, Eighth, or Fourteenth Amendments); *In re Maricopa County Juv. Action*, 930 P.2d 496 (Ariz. Ct. App. 1996) (juvenile sex offenders); *State v. Olivas*, 856 P.2d 1076, 1080-81 (Wash. 1993) (rejecting a search and seizure challenge to DNA identification sex offender law; according to the court, this provision constituted a valid regulatory search). See generally Harold Krent, *Of Diaries and Data Banks: Use Restrictions Under the Fourth Amendment*, 74 TEX. L. REV. 49 (1995); Yale H. Yee, Note, *Criminal DNA Data Banks: Revolution For Law Enforcement or Threat to Individual Privacy?*, 22 AM. J. CRIM. L. 461 (1995).

Identification Act of 1994 provides federal funds to assist in this endeavor.<sup>69</sup>

#### A. PROSECUTORIAL PERSPECTIVE

Levy's prosecution perspective also surfaces when he tells the DNA story. He relies on prosecutor Rockne Harmon's article, which was published in this *Journal*,<sup>70</sup> but does not cite the articles of defense attorneys Barry Scheck,<sup>71</sup> Peter Neufeld,<sup>72</sup> and William Thompson,<sup>73</sup> all of whom have written significant articles on DNA evidence. This perspective makes Levy vulnerable to a charge of selective quoting. For example, he cites the 1990 Office of Technology Assessment (OTA) report as follows: "Its most crucial finding, however, was devastating to the DNA debunkers. Testing of DNA is reliable, concluded the report, and questions about the validity of DNA typing are 'red herrings that do the courts and the public a disservice.'"<sup>74</sup> But he fails to mention that the report also recognized that:

Serious questions are raised . . . about how best to ensure that any *particular test* result is reliable. These questions focus on data interpretation, how to minimize realistic human error, and the appropriate level of monitoring to ensure quality. Such questions, which stem from actual court cases, underscore the need to develop both technical and operational standards now.<sup>75</sup>

The OTA Report also raised the substructure issue,<sup>76</sup> which concerned the population frequencies used to show the discrimina-

<sup>69</sup> LEVY, *supra* note 1, at 209 (listing statutes).

<sup>70</sup> Rockne P. Harmon, *Legal Criticisms of DNA Typing: Where's the Beef*, 84 J. CRIM. L. & CRIMINOLOGY 175 (1993).

<sup>71</sup> Barry C. Scheck, *DNA and Daubert*, 15 CARDOZO L. REV. 1959 (1994).

<sup>72</sup> Peter J. Neufeld, *Have You No Sense of Decency?*, 84 J. CRIM. L. & CRIMINOLOGY 189 (1993).

<sup>73</sup> William C. Thompson, *Evaluating the Admissibility of New Genetic Identification Tests: Lessons From the "DNA War,"* 84 J. CRIM. L. & CRIMINOLOGY 22 (1993); William C. Thompson & Simon Ford, *DNA Typing: Acceptance and Weight of the New Genetic Identification Tests*, 75 VA. L. REV. 45 (1989).

<sup>74</sup> LEVY, *supra* note 1, at 56 (quoting OTA REPORT, *supra* note 3, at 8).

<sup>75</sup> OTA REPORT, *supra* note 3, at 83 (emphasis in original).

<sup>76</sup> The Report stated:

One critical factor: These basic calculations are only valid when applied to populations in which the DNA fragments are statistically independent. Otherwise, the value calculated might greatly underestimate the true occurrence of the pattern in the general population—making a match seem rarer than it actually is. Essentially, the population must be one where individuals randomly marry

tory power of DNA evidence. This issue played a critical role in later DNA cases and required the National Academy of Sciences to issue a second DNA report.<sup>77</sup>

Another illustration is Levy's discussion of *United States v. Yee*,<sup>78</sup> a case that is significant for several reasons. First, *Yee* was the initial DNA case that involved the FBI's profiling system. Second, Magistrate James Carr held an extensive six-week hearing and wrote an exhaustive report, in which he discussed both the scientific and legal issues concerning DNA evidence. Third, each side was represented by exceptional attorneys<sup>79</sup> who had access to impressive expert witnesses.<sup>80</sup>

*Yee* was a major test for DNA evidence, and it passed—but not without criticism. The magistrate wrote that “the F.B.I. program of proficiency testing has serious deficiencies, even without consideration of the troubling hint in the record of an impulse at one point to destroy some of the small amount of test data that had been accumulated earlier.”<sup>81</sup> In another passage, the magistrate stated that he “did not either disregard or discount the accuracy of many of the criticisms about the remarkably poor quality of the F.B.I.'s work and infidelity to important scientific principles.”<sup>82</sup> Finally, he noted that “research must be undertaken to devise a means of responding more fully to the possibilities of substructure.”<sup>83</sup> Unfortunately, Levy does not expose the reader to these comments.<sup>84</sup>

A third example of Levy's selective usage is his citation to an article by Eric Lander and Bruce Budowle, entitled *DNA Finger-*

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and reproduce, so that distinct subgroups are absent. In such freely mixed populations, there will be no correlation between the alleles on the maternal and paternal chromosomes (Hardy-Weinberg equilibrium) and no correlation between alleles at different loci (no linkage disequilibrium).

*Id.* at 67.

<sup>77</sup> See *infra* text accompanying notes 168-70.

<sup>78</sup> 134 F.R.D. 161 (N.D. Ohio 1991), *aff'd sub. nom.*, *United States v. Bonds*, 12 F.3d 540 (6th Cir. 1993).

<sup>79</sup> Barry Scheck was one of the defense attorneys, and James Wooley was one of the prosecutors.

<sup>80</sup> See *infra* text accompanying notes 139-40.

<sup>81</sup> *Yee*, 134 F.R.D. at 208.

<sup>82</sup> *Id.* at 210.

<sup>83</sup> *Id.*

<sup>84</sup> See LEVY, *supra* note 1, at 111, for a discussion of *Yee*.



*printing Dispute Laid to Rest*.<sup>85</sup> The article was significant because Lander was an early critic of the forensic use of DNA evidence and Budowle is the FBI's top DNA expert. Citing this article, Levy writes that "[t]he momentum [toward accepting DNA evidence] snowballed in October 1994, when a major advocate and a leading critic of DNA evidence jointly published an article declaring that the controversy 'has been resolved.'"<sup>86</sup> But Levy fails to note that the Lander and Budowle article also contained a number of troubling statements. The authors wrote: "When it first burst on the scene, the supporting scientific literature consisted of a mere handful of papers."<sup>87</sup> Another passage read:

The initial outcry over DNA typing standards concerned laboratory problems: poorly defined rules for declaring a match; experiments without controls; contaminated probes and samples; and sloppy interpretation of autoradiograms. Although there is no evidence that these technical failings resulted in any wrongful convictions, the lack of standards seemed to be a recipe for trouble.<sup>88</sup>

Yet, during the period to which these comments are addressed, defendants were sentenced to death on the basis of DNA evidence.<sup>89</sup>

## B. DNA MISCONCEPTIONS

There are at least three common misconceptions (perhaps "myths") about DNA evidence, and Levy's treatment of these issues is only partially successful. I have labeled these misconceptions: (1) "It's just like a fingerprint!"; (2) "What's a few decimal points?"; and (3) defense counsel "hypocrisy."

### 1. "It's Just Like a Fingerprint!"

Fingerprints are considered the most reliable type of scientific evidence.<sup>90</sup> They are unique, they do not change over time,

<sup>85</sup> Eric S. Lander & Bruce Budowle, *DNA Fingerprinting Dispute Laid to Rest*, 371 NATURE 735 (1994).

<sup>86</sup> LEVY, *supra* note 1, at 123 (quoting Lander & Budowle).

<sup>87</sup> Lander & Budowle, *supra* note 85, at 735.

<sup>88</sup> *Id.*

<sup>89</sup> See *infra* notes 183-85 and accompanying text (discussing the execution of Timothy Spencer).

<sup>90</sup> See generally *People v. Adamson*, 165 P.2d 3, 12 (Cal. 1946) ("Fingerprints are the strongest evidence of identity of a person and under the circumstances of the present

and the comparison is relatively easy to explain to the jury. Thus, it is not surprising that the proponents of new scientific techniques often invoke favorable comparisons to fingerprints. For example, firearms identification has been described as a ballistic "fingerprint"<sup>91</sup> and neutron activation analysis as a "nuclear fingerprint."<sup>92</sup> Fiber evidence has been touted as "nearly" as valuable as fingerprint evidence.<sup>93</sup> In drug analysis, a molecule's infrared spectrophotometric spectrum has sometimes been referred to as its fingerprint.<sup>94</sup> In one of the IRA cases, a British prosecutor incorrectly stated that certain tests for bomb residues "were like fingerprints."<sup>95</sup> Perhaps the most far-fetched comparison occurred during an evidentiary hearing in the Mike Tyson trial. The prosecutor argued that "state of mind is like fingerprint evidence."<sup>96</sup> In just about every instance the fingerprint comparison is more misleading than helpful. None of these techniques are as unique as fingerprints.

Further, some techniques are intentionally named to imply such a comparison. This was the case with "voiceprint" evidence.<sup>97</sup> In the early 1960s, Lawrence Kersta, the developer of the technique, began to champion the technique as a means of voice identification. According to Kersta, the technique was

case they were alone sufficient to identify the defendant as the criminal."), *aff'd*, 332 U.S. 46 (1947); 1 GIANNELLI & IMWINKELRIED, *supra* note 1, at 481 ("[N]o impression is as important as a fingerprint. . . . [C]rime laboratories rely on fingerprints more heavily than on any other type of impression.").

<sup>91</sup> See Calvin H. Goddard, *Scientific Identification of Firearms and Bullets*, 17 J. CRIM. L. & CRIMINOLOGY 254, 260 (1926).

<sup>92</sup> See Comment, *The Evidentiary Uses of Neutron Activation Analysis*, 59 CALIF. L. REV. 997, 1029 (1971) (phrase "nuclear fingerprint" can be "quite misleading").

<sup>93</sup> See 2 GIANNELLI & IMWINKELRIED, *supra* note 1, at 374 (One expert "has been quoted as stating that fiber evidence can be nearly as valuable as fingerprint evidence in identifying a criminal. The use of the adverb 'nearly' is well-advised . . .").

<sup>94</sup> See *id.* at 306 ("Some commentators refer to a molecule's IR spectrum as its fingerprint.").

<sup>95</sup> Sir John May, Interim Report on the *Maguire* Case at 25 (July 9, 1990) (on file with author). The case against the Maguires developed out of an investigation of an IRA terrorist bombing of a public house in Guilford, England, on October 5, 1974. The prosecution experts used thin layer chromatography (TLC) to detect nitroglycerin (NG), a test that could identify but not quantify NG. *Id.* at 21. At trial, these experts testified falsely that the TLC test was specific for NG and no other substance.

<sup>96</sup> PLAIN DEALER, Feb. 2, 1992, at 6D.

<sup>97</sup> For a discussion, see 1 GIANNELLI & IMWINKELRIED, *supra* note 1, at 295-315.

"[m]uch like fingerprint identification."<sup>98</sup> Speech scientists, however, noted that fingerprints and voiceprints are "fundamentally different from each other"<sup>99</sup> and that "the differences between them seem to exceed the similarities."<sup>100</sup> Eventually, courts also criticized the term, commenting that the "use of the term 'voiceprint,' with its overtones of 'fingerprint,' gives voice spectrographic identification an aura of absolute certainty and accuracy which is neither justified by the facts nor claimed by experts in the field."<sup>101</sup>

Jeffreys used the term "DNA fingerprint" from the beginning,<sup>102</sup> and the press quickly adopted phrases such as "biological fingerprint."<sup>103</sup> Levy's reaction to this misconception is ambiguous. At one point, he writes that "Jeffreys's approach provided results so definitive that it could have been fairly characterized as a fingerprint."<sup>104</sup> But in another passage, he insightfully observes:

In court cases, witnesses for the prosecution frequently testified that no two individuals other than identical twins have the same DNA. This statement, absolutely true as a matter of scientific fact, can be highly misleading if it leads us to believe that the power of DNA analysis lies in its ability to identify and analyze all the characteristics of DNA unique to each individual. Science does not yet have that power.<sup>105</sup>

<sup>98</sup> Lawrence G. Kersta, *Speaker Recognition and Identification by Voiceprints*, 40 CONN. B.J. 586, 586 (1966). He also stated that his experiments showed that the technique's accuracy for correct identifications was "greater than 99 percent." *Id.* at 591. See also Lawrence G. Kersta, *Voiceprint Identification*, 196 NATURE 1253 (1962); Lawrence G. Kersta, *Voiceprint Identification Infallibility*, 34 J. ACOUSTICAL SOC'Y AM. 1978 (1962).

<sup>99</sup> NATIONAL ACADEMY OF SCIENCES, ON THE THEORY AND PRACTICE OF VOICE IDENTIFICATIONS 6 (1979).

<sup>100</sup> Richard Bolt et al., *Speaker Identification by Speech Spectrograms; A Scientist's View of its Reliability for Legal Purposes*, 47 ACOUSTICAL SOC'Y AM. 597, 599 (1970).

<sup>101</sup> *United States v. Baller*, 519 F.2d 463, 465 n.1 (4th Cir.), cert. denied, 423 U.S. 1019 (1975). *Accord* *United States v. Williams*, 583 F.2d 1194, 1197 n.5 (2d Cir. 1978), cert. denied, 439 U.S. 1117 (1979); *State v. Gortarez*, 686 P.2d 1224, 1233 n.2 (Ariz. 1984); *Cornett v. State*, 450 N.E.2d 498, 500 (Ind. 1983).

<sup>102</sup> See Jeffreys et al., *Individual-specific "Fingerprints" of Human DNA*, *supra* note 2.

<sup>103</sup> *New DNA Test Offers Biological "Fingerprints" for Crime Fight*, N.Y. TIMES, Feb. 4, 1986, at 19.

<sup>104</sup> LEVY, *supra* note 1, at 26. On the same page, Levy notes that Jeffreys named his approach "genetic fingerprinting." *Id.*

<sup>105</sup> *Id.* at 24.

In short, DNA *evidence* (as opposed to DNA) is *not* a fingerprint, and it is misleading to imply that it is.

### 2. "What's a Few Decimal Points?"

A second misconception is that a few decimal points in this context is unimportant—i.e., that reporting a probability of 1 in 100,000.00 or 1 in 1,000,000.00 is inconsequential. As Dr. Kenneth Kidd of Yale University reportedly stated: "‘It makes absolutely no difference to me if the number is 1 in 800,000 or 1 in 5 million’ . . . . [I]t probably doesn’t matter to a jury either."<sup>106</sup> This "what's a few decimal points" comment is telling. Kidd, who testified as a prosecution expert in the *Yee* case, may be correct, but for over 200 years the Constitution has entrusted that determination to juries not scientists—and shouldn't the placement of the decimal point favor the accused? Moreover, a few decimal points may indeed make a significant difference. Levy points out why:

In cases where there is a great deal of other evidence against a defendant, modesty in stating the significance of a DNA match may not matter for all practical purposes. . . . But in those criminal cases where there is little evidence against a defendant other than a DNA match, the size of the numbers stating the match's significance may be the difference between conviction and exoneration.<sup>107</sup>

In other words, the decimal point is most important (perhaps determinative) where the prosecution has the least amount of "other" evidence. Of course, one reason that may contribute to a lack of "other" evidence is the innocence of the accused.

### 3. *Defense Attorney Hypocrisy*

Levy perpetuates one of the canards raised in the DNA debates—that defense attorneys are hypocrites, championing DNA when it exculpates their clients but not when it incriminates their clients. He writes: "Defense lawyers could pick and choose between those cases in which they liked DNA results and those in which they did not, relying on favorable DNA results

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<sup>106</sup> Leslie Roberts, *Fight Erupts Over DNA Fingerprinting*, 254 Sci. 1721, 1721 (1991).

<sup>107</sup> LEVY, *supra* note 1, at 112-13.

and attacking DNA tests that implicated their clients."<sup>108</sup> First, Levy fails to acknowledge that this defense position has a valid *scientific* basis; that is, the lack of a "match" at any loci definitively excludes the suspect, whereas a match at even several loci is not conclusive.<sup>109</sup> This is true of other types of scientific evidence as well. For example, if type O blood is found on a bloody dagger at a murder scene (and the victim is not type O), a person with A, B, or AB blood type is automatically excluded.<sup>110</sup> In contrast, a person with type O blood could have contributed the blood, but 43% of the population also has this blood type.<sup>111</sup> The same is true of bitemark evidence—determining that two samples do not match is often both readily apparent and definitive, whereas a "match" is not.<sup>112</sup>

Second, in a very important sense defense attorneys cannot "pick and choose." Public defenders are assigned cases, and defense attorneys are ethically required to contest evidence, including DNA profiling, if their clients exercise the constitutional right to trial by jury. Instead of implying hypocrisy, the reader would have been better served if Levy had provided an explanation of the constitutional role that defense attorneys play in a free society.<sup>113</sup>

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<sup>108</sup> *Id.* at 57.

<sup>109</sup> See Judith A. McKenna et al., *Reference Guide on Forensic DNA Evidence*, in FEDERAL JUDICIAL CENTER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 274, 297 (1994) ("If a profile match is declared, it means only that the DNA profile of the suspect is consistent with that of the source of the crime sample. The crime sample may be from the suspect or from someone else whose profile, using the particular probes involved, happens to match that of the suspect. Expert testimony concerning the frequency with which the observed alleles are found in the appropriate comparison population is necessary for the finder of fact to make an informed assessment of the incriminating value of this match.").

<sup>110</sup> See generally 1 GIANNELLI & IMWINKELRIED, *supra* note 1, at 538-46 (discussing blood group testing).

<sup>111</sup> See *id.* at 570.

<sup>112</sup> See *id.* at 361 ("It is easier to conclude that a person's dentition and a bite mark do not match than it is to find a match. This is due to the fact that any unexplained inconsistency between the bite mark and the dentition means that the suspect could not have made the bite mark.").

<sup>113</sup> In a different context, the Supreme Court has stated: "[I]f the staff's submissions include materials which are susceptible to challenge or impeachment, it is precisely the role of counsel to 'denigrate' such matter." *Kent v. United States*, 383 U.S. 541, 563 (1966).

Finally, some prosecutors selectively fight DNA evidence. Indeed, prosecutors are often criticized on the same point that Levy raises against defense attorneys:

Prosecutors are enthusiastic about using DNA to imprison people, but resist having the tables turned. For example, Suffolk County, N.Y., District Attorney James Catterson fought [Kerry] Kotler's appeals for DNA tests for two years. "If we keep introducing new evidence, there is no stability in the system," he said. It was Catterson's second such defeat in three months: he resisted similar pleas from Leonard Callace, who was convicted of sexual assault, until October, when tests, along with the circumstances of the crime, showed that Callace—imprisoned for six years—could not be guilty. Catterson remains unconvinced of Kotler's innocence. He suggests that samples were somehow contaminated in the lab, but given the tests, he has no plan to retry him.<sup>114</sup>

In the Rickey Hammond case, a kidnaping and rape prosecution tried in Hartford, Connecticut, a DNA expert from the FBI testified for the *defense*; he said that semen stains taken from the victim's panties did not come from Hammond. Nevertheless, the jury, at the prosecutor's urging, convicted.<sup>115</sup> Hammond's conviction was reversed on appeal, and he was acquitted at a retrial.<sup>116</sup>

There are other examples. In *State v. Woodall*,<sup>117</sup> prosecutors claimed PCR-DNA was unreliable when it was offered to exonerate Woodall, who was seeking a new trial. Woodall was later released from prison.<sup>118</sup> In *Dabbs v. Vergari*,<sup>119</sup> the defense had to go to court to have evidentiary samples subjected to DNA analysis; the defendant had been convicted of rape in 1984.

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<sup>114</sup> Kevin Krajick, *Genetics in the Courtroom: Controversial DNA Testing Can Clear a Suspect*, NEWSWEEK, Jan. 11, 1993, at 64; see also EXONERATED BY SCIENCE, *supra* note 33, at 41 (discussing Leonard Callace case); *id.* at 61 (discussing Kerry Kotler's case).

<sup>115</sup> Jack Ewing, *Connecticut Jury Disregards DNA Test*, NAT'L L.J., Apr. 23, 1990, at 9.

<sup>116</sup> See EXONERATED BY SCIENCE, *supra* note 33, at 54-55; see also *State v. Hammond*, 604 A.2d 793 (Conn. 1992).

<sup>117</sup> 385 S.E.2d 253 (W. Va. 1989) (In the original case, the West Virginia Supreme Court upheld the admissibility of DNA evidence, but a post-trial test proved inconclusive, because an insufficient sample existed for RFLP analysis; Woodall was later exonerated by PCR analysis).

<sup>118</sup> PLAIN DEALER, Mar. 27, 1991, at 3C. The *Woodall* case is discussed in Paul C. Giannelli, *The Abuse of Scientific Evidence in Criminal Cases: The Need for Independent Crime Laboratories*, 4 VA. J. SOC. POL'Y & L. 439 (1997). See also EXONERATED BY SCIENCE, *supra* note 33, at 74-76.

<sup>119</sup> 570 N.Y.S.2d 765 (N.Y. Sup. Ct. 1990).

## C. DNA TACTICS

Levy provides a well structured account of the tactics of both prosecutors<sup>120</sup> and defense attorneys in dealing with DNA evidence. One comment, however, is puzzling. Near the end of the book, Levy comments:

Often criminal defense lawyers are just as hesitant, if not more hesitant, to push for DNA testing. Hardened by long exposure to career criminals, many defense lawyers start off believing that their clients are guilty, regardless of their clients' protestations that they were not within miles of the scene of the crime on the day in question. As a consequence, many criminal defense attorneys are wary of ordering a test in each individual case that may force them to face that their client has been lying to them—and that could potentially be admitted at trial to prove their client's guilt. This presents the criminal defense attorney with a difficult choice: Forgo DNA testing, and risk the conviction of an innocent person, or request such testing and possibly aid the conviction of the lawyer's own client.<sup>121</sup>

This dilemma does not seem all that "difficult." If a client insists she is innocent and there is a test that would help establish that innocence, the defense attorney has little choice. Of course, a competent attorney would only request the test after the case had been thoroughly investigated and the consequences of a negative test result explained to the client. A similar issue arose in polygraph stipulation cases. In *People v. Reeder*,<sup>122</sup> a California court of appeals held that a defense counsel "who, in advance of the examination, stipulates that a defendant will submit to a polygraph examination and the results will be admissible at trial demonstrates incompetence."<sup>123</sup> This decision was subsequently vacated, and the defendant's ineffective assistance of counsel claim rejected.<sup>124</sup> Later cases also reject such claims. For example, in one case, the court held that when counsel agrees to an examination after the defendant insists on his innocence, there

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<sup>120</sup> Some prosecutors believe that the direct examination of the prosecution DNA expert should be no more than half an hour. See James R. Wooley, *Presenting DNA Evidence at Trial: The "K.I.S.S. Principle,"* 1 PROFILES IN DNA 3 (1997) (K.I.S.S. stands for "Keep it simple, stupid.").

<sup>121</sup> LEVY, *supra* note 1, at 196.

<sup>122</sup> 129 Cal. Rptr. 646 (Cal. Ct. App. 1976).

<sup>123</sup> *Id.* at 648.

<sup>124</sup> *People v. Reeder*, 135 Cal. Rptr. 421, 424 (Cal. Ct. App. 1976).

is no incompetence.<sup>125</sup> In this situation, the defense counsel has no choice.

Requesting an independent test by a defense expert is risky, however, only if the prosecution is able to use the test results at trial.<sup>126</sup> This is a rather murky legal area. Usually, prosecution discovery extends *only* to experts that the defense intends to call as witnesses.<sup>127</sup> Moreover, in the case of a *nontestifying* defense expert, some jurisdictions recognize the applicability of the work product or attorney-client privilege in this context.<sup>128</sup> Some courts have also recognized a Sixth Amendment right to effective assistance of counsel argument.<sup>129</sup> But these cases are not universally accepted. Moreover, there is nothing to prevent the prosecutor from asking the government expert if there was sufficient DNA remaining for a defense re-test<sup>130</sup> and perhaps asking whether some DNA was in fact offered or turned over to the defense.

Perhaps, a more interesting defense tactic concerns a request to have a defense expert present during prosecution DNA testing. This tactic may backfire, however. What is the expert's role in this context? If the defense expert is present and does not object to the testing procedures, the prosecution can use the defense expert's silence as an imprimatur for the test results—whether or not the defense expert testifies. If the de-

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<sup>125</sup> *People v. Berry*, 173 Cal. Rptr. 137, 143 (Cal. Ct. App. 1981). *Accord* *State v. Sloan*, 545 A.2d 230, 235 (N.J. Super. Ct. App. Div. 1988). *See generally* Gregory G. Sarno, Annotation, *Adequacy of Defense Counsel's Representation of Criminal Client Regarding Hypnosis and Truth Tests*, 9 A.L.R. 4th 354 (1981) (discussing competency of representation concerning defense counsel's handling of matters pertaining to polygraph tests).

<sup>126</sup> *See generally* *Prince v. San Diego County Super. Ct.*, 10 Cal. Rptr. 2d 855 (Cal. Ct. App. 1992) (DNA sample divided between prosecution and defense; denial of Sixth Amendment right to effective assistance of counsel to require presence of prosecution representative during defense testing).

<sup>127</sup> *See* 1 GIANNELLI & IMWINKELRIED, *supra* note 1, at 101 (discussing prosecution discovery).

<sup>128</sup> *See id.* at 162-63 (discussing attorney-client privilege as applied to experts).

<sup>129</sup> *Id.* at 164-65.

<sup>130</sup> *See* Wooley, *supra* note 120, at 3 (recommending that the prosecution expert be asked the following question: "If someone disagrees with your result, is there a scientific way to check if you got the right answer? (*the defendant has the ability to retest the evidence if he really wants to challenge the accuracy of the test result.*)") (emphasis in original).



fense expert criticizes the testing at trial, the prosecution can ask the expert on cross-examination why the expert did not object to the testing procedures at the time of the testing. Here, the prosecutor could argue that, if the defense was really interested in valid test results, the defense expert would have raised these concerns during the test. This is similar to the problem that defense attorneys face when they represent a client at a lineup.<sup>131</sup>

#### D. THE OUT-OF-COURT BATTLES

One of the most fascinating aspects of the DNA story is the out-of-court battles, which involved not only the attorneys but also experts and reporters. Levy spends a good part of his book recounting the developments of these battles. At other times, however, he fails to acknowledge his own participation in this phenomenon. For example, he calls *People v. Castro*, a case discussed later in this article,<sup>132</sup> a “public relations debacle”<sup>133</sup>—without any appreciation of how unusual such a description of a judicial opinion is. Judicial opinions are often described as good, bad, significant, misunderstood, and so forth—but not as “public relations” problems.

The out-of-court battles originated in the early press reaction to the use of DNA evidence in criminal cases. The popular press trumpeted DNA evidence as “foolproof”<sup>134</sup> and “revolutionary.”<sup>135</sup> Moreover, the private DNA laboratories, Lifecodes and Cellmark, promoted DNA’s use by claiming that it had “the power to identify one individual in the world’s population” and “the chance that any two people will have the same DNA print is

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<sup>131</sup> See 1 LAFAYE & ISRAEL, *supra* note 23, § 7.3(e), at 576 (discussing whether defense counsel waives any objection by not asserting it at the lineup); Francis A. Gilligan, *Eyewitness Identification*, 58 MIL. L. REV. 183, 201 (1972); *Panel Discussion, The Role of the Defense Lawyer at a Line-up in Light of the Wade, Gilbert and Stovall Decisions*, 4 CRIM. L. BULL. 273, 290 (1968).

<sup>132</sup> See *infra* text accompanying notes 174-86.

<sup>133</sup> LEVY, *supra* note 1, at 52.

<sup>134</sup> *DNA Prints: A Foolproof Crime Test*, TIME, Jan. 26, 1987, at 66.

<sup>135</sup> Anastasia Toufexis, *Convicted by Their Genes: A New Forensic Test is Revolutionizing Criminal Prosecutions*, TIME, Oct. 31, 1988, at 74.

one in 30 billion."<sup>136</sup> "Cellmark entitled one of its informational brochures DNA Fingerprinting, The Ultimate Identification Test."<sup>137</sup> As Levy notes, the *Castro* case dispelled much of this initial euphoria.<sup>138</sup>

The most important battle over the validity of DNA evidence involved respected scientists. Dr. Richard C. Lewontin of Harvard University and Dr. Daniel Hartl of Washington University testified for the defense in *Yee*,<sup>139</sup> the first case involving the FBI's DNA profiling procedures. The prosecution had its own prominent experts, including Dr. Thomas Caskey of Baylor University and Dr. Kenneth K. Kidd of Yale University. After the magistrate ruled that the DNA evidence was admissible, Lewontin and Hartl wrote a paper on their views that was accepted by *Science*. Lewontin and Hartl stated that the estimates of the probability of a matching DNA profile "as currently calculated, are unjustified and generally unreliable."<sup>140</sup>

Prosecutors and pro-DNA experts were afraid of this article.<sup>141</sup> A paper by a Harvard scientist that was accepted by one of the foremost scientific journals after peer review would cause problems. Consequently, the editors of *Science* changed the normal practice of publishing rebuttals in later issues and actively sought out a rebuttal article for the same issue.<sup>142</sup> According to a *Science* staff reporter:

<sup>136</sup> Peter J. Neufeld & Neville Colman, *When Science Takes the Witness Stand*, SCI. AM., May 1990, at 46, 50.

<sup>137</sup> Dan Burk, *DNA Identification: Possibilities and Pitfalls Revisited*, 31 JURIMETRICS J. 53, 85 n.19 (1990).

<sup>138</sup> For a discussion of *Castro*, see *infra* text accompanying notes 174-86.

<sup>139</sup> See *supra* text accompanying notes 78-83 (discussing *Yee*).

<sup>140</sup> Lewontin & Hartl, *supra* note 17, at 1750.

<sup>141</sup> Levy describes the bases of these fears. See LEVY, *supra* note 1, at 111 ("[t]he impending publication of their article threatened the admissibility of DNA analysis in a way that their courtroom testimony never could"); *id.* ("[s]uch publication can have substantial consequences when courts are trying to determine whose views enjoy general acceptance within the scientific community"); *id.* at 112 ("[b]ut an article by a Harvard scientist in the nation's leading scientific journal would be much harder to discount").

<sup>142</sup> *Cases and Commentaries*, in PROFESSIONAL ETHICS REP., Spring 1992, at 2 ("[T]he normal procedure followed by *Science* is to publish rebuttals in a subsequent issue and to give the authors of the original article an opportunity to respond.") [hereinafter *Ethics Report*].

In mid-October Caskey and Kidd, who had both gotten hold of the paper, cornered one of *Science's* editors at a genetics meeting and urged her not to publish it without a rebuttal. *Science* editor Daniel Koshland agreed, commissioning a rebuttal by Kidd and Ranajit Chakraborty at the University of Texas, which was published in the same issue. Koshland also called Lewontin a few days after the genetics meeting, asking for revisions in the [previously peer-reviewed and accepted] paper, which was already in galleys.<sup>145</sup>

Not only was the rebuttal article published in the same issue,<sup>144</sup> it appeared *before* the Lewontin and Hartl article. And then, as Levy notes, "all hell broke loose."<sup>145</sup>

Levy recounts much of this controversy. Nevertheless, he also omits significant parts of the story. For example, other scientists vigorously criticized *Science's* conduct: "I am appalled . . . . It seems to me inconceivable that scientists would attempt to suppress publication of a paper because they disagreed with its conclusions, a paper which apparently had gone through what one assumes was a normal and stringent review process . . . ." <sup>146</sup> This writer also raised the specter of conflict of interest.<sup>147</sup> Another scientist also expressed concern:

[S]urely it is not often that an Editor insists on revisions to the galleys of an article accepted after peer review. Even more remarkable (and all credit is no doubt due to the Editor) is to commission a rebuttal to the article and to publish it contemporaneously. Save for an uncritical account filtered through staff reporter (Leslie Roberts), oddly missing has been direct comment, so often heard on other issues, from the Editor who stands at the center (or more accurately to one side) of the contro-

<sup>145</sup> Leslie Roberts, *Science in Court: A Culture Clash*, 257 *Sci.* 732, 735 (1992) [hereinafter Roberts, *Science in Court*].

<sup>144</sup> Ranajit Chakraborty & Kenneth K. Kidd, *The Utility of DNA Typing in Forensic Work*, 254 *Sci.* 1735 (1991).

<sup>145</sup> LEVY, *supra* note 1, at 111.

<sup>146</sup> Lynwood R. Yarbrough, *Letter to the Editor*, 255 *Sci.* 1052 (1992) (University of Kansas School of Medicine).

<sup>147</sup> As Yarbrough notes:

The vehemence and lack of scientific objectivity that appear to surround this issue indicate that there may be important concerns other than scientific ones. I urge that *Science* obtain from those most closely involved in this debate information about possible economic interests in DNA typing and provide this information to the reader, as other journals have sometimes done.

versy. Having first stirred the pot, where was he when it came time to eat the meal, be it cake or crow?<sup>148</sup>

The peer review process, if not manipulated, was distorted.

Moreover, in discussing this controversy, Levy does not seem to appreciate how much the lines between science and law had blurred.<sup>149</sup> Dr. Kidd defended his actions as follows: "I felt publishing the article would create a very serious problem in the legal system, and that that was their intent."<sup>150</sup> This statement illustrates a nonscientific motivation. Similarly, Caskey, who had recommended the rebuttal article and was a member of *Science's* board of reviewing editors, said that "he was concerned that 'publishing defense testimony in a scientific journal' gives it such weight that courts might reopen, perhaps to overturn convictions obtained on the basis of DNA evidence."<sup>151</sup> Here, again, is a nonscientific motivation, and a peer-reviewed article in a top scientific journal is reduced to "defense testimony." It may not be possible to separate science and law in such disputes, but these statements raise troublesome issues for a judicial system relying increasingly on scientific knowledge.<sup>152</sup>

<sup>148</sup> Don W. Cleveland, *Letter to the Editor*, 255 *Sci.* 1052 (1992) (Johns Hopkins University School of Medicine). Koshland responded to this challenge:

The decision to publish Lewontin and Hartl's article and accompanying Perspective [rebuttal] was guided by our desire to present to our readers the best and most up-to-date developments in contemporary science. Our judgments were consistent with our overall philosophy that the pages of *Science* should reflect the most accurate view of highly controversial scientific issues.

*Id.* at 1053.

<sup>149</sup> Lewontin and Hartl accused Koshland of "caving into political pressure by commissioning the Chakraborty-Kidd rebuttal." Leslie Roberts, *Fight Erupts Over DNA Fingerprinting*, 254 *Sci.* 1721, 1721 (1991). Lewontin characterized the use of the rebuttal article as, "[p]ure politics. . . . I think it is quite extraordinary that an editor would go out and hire two guys to write a rebuttal' after the article had been peer reviewed and accepted." Leslie Roberts, *Was Science Fair to its Authors?*, 254 *Sci.* 1722 (1991) [hereinafter Roberts, *Was Science Fair to its Authors?*].

<sup>150</sup> Roberts, *Was Science Fair to its Authors?*, *supra* note 149, at 1722.

<sup>151</sup> Christopher Anderson, *DNA Fingerprinting Discord*, 354 *NATURE* 500 (1991). Also, the article reports that "Caskey is a prominent supporter of DNA fingerprinting who licenses his techniques to Cellmark Diagnostics, one of the largest DNA fingerprinting companies." *Id.*

<sup>152</sup> Attorneys also crossed over and published their views in scientific journals. *See, e.g.*, Rockne P. Harmon, *Letter to the Editor*, 261 *Sci.* 13 (1993) ("Hartl and Lewontin's misuse of legal history to bolster their scientific opinions will only guarantee more contentiousness and controversy.").

The *Science* controversy was not an isolated incident. Another dispute over a DNA article arose at a second journal. In November 1991, Professor Seymour Geisser, a statistician at the University of Minnesota, submitted a paper on the forensic use of DNA statistics to the *American Journal of Human Genetics*. One of the anonymous peer reviewers, who strongly recommended against publication, was Dr. Ranajit Chakraborty, who had co-authored the rebuttal article in *Science*<sup>153</sup> and had been aligned with the prosecution in court cases. Moreover, Charles Epstein, the Editor, wrote to Geisser commenting: "since this work will certainly be used in court cases, the writing needs to be more careful."<sup>154</sup> Later, Epstein would write that his journal had "served as an open forum on the forensic uses of DNA technology. We have published highly 'partisan' but nevertheless carefully reviewed papers on all sides of the issue."<sup>155</sup> Geisser later wrote:

Both [Chakraborty and the second referee, Bruce Weir] have frequently submitted reports and testified for the prosecution when FBI DNA profiles were at issue. I have testified for the defense in some of these cases. They have collaborated with FBI forensic workers, gained access to their data, and have published it. Certainly they should have recused themselves from serving as referees, or at the very least informed the editor of their situation.<sup>156</sup>

Here, again, this incident—"highly partisan" scientific articles, conflict of interest, and FBI control of data—is unprecedented.<sup>157</sup>

The publication of the National Academy of Science's first DNA report<sup>158</sup> also sparked controversy. The report proposed a

<sup>153</sup> See Chakraborty & Kidd, *supra* note 144.

<sup>154</sup> *Ethics Report*, *supra* note 142, at 2.

<sup>155</sup> *Id.* at 5 (comments of Charles J. Epstein, Editor).

<sup>156</sup> *Id.*

<sup>157</sup> In January 1992, Geisser was scheduled to testify as a defense DNA witness. He "received a fax from [the prosecutor] demanding that he produce in court any manuscript he authored, whether accepted or under review . . . [F]ifteen minutes after receiving that fax, [he] received a fax from . . . Epstein, . . . along with comments from three anonymous reviewers, one of whom strongly recommended against publication." *Ethics Report*, *supra* note 142, at 2. Epstein later wrote that this incident was "sheer coincidence." *Id.* at 4.

<sup>158</sup> COMMITTEE ON DNA TECHNOLOGY IN FORENSIC SCIENCE, NATIONAL RES. COUNCIL, DNA TECHNOLOGY IN FORENSIC SCIENCE (1992) [hereinafter NAS REPORT].

method, known as the "ceiling principle," as a partial solution to problems associated with the use of statistical evidence in court.<sup>159</sup> The debate over the ceiling principle was intense and acrimonious. There were attacks<sup>160</sup> and counterattacks,<sup>161</sup> followed by rebuttals<sup>162</sup> and surrebuttals.<sup>163</sup> As Levy recounts, "[S]cientists fighting for principle displayed an intensity, even a savagery, unmatched by the most aggressive lawyers."<sup>164</sup> While Levy discusses the "ceiling principle" battles, he omits other problems. First, a "confidential" draft of the report was leaked to the FBI.<sup>165</sup> Second, Dr. Thomas Caskey, a member of the

<sup>159</sup> See Richard Lempert, *DNA, Science and the Law: Two Cheers for the Ceiling Principle*, 34 JURIMETRICS J. 41 (1993).

<sup>160</sup> See Peter Aldhous, *Geneticists Attack NRC Report As Scientifically Flawed*, 259 SCI. 755 (1993); Bruce Devlin et al., *Statistical Evaluation of DNA Fingerprinting: A Critique of the NRC's Report*, 259 SCI. 748 (1993); see also Bruce Devlin et al., *Comments on the Statistical Aspects of the NRC's Report on DNA Typing*, 39 J. FORENSIC SCI. 28 (1994) (elaborating the statistical details of the authors' earlier critique of the NRC report).

<sup>161</sup> "The critique that B. Devlin et al. . . . aim at the NRC report on DNA typing is itself open to some criticism." Richard C. Lewontin & Daniel Hartl, *Letter to the Editor*, 260 SCI. 473 (1993).

<sup>162</sup> See Ranajit Chakraborty, *Letter to the Editor*, 260 SCI. 1059 (1993); Bruce Devlin et al., *Letter to the Editor*, 260 SCI. 1057 (1993).

<sup>163</sup> See Eric S. Lander, *Letter to the Editor*, 260 SCI. 1221 (1993).

<sup>164</sup> LEVY, *supra* note 1, at 106.

<sup>165</sup> The *Journal of NIH Research* explained:

[FBI lab director] Hicks says that after the Oregon case, two members of the NAS committee gave him copies of a preliminary draft of the report. . . . He says the members of the committee who gave him preliminary copies of the report were frustrated "that it was so unbalanced and lacked objectivity."

Because the FBI is one of the sponsors of the report (along with NIH, the National Science Foundation, the State Justice Institute, the National Institute of Justice, and the Alfred P. Sloan Foundation), Hicks phoned Oskar Zaboraky and wrote to John Burris to express his concerns. Zaborasky is the NAS study director for the committee. Burris is the executive director of the NAS commission on life sciences. Hicks says he urged the academy staff "to closely examine the chapter" on DNA profiling statistics, but contends, "I was not directing them in any way."

Burris and Zaborasky insist they never relayed Hicks' comments to members of the committee. . . .

Celia Hooper, *Rancor Precedes National Academy of Science's DNA Fingerprinting Report*, J. NIH RES., Mar. 1992, at 76, 79-80.

committee, resigned because of the appearance of a conflict of interest due to his ties with one of the commercial DNA labs.<sup>166</sup>

The criticisms of its first Report were so strong<sup>167</sup> that the NAS commissioned a second report, which was published in 1996.<sup>168</sup> Yet, even this action was plagued by controversy. Apparently, the NAS at first turned down the request for a second report. After FBI Director William Sessions requested the second report, it was put on the "fast track."<sup>169</sup> Lewontin later stated that the conclusions in the second report "were 'bought' by the Department of Justice."<sup>170</sup>

### III. LESSONS LEARNED

The most important question to be drawn from the DNA cases is: What have we learned? There are several ways to look

<sup>166</sup> See Roberts, *Science in Court*, *supra* note 143, at 733 ("Caskey's ties to Cellmark Diagnostics led to his resignation from a committee of the National Academy of Sciences . . ."); see also Christopher Anderson, *Conflict Concerns Disrupt Panels, Cloud Testimony*, 355 NATURE 753 (1992). Also, the Justice Department, through the National Institute of Justice, had awarded his school a \$200,000 grant for DNA fingerprinting research. *Id.*

<sup>167</sup> For a further discussion, see D.H. Kaye, *The Forensic Debut of the National Research Council's DNA Report: Population Structure, Ceiling Frequencies and the Need for Numbers*, 34 JURIMETRICS J. 369 (1994); David H. Kaye, *DNA Evidence: Probability, Population Genetics, and the Courts*, 7 HARV. J.L. & TECH. 101 (1993); Kenneth R. Kreiling, *DNA Technology in Forensic Science*, 33 JURIMETRICS J. 449 (1993) (Review of NAS Report). See also Kenneth R. Kreiling, *Comment: The National Research Council Report on Forensic DNA*, in SHEPARD'S EXPERT & SCI. EVIDENCE 507 (1994).

<sup>168</sup> COMMITTEE ON DNA FORENSIC SCIENCE: AN UPDATE, NATIONAL RES. COUNCIL, THE EVALUATION OF FORENSIC DNA EVIDENCE (1996). The 1992 report "did not eliminate all controversy. Indeed, in propounding what the committee regarded as a moderate position—the *ceiling principle* and the *interim ceiling principle*—the report itself became the target of criticism from scientists and lawyers on both sides of the debate on DNA evidence in the courts." *Id.* at 1 (emphasis in original).

<sup>169</sup> As Neufeld notes:

The Bureau's request went through the normal Academy channels and was initially rejected. Undaunted by this rejection, Director Sessions reiterated his request, this time formally to the president of the Academy, with an offer to underwrite the project. The normal procedures were dispensed with . . . . So much for the integrity of the Bureau and the independence of science.

See Neufeld, *supra* note 72, at 197.

<sup>170</sup> Eliot Marshall, *Academy's About-Face on Forensic DNA*, 272 SCI. 803 (1996). See also Rorie Sherman, *New Scrutiny for DNA Typing*, NAT'L L.J., Oct. 18, 1993, at 3 (Defense attorney Peter Neufeld stated, "It's offensive that law enforcement can be dictating to the independent scientific community how they should examine problems.").

back on the DNA controversy. The first view is that the proponents of DNA evidence were correct from the beginning, and although there were various "setbacks" along the way, the proponents were eventually vindicated. Under this view, the setbacks are marginalized as "technical" problems. I am afraid that Levy's book can be read as affirming this view, although the reader would have to ignore many of Levy's caveats. I believe this view is wrong. The significant lesson is not that DNA evidence eventually succeeded, but how the courts dealt with this evidence in the early cases. Before the advent of DNA, prosecutors advocated the admissibility of paraffin test results,<sup>171</sup> voice-print evidence,<sup>172</sup> and hypnotically-refreshed testimony.<sup>173</sup> These prosecutors were undoubtedly just as confident about the validity of those techniques—and they were wrong. A number of significant legal issues arose in the early DNA cases, including (1) use of improper scientific procedures, (2) insufficient pretrial discovery, (3) difficulty obtaining defense experts, and (4) lack of independent scientific studies.

#### A. SCIENTIFIC PROCEDURES

*People v. Castro*<sup>174</sup> was the first reported case to successfully challenge the validity of DNA evidence. Some DNA proponents minimize the importance of *Castro*, noting that the accused eventually plead guilty<sup>175</sup> and that the *Castro* ruling was limited because the court accepted the general validity of DNA evidence; it ruled only that the results in *Castro* were inadmissible. Nevertheless, the deficiencies in the DNA procedures were by no means minor or technical. The court wrote: "In a piercing attack upon each molecule of evidence presented, the defense was successful in demonstrating to this court that the testing laboratory failed in its responsibility to perform the accepted scientific techniques and experiments."<sup>176</sup> Significantly, the

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<sup>171</sup> See 1 GIANNELLI & IMWINKELRIED, *supra* note 1, at 395-97.

<sup>172</sup> See *id.* ch. 10.

<sup>173</sup> See *id.* at 336-48.

<sup>174</sup> 545 N.Y.S.2d 985 (N.Y. Sup. Ct. 1989).

<sup>175</sup> See MONES, *supra* note 57, at 310 ("Interestingly, however, Mr. Castro eventually pleaded guilty.").

<sup>176</sup> *Castro*, 545 N.Y.S.2d at 996.



prosecution and defense experts met out-of-court and issued a joint statement, including the following: "[T]he DNA data in this case are not scientifically reliable enough to support the assertion that the samples . . . do or do not match. If this data were submitted to a peer reviewed journal in support of a conclusion, it would not be accepted. Further experimentation would be required."<sup>177</sup>

After *Castro* was decided,<sup>178</sup> the National Academy of Science's first DNA report recommended stringent lab procedures: written lab protocols; objective and quantitative procedures for identifying DNA patterns; clearly defined procedures for declaring a match; and methods for identifying potential artifacts.<sup>179</sup> Later, the FBI's top DNA expert, Dr. Bruce Budowle, would acknowledge these deficiencies:

The initial outcry over DNA typing standards concerned laboratory problems: poorly defined rules for declaring a match; experiments without controls; contaminated probes and samples; and sloppy interpretation of autoradiograms. Although there is no evidence that these technical failings resulted in any wrongful convictions, the lack of standards seemed to be a recipe for trouble.<sup>180</sup>

In addition, there was no mandatory proficiency testing.<sup>181</sup> The NAS report also addressed this issue: "No laboratory should let

<sup>177</sup> Eric Lander, *DNA Fingerprinting On Trial*, 339 NATURE 501, 504 (1989).

<sup>178</sup> There were also other early troubles. In *State v. MacLeod*, the prosecutor withdrew the DNA evidence after the defense successfully challenged Lifecodes' procedure for dealing with band shifting. See Colin Norman, *Maine Case Deals Blow to DNA Fingerprinting*, 246 Sci. 1556 (1989).

In *New York v. Neysmith*, the defendant hired Lifecodes to compare his blood with semen samples from the crime scene. The laboratory excluded the defendant based on its results. The prosecutor then obtained a court order for a second test. Lifecodes reported that the second sample did not match the first sample submitted. Blood and semen samples were then sent to Cellmark, which confirmed Lifecodes' original exclusion of the defendant. Lifecodes later admitted to the prosecutor that an error had occurred. See Lander, *supra* note 177, at 505.

<sup>179</sup> NAS REPORT, *supra* note 158, at 52-55.

<sup>180</sup> Lander & Budowle, *supra* note 85, at 735.

<sup>181</sup> The California Association of Crime Laboratory Directors had conducted voluntary proficiency tests:

With respect to blind trials of forensic DNA testing in the United States, CACLD organized trials using case-simulated samples in 1987 and 1988. The three major commercial facilities then performing forensic DNA analysis participated in each trial. In the first trial, out of 50 samples, 2 firms each declared 1 false match that could have resulted in the conviction of an innocent person. The errors apparently

its results with a new DNA typing method be used in court, unless it has undergone such proficiency testing via blind trials."<sup>182</sup>

Lifecodes, the commercial laboratory that performed the tests in *Castro*, had previously conducted DNA analysis in the multiple prosecutions of Timothy Spencer.<sup>183</sup> These prosecutions illustrate the power of DNA evidence. Four brutal rape-murders in different parts of Virginia were tied together through the DNA evidence. *Spencer* also highlights the stakes involved; the defendant was found guilty and was executed in 1994.<sup>184</sup> There is no reason to believe that Lifecodes did a better job in *Spencer* than it did in *Castro*.<sup>185</sup> Levy describes *Castro* as a "public relations debacle," but then, to his credit, notes: "More significant, there was an unquestioned need for standards to guarantee the reliability of DNA testing, particularly testing done by the commercial laboratories run for profit . . ."<sup>186</sup>

The importance of written protocols and adherence to proper procedure would later be demonstrated by Fred Zain,

arose from sample handling problems. The third company declared no false matches. In the second trial, one company again reported an incorrect match. OTA REPORT, *supra* note 3, at 79-80 (emphasis added).

<sup>182</sup> NAS REPORT, *supra* note 158, at 55.

<sup>183</sup> See *Spencer v. Commonwealth*, 384 S.E.2d 775 (Va. 1989) (death of Susan Tucker), *cert. denied*, 493 U.S. 1036 (1990), *habeas corpus denied sub. nom. Spencer v. Murray*, 18 F.3d 237 (4th Cir. 1994); *Spencer v. Commonwealth*, 384 S.E.2d 785 (Va. 1989) (death of Debbie Davis), *cert. denied*, 493 U.S. 1093 (1990), *habeas corpus denied sub. nom. Spencer v. Murray*, 5 F.3d 758 (4th Cir. 1994); *Spencer v. Commonwealth*, 385 S.E.2d 850 (Va. 1990) (death of Dr. Susan Helleans), *cert. denied*, 493 U.S. 1093 (1990), *habeas corpus denied sub. nom. Spencer v. Murray*, 18 F.3d 229 (4th Cir. 1994); *Spencer v. Commonwealth*, 393 S.E.2d 609 (Va. 1990) (death of Diane Cho), *cert. denied*, 498 U.S. 908 (1990). See also MONES, *supra* note 57, at 310; C. Thomas Blair, Comment, *Spencer v. Commonwealth and Recent Developments in the Admissibility of DNA Fingerprint Evidence*, 76 VA. L. REV. 853 (1990) (discussing the DNA aspects of the case).

<sup>184</sup> *Murderer Put to Death in Virginia: First U.S. Execution Based on DNA Tests*, N.Y. TIMES, Apr. 28, 1994, at A1.

<sup>185</sup> This is not to say that *Spencer* was innocent or that Lifecodes erred. The defense had the evidence examined by another DNA laboratory, Cellmark, which reached the same result. The defense also submitted samples under a fictitious name to Lifecodes, which confirmed its original conclusion. See *Spencer*, 5 F.3d at 766. Nevertheless, Lifecodes's procedures were seriously and unacceptably deficient. Indeed, one of the prosecution witnesses in *Spencer*, Dr. Richard J. Roberts, later signed the critical joint statement in *Castro*. See *supra* text accompanying note 177.

<sup>186</sup> LEVY, *supra* note 1, at 52.

the former head serologist of the West Virginia State Police crime laboratory. Zain falsified conventional serological test results in as many as 134 cases from 1979 to 1989.<sup>187</sup> Defendants, since exonerated, were sentenced to long prison terms based upon his testimony. A judicial inquiry concluded that "as a matter of law, any testimonial or documentary evidence offered by Zain at any time in any criminal prosecution should be deemed invalid, unreliable, and inadmissible."<sup>188</sup> In 1989, Zain accepted a serologist position with the County Medical Examiner's laboratory in San Antonio, where he performed DNA profiling and testified in death penalty cases. In *State v. Alejandro*,<sup>189</sup> Zain testified that the defendant's DNA profile matched the DNA found on a rape victim's clothing, stating that it could "only have originated from [Alejandro]."<sup>190</sup> This testimony, on its face, is suspect; DNA profiling, as powerful as it is, could not have positively identified one person. Subsequent DNA tests excluded Alejandro as the assailant.<sup>191</sup> An independent investigator concluded that Zain's work in Texas demonstrated inadequate documentation "[i]n every case."<sup>192</sup> In addition, Zain reached conclusions without specifying the tests performed, used defi-

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<sup>187</sup> *In re Investigation of the W. Va. State Police Crime Lab., Serology Div.*, 438 S.E.2d 501, 511 (W. Va. 1993).

<sup>188</sup> *Id.* at 520 (the Report is reprinted after the opinion). In another passage, the Report stated that Zain's conduct "strikes at the heart of the integrity of the State's case in every prosecution in which Zain was involved." *Id.* at 519.

<sup>189</sup> See EXONERATED BY SCIENCE, *supra* note 33, at 34-35. Alejandro was later awarded damages. See Matt Flores, *Bexar Pays \$250,000 Over False Conviction*, SAN ANTONIO EXPRESS-NEWS, Sept. 13, 1995, available in 1995 WL 9501799.

<sup>190</sup> EXONERATED BY SCIENCE, *supra* note 33, at 34.

<sup>191</sup> *Alejandro* was not Zain's only DNA case. As Professor Starrs notes:

[I]n 1991, on the murder prosecution of Jesus Flores for the murder of Donna Mae Inlow, Zain's DNA report matching the accused's blood to that of semen on the victim was contradicted by a report from Brian Wraxall submitted to the District Attorney of Brownwood, Texas that PCR testing had excluded Flores as the donor of the sperm.

James E. Starrs, *The Seamy Side of Forensic Science: The Mephitic Stain of Fred Salem Zain*, 17 SCI. SLEUTHING REV. 1, 7 (1993).

<sup>192</sup> Mark Hansen, *Lab Evidence Questioned*, 80 A.B.A. J. 16, 16 (1994). Dr. Irving Stone, Chief of the Physical Evidence Section, Southwestern Institute of Forensic Science, Dallas, was the investigator. Dr. Stone commented: "I've never seen anything like it before. It's more than just carelessness. It's patent disregard for normal lab procedures." *Forensic Chief's Job Challenged in Verdict*, HOUS. CHRON., Nov. 7, 1993.

cient controls, and did not relate test results to the evidence examined.<sup>193</sup>

#### B. PRETRIAL DISCOVERY

The criminal justice system cannot adequately deal with scientific evidence without pretrial discovery,<sup>194</sup> and good science is the antithesis of "trial by ambush." More importantly, discovery is not only a fairness issue but a quality control issue.<sup>195</sup> From the beginning, the justice system was plagued with discovery problems.<sup>196</sup> Levy omits any discussion on this topic.

As noted above, Spencer was the first person executed based on DNA evidence.<sup>197</sup> When the defense sought discovery of the prosecution expert's "work notes," which formed the basis of his report, the motion was denied. The Virginia Supreme Court upheld this ruling.<sup>198</sup> Why would a "scientist" want to keep work notes secret? Why would a legal system permit him to do so when a man's life is at stake?

Another illustration was the *Yee* case, discussed earlier as the first DNA case involving the FBI protocols.<sup>199</sup> In *Yee*,<sup>200</sup> the government opposed discovery, even though the need for discovery was underscored by the lack of "extensive independent scientific

<sup>193</sup> Starrs, *supra* note 191, at 8.

<sup>194</sup> See generally Paul C. Giannelli, *Criminal Discovery, Scientific Evidence, and DNA*, 44 VAND. L. REV. 791 (1991).

<sup>195</sup> People are more careful when they have to document what they do and when they know that other experts may review their findings. See Symposium on Science and the Rules of Legal Procedure, 101 F.R.D. 599, 643 (1984). As Professor Joseph Peterson remarked:

Only a small percentage of the cases in any jurisdiction go to trial, so the technicians or scientists in the crime laboratories seldom are called upon to justify their conclusions under rigorous cross-examination. I think the realization that their work will not be reviewed—either by an independent scientist or by opposing counsel and expert in court—decreases the care and completeness with which examiners process evidence.

*Id.*

<sup>196</sup> See *State v. Schwartz*, 447 N.W.2d 422, 427 (Minn. 1989) ("The fair trial and due process rights are implicated when data relied upon by a laboratory in performing [DNA] tests are not available to the opposing side for review and cross-examination.").

<sup>197</sup> See *Murderer Put to Death in Virginia*, *supra* note 184, at A1.

<sup>198</sup> *Spencer v. Commonwealth*, 384 S.E.2d 785, 791 (Va. 1989).

<sup>199</sup> See *supra* text accompanying notes 78-83.

<sup>200</sup> 129 F.R.D. 629 (N.D. Ohio 1990).

assessment and replication of the reliability of the procedures that have been developed by the F.B.I.<sup>201</sup> The defense sought production of matching criteria, environmental insult studies, population data, and proficiency tests. The most troubling aspect of the case concerns the reason the prosecution opposed discovery in the first place. The prosecution simply argued that these materials were not scientific reports under Federal Rule of Criminal Procedure 16(a)(1)(D) and therefore were not subject to discovery. They did not argue that the material was irrelevant or that it would not help the defense.<sup>202</sup> Interestingly, the day after the discovery motion in *Yee* was argued, the FBI Crime Laboratory Director wrote a letter to the *New York Times*, promoting its DNA program:

The procedures employed in these tests have been carefully defined, based on extensive studies. Our procedures and test results have passed muster when subjected to close scrutiny in the scientific community and the courts. The F.B.I. has encouraged wide review of the forensic use of DNA technology through sponsorship of technical seminars and international symposiums and support to studies conducted by the Office of Technology Assessment and the National Academy of Sciences.<sup>203</sup>

It seems incongruous to trumpet the "wide review" of DNA procedures in the press and at the same time oppose discovery in the courtroom.<sup>204</sup>

There are other discovery cases, some of which upheld the denial of discovery.<sup>205</sup> The first NAS Report recommended

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<sup>201</sup> *Id.* at 631.

<sup>202</sup> The federal magistrate granted the motion, but based his decision on Fed. R. Crim. P. 16(C), which permits discovery of documents and tangible objects that are material to the preparation of the defense. He ruled that "predicate materials" were discoverable under this provision. *Id.* at 635.

<sup>203</sup> John Hicks, *Letter to the Editor*, N.Y. TIMES, Feb. 21, 1990, at A24.

<sup>204</sup> The reason for the prosecutor's conduct is tactical, of course, a motivation that is inherent in the adversary system. Thus, the fault lies not with the prosecutor, but with the rule. The federal rule was subsequently amended to require a summary of the expert's testimony. See FED. R. CRIM. P. 16(a)(1)(E).

<sup>205</sup> *E.g.*, *State v. Dykes*, 847 P.2d 1214 (Kan. 1993) (denial of request for the database used to determine DNA match did not deny a fair trial; defense argued that accused's "substantial" Cherokee ancestry made this data important); *Sadler v. State*, 846 P.2d 377 (Okla. Crim. App. 1993) (prosecution's failure to turn over "inconclusive" DNA report did not violate *Brady*). *But see* *People v. Davis*, 601 N.Y.S.2d 174 (N.Y. App. Div. 1993) (due process violation for Lifecodes to refuse to disclose its population data base for its "one in ten million" conclusion).

“open discovery”: “The prosecutor has a strong responsibility to reveal fully to defense counsel and experts retained by the defendant all material that might be necessary in evaluating the evidence.”<sup>206</sup> No doubt some defense lawyers make outrageous demands for discovery, but judges have the authority to control such abuses.<sup>207</sup>

### C. DEFENSE EXPERTS

In *Ake v. Oklahoma*,<sup>208</sup> the United States Supreme Court for the first time recognized a due process right to expert assistance for indigents. The Court wrote:

We hold that when a defendant has made a preliminary showing that his sanity at the time of the offense is likely to be a significant factor at trial, the Constitution requires that a State provide access to a psychiatrist's assistance on this issue, if the defendant cannot otherwise afford one.<sup>209</sup>

*Ake* is a significant decision because up to 80% of all criminal defendants in this country are indigents.<sup>210</sup>

<sup>206</sup> NAS REPORT, *supra* note 158, at 146.

<sup>207</sup> Prosecutors have also made extensive discovery requests. In *State v. DeMarco*, 646 A.2d 431 (N.J. Super. Ct. App. Div. 1994) (*per curiam*), a New Jersey appellate court ruled that the prosecution may not compel discovery of DNA reports prepared by the defendant's expert witness for other clients in unrelated cases. The prosecution issued a subpoena for all of Dr. Edward Blake's DNA reports that indicated the existence of unexplained contamination. The court indicated that the work-product rule would not apply and that applying the attorney-client privilege to reports generated outside of New Jersey would be problematic.

Nevertheless, the court issued a protective order under its discovery rule. The court noted that:

Although we do not determine the applicability of the privileges or . . . [a] Sixth Amendment analysis, their underlying policies inform our view of the issue. Dr. Blake's reports contain private and critical information which should be shielded from undue public exposure. Moreover, litigators, public and private, should have access to the assistance of retained experts with a minimum of risk that their reports, which otherwise have not been placed in the public domain, will surface in unrelated litigation.

*Id.* at 436-37.

<sup>208</sup> 470 U.S. 68 (1985). *Ake's* attorney requested a psychiatric evaluation at state expense to prepare an insanity defense. The trial court refused, and although insanity was the only contested issue at trial, no psychiatrist testified on this issue.

<sup>209</sup> *Id.* at 74.

<sup>210</sup> YALE KAMISAR ET AL., *MODERN CRIMINAL PROCEDURE* 27 (8th ed. 1994) (“The most complete national survey estimated the overall felony indigency rate at 48%, and statistics from particular urban jurisdictions suggest rates in the 70-85% range.”).

The importance of *Ake* to a new and complex technique such as DNA is self-evident. The first NAS Report commented: "Because of the potential power of DNA evidence, authorities must make funds available to pay for expert witnesses . . . ." <sup>211</sup> Nevertheless, in "DNA cases in Oklahoma and Alabama, . . . the defense did not retain any experts, because the presiding judge had refused to authorize funds." <sup>212</sup> Other examples of trial court refusals include *Ex parte Dubose* <sup>213</sup> and *Prater v. State*. <sup>214</sup> The importance of defense DNA experts is illustrated by the O.J. Simpson trial, where a prosecution expert, a leading population geneticist, made a simple computation mistake that was revealed only during cross-examination. <sup>215</sup>

Further, there is a special need for outside experts when novel scientific evidence is introduced. There was no defense expert in *Andrews v. State*, <sup>216</sup> the first reported appellate case considering the admissibility of DNA evidence. Nor was there a defense expert in *Spencer*, the first execution case. <sup>217</sup> In *Spencer*, the prosecution experts "testified unequivocally that there was no disagreement in the scientific community about the reliability of DNA print testing," <sup>218</sup> and there was "no dissent whatsoever in the scientific community." <sup>219</sup> Later events, as Levy documents, completely undermined these statements.

The lack of defense experts in the early DNA cases is not surprising. With novel scientific evidence there is often a delay

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<sup>211</sup> NAS REPORT, *supra* note 158, at 149. The Report also includes the following passage: "Defense counsel must have access to adequate expert assistance, even when the admissibility of the results of analytical techniques is not in question, because there is still a need to review the quality of the laboratory work and the interpretation of the results." *Id.* at 147.

<sup>212</sup> Neufeld & Colman, *supra* note 136, at 53.

<sup>213</sup> 662 So. 2d 1189, 1192-93 (Ala. 1995) (*Ake* due process violation for failure to provide indigent defendant with funds for DNA expert).

<sup>214</sup> 820 S.W.2d 429, 439 (Ark. 1991) (trial judge's initial denial of motion for appointment of defense expert because no available funds was erroneous).

<sup>215</sup> See David H. Kaye, *Cross-Examining Science*, 36 JURIMETRICS vii (1996) (Editor's Page); John Horgan, *High Profile: The Simpson Case Raises the Issue of DNA Reliability*, SCI. AM., Oct. 1994, at 33, 36.

<sup>216</sup> 533 So. 2d 841 (Fla. Dist. Ct. App. 1988).

<sup>217</sup> See *supra* text accompanying notes 183-84 (discussing the *Spencer* case).

<sup>218</sup> *Spencer v. Commonwealth*, 384 S.E.2d 785, 792 (Va. 1989).

<sup>219</sup> *Id.* at 797.

before independent experts appreciate how science is being used in the courtroom.<sup>220</sup> When "voiceprint" evidence was introduced in the early 1970s, the same problem arose. A National Academy of Sciences voiceprint report noted that a "striking fact about the trials involving voicegram evidence to date is the very large proportion in which the only experts testifying were those called by the state."<sup>221</sup> Courts should not use the lack of defense experts as proof that a technique is accepted in the scientific community.

#### D. INDEPENDENT STUDIES

Perhaps the most serious problem with the early DNA cases was the absence of independent scientific studies. The Office of Technology Assessment report was published in 1990.<sup>222</sup> The first NAS report was published in 1992.<sup>223</sup> The second NAS report was issued in 1996, after Spencer's execution. The scientific studies should precede, not follow, the court cases.

Unlike Levy, I believe that the United States Supreme Court's 1993 decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*<sup>224</sup> would have caused serious problems for DNA evidence in

<sup>220</sup> One of the justifications for the *Frye* rule, which required the scientific technique to gain "general acceptance" in the scientific community as a prerequisite to admissibility, focused on this point. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The *Frye* test guaranteed that "a minimal reserve of experts exists who can critically examine the validity of a scientific determination in a particular case." *United States v. Addison*, 498 F.2d 741, 743-44 (D.C. Cir. 1974). The *Frye* test was superseded by the Federal Rules of Evidence. See *Daubert v. Merrell Dow Pharm., Inc.*, 500 U.S. 579 (1993).

<sup>221</sup> NAS REPORT, *supra* note 99, at 49. See also *People v. Chapter*, 13 Crim. L. Rep. (BNA) 2479 (Cal. Super. Ct. 1973) ("In approximately eighty percent of the twenty-five [voiceprint] cases in which such expert testimony/opinion was admitted there was no opposing expert testimony on the issue of reliability and general acceptability of the scientific community . . .").

<sup>222</sup> See OTA REPORT, *supra* note 3.

<sup>223</sup> See NAS REPORT, *supra* note 158.

<sup>224</sup> 509 U.S. 579 (1993). The case involved the admissibility of expert testimony concerning whether Bendectin, an anti-nausea drug, causes birth defects. Levy refers to *Daubert* as adopting a "more relaxed standard" of admissibility. LEVY, *supra* note 1, at 122. There is support for this view. Some courts view *Daubert* as a less stringent standard than *Frye*. See, e.g., *United States v. Kwong*, 69 F.3d 663, 668-69 (2d Cir. 1995) ("The Federal Rules of Evidence, although concededly more liberal than the *Frye* test, still require a determination that the proffered scientific evidence is both relevant and reliable."); *Borawick v. Shay*, 68 F.3d 597, 610 (2d Cir. 1995) ("[B]



the 1980s. In place of the *Frye* test, *Daubert* substituted a reliability test. Such a standard, in the Court's view, is derived from Federal Rule of Evidence 702, which uses the terms "scientific" and "knowledge":

[I]n order to qualify as "scientific knowledge," an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation—i.e., "good grounds," based on what is known. In short, the requirement that an expert's testimony pertain to "scientific knowledge" establishes a standard of evidentiary reliability.<sup>225</sup>

In determining reliability, the Supreme Court specified a number of relevant factors, including whether the scientific theory or technique has been tested. Citing authorities on the philosophy of science, the Court noted that a hallmark of science is empirical testing.<sup>226</sup> Another factor is whether a theory or technique has been subjected to peer review and publication.<sup>227</sup> The peer review and publication process, in the Court's

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loosening the strictures on scientific evidence set by *Frye*, *Daubert* reinforces the idea that there should be a presumption of admissibility."), *cert. denied*, 116 S. Ct. 1869 (1996); *United States v. Bonds*, 12 F.3d 540, 568 (6th Cir. 1993) ("We find that the DNA testimony easily meets the more liberal test set out by the Supreme Court in *Daubert*.").

It is not my view, however. *Daubert*, properly understood, adopts a different, but not a less stringent, standard of admissibility. Cases limiting the admissibility of previously well-established techniques such as handwriting and hair comparisons buttress this position. See *United States v. Starzeczyzel*, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995) (concluding that the "testimony at the *Daubert* hearing firmly established that forensic document examination, despite the existence of a certification program, professional journals and other trappings of science, cannot, after *Daubert*, be regarded as 'scientific . . . knowledge'"); *Williamson v. Reynolds*, 904 F. Supp. 1529, 1558 (E.D. Okla. 1995) (excluding hair comparison while observing that the court had been "unsuccessful in its attempts to locate *any* indication that expert hair comparison testimony meets *any* of the requirements of *Daubert*;" further, "[a]lthough the hair expert may have followed procedures accepted in the community of hair experts, the human hair comparison results in this case were, nonetheless, scientifically unreliable."), *rev'd on other grounds*, *Williamson v. Ward*, 110 F.3d 1508, 1522-23 (10th Cir. 1997).

<sup>225</sup> *Daubert*, 509 U.S. at 590.

<sup>226</sup> See *id.* at 593 (citing HEMPEL, PHILOSOPHY OF NATURAL SCIENCE 49 (1966) ("[T]he statements constituting a scientific explanation must be capable of empirical test.")); see also KARL POPPER, CONJECTURES AND REFUTATIONS: THE GROWTH OF SCIENTIFIC KNOWLEDGE 37 (5th ed. 1989) ("[T]he criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.").

<sup>227</sup> *Daubert*, 509 U.S. at 594.

view, increased the likelihood that flaws in methodology will be detected.<sup>228</sup>

There is a serious question that the *Daubert* standard could have been satisfied in the early DNA cases. For example, in *Yee*<sup>229</sup> the magistrate noted the lack of "extensive independent scientific assessment and replication of the reliability of the procedures that have been developed by the F.B.I."<sup>230</sup> as a reason for pretrial discovery. The FBI's top DNA expert later recalled: "When it first burst on the scene, the supporting scientific literature consisted of a mere handful of papers."<sup>231</sup> The FBI's *VNTR Population Data: A Worldwide Study* was published in 1993, three years after FBI experts began testifying in court.<sup>232</sup> The lack of peer-reviewed articles and independent replication would have raised a formidable obstacle to admissibility under *Daubert*.

#### E. LACK OF ACCESS

One other significant point surfaced during the out-of-court battles discussed earlier.<sup>233</sup> After submitting his article to the *American Journal of Human Genetics*, Professor Geisser was asked to obtain permission from the FBI to use their original data rather than the data submitted by the FBI to defense attorneys in court cases. Geisser then requested this data from Dr. Budowle, the top FBI DNA scientist. The FBI informed Geisser

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<sup>228</sup> A third factor is a technique's "known or potential rate of error." *Id.* As an example the Court cited *United States v. Smith*, 869 F.2d 348, 353-54 (7th Cir. 1989) (surveying studies of the error rates for "voiceprints"). Fourth, the "existence and maintenance of standards controlling the technique's operation" is another indicia of trustworthiness. *Daubert*, 509 U.S. at 594. As an example the Court cited *United States v. Williams*, 583 F.2d 1194, 1198 (2d Cir. 1978) (noting professional organization's standards governing "voiceprints"). Finally, "general acceptance" remains a factor in assessing reliability. Although the Court rejected "general acceptance" as the sole criterion for admissibility, it recognized its relevance in assessing the reliability of scientific evidence. *Daubert*, 509 U.S. at 594 ("Widespread acceptance can be an important factor in ruling particular evidence admissible, and 'a known technique that has been able to attract only minimal support within the community' . . . may be viewed with skepticism.").

<sup>229</sup> See *supra* text accompanying notes 200-04 (discussing discovery opinion in *Yee*).

<sup>230</sup> *United States v. Yee*, 129 F.R.D. 629, 631 (N.D. Ohio 1990).

<sup>231</sup> Lander & Budowle, *supra* note 85, at 735.

<sup>232</sup> FEDERAL BUREAU OF INVESTIGATION, *VNTR POPULATION DATA: A WORLDWIDE STUDY* (1993).

<sup>233</sup> See *supra* text accompanying notes 134-70.

that (1) the FBI had made commitments earlier to other scientists (Chakraborty, Devlin, Risch, and Weir) and therefore his study must not conflict with their studies, (2) the FBI data may be used only in a joint collaboration with Dr. Budowle, (3) the use of the data was restricted to this one paper, and (4) all authors must agree to the entire contents of a final manuscript prior to submission to a journal. Geisser later wrote that:

an independent study under such provisions would be totally compromised, if not impossible. . . . [Moreover,] Chakraborty, Devlin, Risch and Weir have all published articles based on the FBI databases without Budowle as a co-author. . . . Recently, I analyzed Cellmark databases for a court in Ann Arbor, Michigan. At the insistence of Cellmark, the prosecutor requested that the judge rule that I not be allowed to submit my analysis of their data for publication. So much for open science!<sup>234</sup>

#### IV. CONCLUSION

Harlan Levy's book is well-worth reading. He tackles an important subject and explains the subject in a clear and straightforward manner. He presents one view of the DNA story, a view shared by many others, that the proponents were always correct and the debunkers' objections were based upon technicalities. Levy attempts to be fair and succeeds most of the time, noting that the "critics of DNA analysis deserve plaudits for highlighting these concerns."<sup>235</sup> Moreover, the prosecutors trying these cases deserve credit. While litigating cases that could not wait for the publication of independent scientific reports, they had to learn a very complex technique, which was rapidly changing. Indeed, the lawyering in the DNA cases was often superb by both prosecutors and defense attorneys; this was not the case for other scientific techniques. Finally, the FBI deserves credit for implementing DNA profiling—providing standards and delivering DNA technology to state and city crime laboratories.

Unfortunately, however, we did not learn the lessons from the voiceprint cases. For example, in 1978, one court, in rejecting voiceprint evidence, stated:

It is certainly reasonable to expect science to withhold judgment on a new theory until it has been well tested in the crucible of controlled ex-

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<sup>234</sup> *Ethics Report*, *supra* note 142, at 5.

<sup>235</sup> LEVY, *supra* note 1, at 198.

perimentation and study. Such a procedure would require replication of original experiments, and scrutiny of the results in various scientific journals. . . .<sup>236</sup>

Similarly, in the same year, another court noted, "What this court finds disconcerting is the paucity of major tests and studies. . . . But to be assured that we have a scientific technique which is valid and reliable we also need something more than the bare results of one major study."<sup>237</sup> In 1980, I argued for a high burden of proof when the prosecution offers novel scientific evidence because such a burden would require that "the necessary resources [be] expended to validate new techniques. The federal government possesses the capability of marshalling those resources, of establishing independent tribunals, and of conducting the validating research."<sup>238</sup> I also cited the National Academy of Sciences report on voiceprints as instructive: "The evaluation of the voiceprint technique conducted by the Academy (at the request of the FBI) should have preceded, and not followed, the proffer of voiceprint evidence."<sup>239</sup> With DNA evidence, the second NAS report was published after Spencer's execution.

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<sup>236</sup> *People v. Collins*, 405 N.Y.S.2d 369 (N.Y. Sup. Ct. 1978).

<sup>237</sup> *D'Arc v. D'Arc*, 385 A.2d 278, 283 (N.J. Super. Ct. Ch. Div. 1978).

<sup>238</sup> Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, A Half-Century Later*, 80 COLUM. L. REV. 1197, 1249 (1980).

<sup>239</sup> *Id.*