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THE USE AND MISUSE OF HIGH-TECH EVIDENCE BY PROSECUTORS: ETHICAL AND EVIDENTIARY ISSUES

Robert Aronson* & Jacqueline McMurtrie**

INTRODUCTION

The United States Attorney is the representative not of an ordinary party to a controversy, but of a sovereignty whose obligation to govern impartially is as compelling as its obligation to govern at all; and whose interest, therefore, in a criminal prosecution is not that it shall win a case, but that justice shall be done. As such, he is in a peculiar and very definite sense the servant of the law, the twofold aim of which is that guilt shall not escape or innocence suffer. He may prosecute with earnestness and vigor—indeed, he should do so. But, while he may strike hard blows, he is not at liberty to strike foul ones. It is as much his duty to refrain from improper methods calculated to produce a wrongful conviction as it is to use every legitimate means to bring about a just one.1

The role of a prosecutor comes with great responsibility. A prosecutor is a "minister of justice" and cannot simply act as an advocate, but must also take care to ensure "procedural justice" to the defendant.2 As the representative of the state’s interests, the prosecutor exercises the sovereign power of the state in charging and trying criminal defendants.3 Since "the state" includes the defendant, as well as the victim, the prosecutor must take care not only to prevent the guilty from escaping justice but also to ensure that the innocent do not suffer. Prosecutors are given a great deal of flexibility and deference in exercising their responsibility to do justice because there is a general sense that prosecutors can be trusted to behave ethically.4 While most prosecutors do behave ethically and responsibly, the

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4. See Bruce A. Green & Fred C. Zacharias, Regulating Federal Prosecutors’ Ethics, 55 Vand. L. Rev. 381, 449 (2002) (“Implicit in any deference to prosecutorial decisionmaking is the notion that, at least sometimes, we can trust prosecutors to behave..."
importance of this office makes it imperative that they exercise the highest degree of ethical restraint at all times. Guilt must be decided on the basis of adequate evidence. As technological advances have introduced high-tech evidence into the courtroom, there is an even greater need for evidentiary guidelines to ensure that prosecutors fulfill their duty to do justice and prove guilt upon the basis of sufficient evidence.\(^5\)

The appropriate use of evidence is even more important when considering that prosecution of an innocent person means that the guilty person may be out committing more crimes.\(^6\) Prosecutors must also take special care to acknowledge that they may lack empathy for the defendants they are prosecuting. While criminal defense lawyers interact on a daily basis with clients who have "frailties, weaknesses, vulnerabilities," prosecutors represent the government, an abstract entity.\(^7\) Thus, a prosecutor may enforce a law with unnecessary harshness, without fully considering other mitigating circumstances, because "[m]ost prosecutors believe that if someone breaks the law, he or she ought to be prosecuted."\(^8\) Prosecutors must also be careful that an inequality of resources between the prosecution and the defense does not impede the criminal justice system's ability to produce valid results. The defense usually does not have the means to match police searches for evidence, and, in cases such as FBI laboratories, the "government has a virtual monopoly on the expert service in question."\(^9\) Prosecutors' obligations to do justice should include ensuring equal access to important evidence.

While prosecutors have a duty "to seek justice, [and] not merely to convict,"\(^10\) they may lose sight of this goal, particularly for the most

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5. See Model Rules of Prof'l Conduct R. 3.8 cmt. 1.
8. Id. at 380.
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heinous crimes.\textsuperscript{11} Since prosecutors are among the least accountable public officials, the public overemphasizes the measurable aspects of a prosecutor’s work, both for individual prosecutors and the office as a whole.\textsuperscript{12} The public focus is on a kind of scorecard: “the number of convictions [prosecutors] obtain, the length of sentences, and the prosecutors’ behavior in public trials.”\textsuperscript{13} It is not uncommon for prosecutors’ promotions and favorable reviews to depend on their conviction rates.\textsuperscript{14} However, prosecutors make a number of other important decisions that occur behind the scenes that are not subjected to such intense public scrutiny, such as charging and sentencing decisions.\textsuperscript{15}

If a case receives a lot of media attention, a prosecutor may feel enormous pressure to charge a suspect with a crime and seek a long sentence, due to the likely positive public response. Yet a prosecutor’s use of discretion, through all phases of prosecution, is a “hallmark” of the criminal justice system.\textsuperscript{16} Without the ability to exercise discretion, “there would be many more unjust decisions at every stage of the criminal process,”\textsuperscript{17} but this use of discretion can also cause problems if it is not carefully controlled.

Cases brought to court by organizations such as the Innocence Project are proof that prosecutors can make grievous errors in their conviction of defendants. Some of these are innocent errors, but others are caused by ethical failures on the part of the prosecutors and questionable evidentiary decisions by judges. For example, the director of the Northern California Innocence Project “told the [California Commission on the Fair Administration of Justice] that judges had found prosecutorial misconduct in 443 of more than 2,100 California cases over the last 10 years.”\textsuperscript{18} This

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\textsuperscript{11} See, e.g., Bennett L. Gershman, The New Prosecutors, 53 U. Pitt. L. Rev. 393, 456 (1992) (“Any prosecutor can convict a guilty man; it takes a great prosecutor to convict an innocent man.” (quoting defense attorney Melvyn Bruder in the documentary The Thin Blue Line)).

\textsuperscript{12} See Bruce A. Green & Fred C. Zacharias, Prosecutorial Neutrality, 2004 Wis. L. Rev. 837, 902–03.

\textsuperscript{13} Id. at 903.

\textsuperscript{14} Daniel S. Medwed, The Zeal Deal: Prosecutorial Resistance to Post-Conviction Claims of Innocence, 84 B.U. L. Rev. 125, 132–37 (2004) (discussing how a prosecutor’s office creates a culture that places a high premium on convictions by providing incentives for higher conviction rates—including career advancement, bonuses, and public posting of individual and office-wide conviction rates—and noting how offices may also use conviction statistics during budget negotiations, using their “records of success” to leverage greater resources); William E. Hellerstein, Freeing the Innocent: Why So Hard?, N.Y. L.J., Mar. 10, 2005, at 2.

\textsuperscript{15} But see Gene Johnson, Green River Killer Given Life in Prison, Wash. Post, Dec. 19, 2003, at A4 (noting that prosecutors agreed not to seek the death penalty in exchange for Gary Ridgway’s assistance in locating the remains of his victims, which led to mixed reactions on the part of the victims’ families).


\textsuperscript{17} Id.

\textsuperscript{18} Henry Weinstein, Lawyers Clash over Prosecutorial Misconduct, L.A. Times, July 12, 2007, at B2. Studies of wrongful convictions have identified prosecutorial misconduct as a substantial contributor to wrongful convictions. See Barry Scheck et al., Actual Innocence: Five Days to Execution and Other Dispatches from the Wrongly Convicted 263 (2000)
was simply a consideration of cases that had gone to trial, and there are surely far more instances of less visible prosecutorial misconduct since as much as ninety-seven percent of criminal cases are resolved by plea bargains. Prosecutors should exercise care to ensure that all of their convictions are fair, especially in the case of death penalty convictions because only a prosecutor may decide whether or not to seek the death penalty in a particular case. Prosecutors pursuing a death penalty conviction are "tinker[ing] with the machinery of death," and at a minimum should ensure that they behave in an ethically responsible manner. Similarly, judges should pay close attention to the ethical standards for the admittance of questionable evidence.

Although outside the scope of this essay, ethical lapses by prosecutors have included the use of questionable witnesses, including jailhouse snitches and unethically coached witnesses, and simple failure to follow (indicating that prosecutorial misconduct contributed to forty-two percent of the first sixty-two DNA exonerations); Ken Armstrong & Maurice Possley, The Verdict: Dishonor, Chi. Trib., Jan. 10, 1999, at 1.

19. See Armstrong & Possley, supra note 18, at 3.

20. See Davis, supra note 16, at 78.

21. Callins v. Collins, 510 U.S. 1141, 1145 (1994) (mem.) (Blackmun, J., dissenting) ("From this day forward, I no longer shall tinker with the machinery of death. For more than 20 years I have endeavored—indeed, I have struggled—along with a majority of this Court, to develop procedural and substantive rules that would lend more than the mere appearance of fairness to the death penalty endeavor. Rather than continue to coddle the Court's delusion that the desired level of fairness has been achieved and the need for regulation eviscerated, I feel morally and intellectually obligated simply to concede that the death penalty experiment has failed.").

22. Prosecutors have a duty to at least investigate the testimony of their witnesses if they suspect perjury. See Morris v. Ylst, 447 F.3d 735, 744 (9th Cir. 2006). The testimony of jailhouse snitches is inherently questionable, and snitches are a major factor in fifteen percent of wrongful convictions. See Innocence Project, Facts on Post-Conviction DNA Exoneration, http://www.innocenceproject.org/content/351.php (last visited Oct. 29, 2007); see also Daniel S. Medwed, Anatomy of a Wrongful Conviction: Theoretical Implications and Practical Solutions, 51 Vill. L. Rev. 337, 364 (2006) (discussing the wrongful incarceration of David Wong for nine years, principally due to the use of jailhouse informers); Innocence Project, Know the Cases: Dennis Fritz, http://www.innocenceproject.org/content/152.php (last visited Oct. 29, 2007) (discussing the wrongful incarceration of Dennis Fritz for eleven years partly due to the testimony of a jailhouse snitch). A jailhouse informant possesses incentives to "fabricate statements, including the opportunity to improve [his or her] penal situation[], and virtually no disincentive considering that perjury is hard to detect, much less prosecute." Medwed, supra, at 364. See generally Myrna S. Raeder, See No Evil: Wrongful Convictions and the Prosecutorial Ethics of Offering Testimony by Jailhouse Informants and Dishonest Experts, 76 Fordham L. Rev. 1413 (2007).

Prosecutors may also give jailhouse snitches special treatment extending beyond the reduction of charges or favorable sentencing recommendations. See, e.g., Jack King, Twisted Justice: Prosecution Function in America out of Control, Champion, Mar. 1999, at 10, 10–11 ("[San Diego prosecutors] lavished an informer and star witness with privileges such as a private cell with color TV and a shower and conjugal visits in the prosecutor's office with the informer's wife and three of his girlfriends—and concealed these inducements from defense counsel."). Witness inducements, however, have always been an integral part of the American criminal justice system, and "will continue to be an important tool to prosecutors in the twenty-first century." H. Lloyd King, Jr., Why Prosecutors Are Permitted to Offer
ethical rules or other unacceptable behavior, including using peremptory challenges to obtain racially discriminatory jury panels. While these


23. Witness preparation presents a difficult ethical problem because it may “foster inaccuracy by introducing distortion into a witness’s testimony, but it also promotes accuracy when it is used to clarify complex or ill-recalled events.” John S. Applegate, Witness Preparation, 68 Tex. L. Rev. 277, 341 (1989). Lawyers cannot simply rely on ethical codes to guide their ethical decisions, because the true morality of an action may depend on the lawyer’s motivations for acting in a specific way. See Fred C. Zacharias & Shaun Martin, Coaching Witnesses, 87 Ky. L.J. 1001, 1005–06 (1999); see also Applegate, supra, at 352; Richard C. Wydick, The Ethics of Witness Coaching, 17 Cardozo L. Rev. 1 (1995); Joseph D. Piorkowski, Jr., Note, Professional Conduct and the Preparation of Witnesses for Trial: Defining the Acceptable Limitations of ‘Coaching,’ 1 Geo. J. Legal Ethics 389 (1987).


The U.S. Court of Appeals for the Second Circuit recently found that federal prosecutors violated the Constitution by pressuring an accounting firm not to advance attorneys’ fees to a group of former employees facing criminal charges. See generally Stein v. KPMG, LLP, 486 F.3d 753, 763 (2d Cir. 2007). A New York prosecutor essentially dictated the punishments that drunk-driving defendants must accept by creating a particularly tough policy for drunk drivers. See Michael Scholl, N.Y. Lawyer Challenges Local DA’s ‘Draconian’ DWI Policy, N.Y. Law., Aug. 8, 2006, http://www.nylawyer.com/display.php/file=/news/06/08/080806e.

25. A state’s privilege to dismiss potential jurors through peremptory challenges is “subject to the commands of the Equal Protection Clause.” Batson v. Kentucky, 476 U.S. 79, 89 (1986). In order to challenge allegedly discriminatory peremptory challenges (1) a party makes a prima facie case by showing that the relevant facts give rise to an “inference of discriminatory purpose”; (2) the striking party must then explain the racial exclusion by offering permissible race-neutral justifications for the strikes; and (3) once the striking party
issues could easily be the subjects of several articles, this essay will specifically focus on prosecutors’ use of complex technological and scientific evidence in the form of computer-generated and DNA evidence. In this world of “MTV/Gen X” meets “CSI,” prosecutors must resist the temptation to misuse or misrepresent computer-generated and forensic DNA evidence in order to obtain a conviction. With both types of evidence, there is a danger that the jury will be unduly swayed by the scientific nature of the evidence and consider it infallible proof of the accused’s guilt. One of the challenges our system faces is to ensure that this highly technical evidence is presented in a fair and evenhanded manner that does not embellish or exaggerate its true worth.

This essay first addresses the ethical and evidentiary standards for the emerging use of high-tech computer-generated animations and computer-assisted closing arguments. Next, this essay considers the same questions within the context of forensic DNA evidence. Third, this essay considers the ethics of prosecutors’ use of such evidence and the consequences for the misuse of this evidence. Finally, this essay suggests remedies to ethical problems facing prosecutors in their use of this kind of evidence.

provides a race-neutral explanation, the burden returns to the challenging party to show that the reason was pretextual and that the striking party engaged in purposeful discrimination. Id. at 93–98.

The inference of discrimination can also be enough to establish a Batson claim: “[A] defendant satisfies the requirements of Batson’s first step by producing evidence sufficient to permit the trial judge to draw an inference that discrimination has occurred.” Johnson v. California, 545 U.S. 162, 170 (2005). A variety of methods may also show evidence of discrimination, including a lack of good reason for striking jurors, different questioning for people of different races, and the use of a jury shuffle. See generally Miller-El v. Dretke, 545 U.S. 231 (2005).

Despite this three-part Batson test, the discriminatory use of peremptory challenges remains a problem. See id. at 268–69 (Breyer, J., concurring) (citing David C. Baldus et al., The Use of Peremptory Challenges in Capital Murder Trials: A Legal and Empirical Analysis, 3 U. Pa. J. Const. L. 3, 52–53, 73 n.197 (2001)) (noting that, “in 317 capital trials in Philadelphia between 1981 and 1997, prosecutors struck 51% of black jurors and 26% of nonblack jurors; defense counsel struck 26% of black jurors and 54% of nonblack jurors; and race-based uses of prosecutorial peremptories declined by only 2% after Batson”); Mary R. Rose, The Peremptory Challenge Accused of Race or Gender Discrimination? Some Data from One County, 23 Law & Hum. Behav. 695, 698–99 (1999) (discussing how, in one North Carolina county, 71% excused black jurors were removed by the prosecution; 81% of excused white jurors were removed by the defense). The U.S. Court of Appeals for the Ninth Circuit held that a waiver of peremptory strikes could be discriminatory in a struck jury system. See United States v. Esparza-Gonzalez, 422 F.3d 897, 903 (9th Cir. 2005) (“Failing to provide protection against removal of identifiable jurors, when such removal is achieved by waiver rather than exercise of a peremptory strike, would frustrate the essential purpose of Batson—to eliminate the race-based selection of jurors—and would violate the equal protection rights of both the defendant and prospective jurors.”).
I. COURT DEVELOPED STANDARDS FOR HIGH-TECH EVIDENCE HAVE AFFECTED PROSECUTORS’ USE OF COMPUTER SIMULATIONS DURING TRIAL AND THE USE OF TECHNOLOGY DURING CLOSING ARGUMENTS

A. Standards for the General Use of Technology in the Courtroom

Computers have become a necessity in the modern legal office, but the use of technology in the courtroom has been more measured. While some technological advances are useful, with multimedia trial presentations cutting trial time from twenty-five to fifty percent,\(^2\) other technologies can cause a greater distraction or even present an inaccurate message when used in the courtroom. Trial technology companies aggressively advertise to litigators looking for a competitive edge, and offer the services of graphic artists and visual consultants to create time lines, chains of events, graphs and charts, document call outs and highlights, PowerPoint presentations, medical designs, technical and complex illustrations, scene and site recreations, and two- and three-dimensional animations.\(^2\) Use of these services can be very effective in communicating a message to a jury. For example, animations can help clarify and simplify complex or technical evidence, and visual obstructions can be eliminated, “allowing the jury to view the inside of a machine or a component which might otherwise be impossible to photograph with a regular camera.”\(^2\)

The courts have recognized the importance of using computers during trial. In an early case about the admissibility of a computer animation depicting an automobile accident, the court stated,

A computer is not a gimmick and the court should not be shy about its use, when proper. Computers are simply mechanical tools—receiving information and acting on instructions at lightning speed. When the results are useful, they should be accepted, when confusing, they should be rejected. What is important is that the presentation be relevant to a possible defense, that it fairly and accurately reflect the oral testimony offered and that it be an aid to the jury’s understanding of the issue.\(^2\)

As the use of technology has become more common in courtrooms, and society in general, it has become increasingly important to continue

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\(^{27}\) E-mail from Prolumina Trial Technologies to Jacqueline McMurtrie (Apr. 13, 2007, 16:06:34 PDT) (on file with author).


\(^{29}\) People v. McHugh, 476 N.Y.S.2d 721, 722–23 (Sup. Ct. 1984); see also Fed. R. Evid. 401 (relevance); Fed. R. Evid. 403 (prejudice); Fed. R. Evid. 702–703 (expert testimony); Fed. R. Evid. 901 (authentication and identification).
allowing new and different uses of this technology in the courtroom. Computers may help jurors understand complex concepts, and the use of these presentations becomes increasingly important as jurors come to expect technological displays during trial. Interactive multimedia courtroom presentations “communicate visually to audiences accustomed by their everyday work and leisure experiences with television, print media, billboards, movies and computers to rely on visual information,” so they are especially effective and persuasive tools for the modern juror.

Despite the increasing value of computer presentations during trial, the use of high-tech evidence is not always necessary or desirable. Sometimes justice is better served by using traditional communications media and methods when the expense of a high-tech presentation is not justified. Social science research suggests that jurors “construct a ‘story’ from the evidence and remember the evidence that is consistent with the ‘story’ and selectively ignore the remainder.” Adding additional high-tech evidence to an already complete story “merely becomes superfluous and does not alter the jurors’ apportionment,” and does not justify the cost of such a method. While the use of high-tech evidence is appropriate in a large number of cases, prosecutors should take particular care to ensure that the use of this kind of evidence is worth the time and expense. Justice must be more than just an “exhibition of showmanship”; it “requires scrupulous attention to providing a jury with information that can reasonably be expected—both in form and content—to assist them in reaching a rational and fair conclusion,” which includes following ethical standards for the presentation of high-tech evidence. The following section will address established standards for the use of computer-generated animations and computer-assisted closing arguments, including examples of appropriate and inappropriate uses of such high-tech evidence by prosecutors.

30. See Donald E. Shelton et al., A Study of Juror Expectations and Demands Concerning Scientific Evidence: Does the ‘CSI Effect’ Exist?, 9 Vand. J. Ent. & Tech. L. 331, 333, 368 (2006) (noting that a broader “tech effect” in popular culture may be affecting juror expectations more than any television show and that the criminal justice system should adapt to accommodate jurors’ expectations and commit more resources to obtaining scientific evidence in certain situations).
31. See id. at 368.
34. Id.
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B. Application of High-Tech Evidentiary Standards to Prosecutors' Use of Computer-Generated Animations and Simulations

1. Animation

In Commonwealth v. Serge, a Pennsylvania court established a three-pronged test for the admissibility of computer-generated animations. The court found that a computer animation is admissible if it "(1) is properly authenticated under Rule 901 as a fair and accurate representation of the evidence it purports to portray; (2) is relevant under Rules 401 and 402; and (3) has a probative value that is not outweighed by the danger of unfair prejudice under Rule 403." The Supreme Court of Pennsylvania affirmed this three-part test, but also required that the party attempting to enter an animation into evidence should do so as soon as possible to avoid unfair prejudice to the other side.

The Serge case addressed the use of an animation reconstructing the shooting and killing of Jennifer Serge by her husband Michael in 2001. The defendant claimed that he acted in self-defense and was also too intoxicated at the time to form the specific intent to support a first-degree murder charge. The prosecutor hired 21st Century Forensic Animations to create a reconstruction of the shooting based on testimony from the prosecution's crime scene reconstruction expert and forensic pathologist. The animation showed "the location of [Serge] and his wife within the living room, the positioning of their bodies, and the sequence, path, trajectory, and impact sites of the bullets fired from [Serge's] handgun," and depicted Serge shooting his wife in her lower back and then in her heart as she knelt on the floor. The trial court found that this was an appropriate use of an animation by following the three-pronged analysis of (1) accuracy, (2) relevance, and (3) avoidance of unfair prejudice. First, the animation could be authenticated by the testimony of the prosecution's two experts, as well as the animator's description of how 3-D drawings are produced by computer. Second, the animation was relevant to rebut the defendant's self-defense claim and to effectively demonstrate the prosecution's theory of the shooting. Third, the probative value of the animation was not substantially outweighed by the danger of unfair prejudice.

37. Id. at 72.
38. Id.
41. Id. at 55.
42. Id. at 57–58.
43. Serge, 896 A.2d at 1175.
45. Id. at 77–78.
46. Id. at 78–79.
prejudice, especially since the animation did not "display any blood or facial expressions or attempt to replicate the sound of gunshots or other noise." 47

Serge's three-pronged analysis for the admissibility of animations would appear to establish a clear guideline; however, some prosecutors continue to submit unacceptable computer animations. In one case, the prosecution submitted an animation depicting four different views of a drive-by shooting of a bicyclist, including one from inside the car. 48 While three of the sequences were helpful in explaining the shot's distance, angle, and path, the in-car sequence did not help the jury understand these factors. 49 Instead, this fourth animation depicted the face and eyes of the car's passengers, which "amounted to original evidence depicting [the defendant]'s intent, the most hotly disputed element in the case." 50 Despite the erroneous admission of this prejudicial evidence, the court found that it was harmless error because there was overwhelming independent evidence of the defendant's intent. 51

In another case, the court found that the prosecution's misuse of computer-generated animations constituted reversible error. 52 The prosecution created four different animations to illustrate potential scenarios at the crime scene. 53 However, the first three animations illustrated only parts of the defendant's story, and set up the fourth illustration as the "only one" that was correct. 54 The court found that these animations did not fairly represent the existing evidence, they were not adequately supported by concrete facts, and there was an unacceptable chance that they would mislead and confuse the jury. 55 The use of high-tech evidence in this case was particularly damaging because the prosecution's use of computer-generated animations suggested that there was an independent computer-based analysis of the evidence in the case. 56 However, the animations were simply a restatement of evidence "already introduced and re-summarizing areas in which various statements by [the defendant] were inconsistent with this evidence." 57

Sometimes the number of scenes depicted in a computer animation can cause it to be inadmissible. In State v. Farner, 58 the defendant was involved in a drag race that ended when his competitor lost control and

47. Id. at 82.
49. Id. at 295.
50. Id.
51. Id. at 295–96.
53. Id. at 248–49.
54. Id. at 250.
55. Id. at 250–51.
56. Id. at 251.
57. Id.
58. 66 S.W.3d 188 (Tenn. 2002).
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collided with oncoming traffic. Although there was no actual evidence regarding the speed of the competitors or oncoming vehicles, eyewitnesses consistently described the cars as side-by-side during the race. The prosecution, however, created a computer animation of the race showing the vehicles in different locations in relation to one another and moving at various speeds, which had an inadequate basis in the evidence. Additionally, the animation depicted the accident a total of fifteen times at various speeds. The court declined to set a standard for the number of times an animation may depict an event, but noted that “trial judges must carefully monitor such evidence and prevent cumulative presentation if it poses a substantial risk of unfairly prejudicing the defendant.” Subjecting jurors to repeated visualizations of a car crash, especially visualizations with questionable evidentiary bases, is very likely to result in unfair prejudice, violating Rule 403 and the third prong of the Serge test.

Computer animations must be “carefully scrutinized for proper foundation, relevancy, accuracy, and the potential for undue prejudice” because animations have such “dramatic power.” Even if the animation does not cause undue prejudice, it has been suggested that the trial court “should issue a cautionary instruction relating to the animation before playing the animation to the jury and in final instructions to help insure its proper use.” Such instructions should highlight the difference between computer animations and other types of evidence and alert jurors to use due diligence when considering this high-tech evidence, rather than simply accepting the animation as fact. In Serge, for example, the court stated that the danger of a jury accepting an animation as fact is “vitiates by thorough cautionary instructions that educate the jury on the exact nature and role of a [computer-generated animation].” In that case the judge instructed the jury that

an animation is simply a graphic depiction, or illustration, of an opinion that an expert has already formed based upon his or her own independent investigation, computations, and analysis.

... You should not confuse art with reality and should not view the animation as a definitive recreation of the actual incident. The series of pictures which have been drawn by the computer and transferred on to the tape for your review are no different from a witness sketching a series of

59. Id. at 192.
60. Id. at 209-10.
61. Id.
62. Id. at 210.
63. Id.
64. See Fed. R. Evid. 403 (prejudice); Commonwealth v. Serge, 58 Pa. D. & C.4th 52, 72 (C.P. Lackawanna County 2001); see also Fed. R. Evid. 402 (relevance); Fed. R. Evid. 611 (mode and order of interrogation).
65. State v. Stewart, 643 N.W.2d 281, 296 (Minn. 2002).
66. Id.
drawings on paper and then fanning those pages to portray moving images of his or her opinion.

Remember, the demonstrative animation is only as good as the underlying testimony, data, assumptions, and opinions that serve as the basis for its images, and the computer maxim, "garbage in, garbage out," applies equally to computer animations.68

Such a statement clearly alerts the jurors to the evidentiary foundations of the animation and serves to place it within the context of the other evidence offered by the prosecution. The use of this kind of a warning can also be supplemented by the use of a general jury instruction regarding the use of computer animations:

The State/defendant is about to present evidence in the form of a video/computer animation/[other], which is intended to help illustrate certain testimony or evidence being presented to you. The exhibit being presented is not an actual recording or video of the event that is shown. Rather, the exhibit is offered simply as a "reenactment." The exhibit is intended to help you better understand the State's/defendant's position about how an event occurred (or did not occur) and that party's understanding of the evidence supporting this interpretation. The exhibit is intended to assist you in your role as jurors, and like all evidence, it may be accepted or rejected by you, in whole or in part.69

Despite such jury instructions, however, there is still concern that a jury could give the information undue weight. The jury may not be able to weigh competing testimony fairly, regardless of the jury instructions, because the information underlying an animation is often extremely technical.70 In such cases, the animation should be excluded under Rule 403.

2. Simulations

While the Rules of Evidence and the Serge test govern demonstrative animations,71 simulations require stricter scrutiny because they are dependent on scientific principles.72 An animation is only a "graphic depiction or illustration of the previously formed opinion of an expert," whereas a simulation is a substantive basis for an expert's opinion and is subject to the Frye/Daubert test.73 A simulation links together sequences of

68. Id. at 1186–87.
72. Id. at 71; see also Chatterjee, supra note 70, at 38–39.
events and may synthesize information based on otherwise inadmissible
evidence. The test for computer simulations is similar to the tests for
scientific evidence; the party seeking to view a simulation must
"introduce evidence of the validity of the computer program's methodology
and scientific principles" before the simulation may be admitted. This
requirement includes demonstrating that "(1) the computer is functioning
properly; (2) the input and underlying equations are sufficiently complete
and accurate (and disclosed to the opposing party, so that they may
challenge them); and (3) the program is generally accepted by the
appropriate community of scientists." Simulations require such strict
scrutiny to avoid the admission of unreliable evidence through the computer
program, as well as to guard against human and programming error in the
underlying software. Further, like animations, simulations cost a great deal
of money, and they may not always be a good use of limited resources.

C. Application of High-Tech Evidentiary Standards to Prosecutors' Use of
Computer-Assisted Closing Arguments

During closing argument, the prosecutor argues all reasonable inferences
from evidence in the record and may draw conclusions from the evidence
based on his or her own reasoning. The prosecutor cannot intentionally
misstate evidence or appeal to the prejudices of the jury. These rules
apply as well to the increasing utilization of computer-assisted closing
arguments. For example, prosecutors use PowerPoint presentations to
guide jurors through a summary of the evidence, or to highlight the
elements that must be proven in order to establish a crime. Some
prosecutors use a multimedia presentation of pictures and audio, which
were introduced earlier in the trial, highlighting the most important parts of
the testimony. Although these uses of technology may help jurors
understand the evidence, prosecutors must take special care to ensure that
this use of high-tech evidence is not unduly prejudicial.

More than twenty-five years after the 1975 murder of Martha Moxley in
Greenwich, Connecticut, her former neighbor Michael Skakel was
convicted for her murder. Fifteen-year-old Martha Moxley was beaten
and left under a tree in her wealthy, virtually crime-free
neighborhood. The prosecutors in this case made use of multimedia presentations
throughout the trial, but their use of this technology during closing
argument was particularly troublesome. First, the prosecution created a multimedia presentation that included an audiotape of Skakel talking about the morning after the murder:

[And I woke up to Mrs. Moxley saying, “Michael, have you seen Martha?”] I am like “what?” [And I was like still high from the night before, a little drunk and I was like “what?”] I was like “oh, my God, did they see me last night?” And I am like, “I don’t know,” I am like and I remember just having this feeling of panic like “oh shit,” you know, like my worry of what I went to bed with, I don’t know, you know what I mean, I had a feeling of panic.

While the tape played, the transcript of the audiotape was projected on the wall. Each time Skakel said the name “Martha,” a picture of the victim appeared on the screen, and each time Skakel described his “panic,” a picture of the victim’s dead body appeared. This small portion of a much longer recording failed to adequately place the smaller section in context. Skakel’s “panic” was his concern that someone had seen him masturbating in a tree near the Moxley home the night of the murder. However, the in-court presentation made it seem that Skakel’s “panic” related to the murder. The prosecution used further segments of the audiotape to disprove Skakel’s alibi for the night of the murder. The transcript testimony was once again projected on a screen while the tape played in the courtroom. This time, instead of pictures, the part tending to disprove Skakel’s alibi exploded in size and turned red, in contrast to the black text used for the rest of the transcript.

The prosecution in the Skakel case thus used a variety of high-tech presentations during closing argument. This use of technology made a compelling closing argument by incorporating various aspects of the multimedia evidence presented throughout the course of the trial. Although the jury had heard all of the evidence in context during the trial without the visual enhancements, the defense challenged the prosecution’s summation because “the [j]uxtaposition of [w]ords and [i]mages” drew “faulty parallels” and “‘creat[ed] deceptive visual connections.’” Timing is particularly important in determining the acceptability of a closing argument, and the prosecution’s decision to wait until rebuttal closing argument to show this presentation also raises concerns about fairness. The defendant was not given an opportunity to respond to the selectively edited multimedia presentation and point out the prosecution’s omissions.

82. See id. at 361.
83. Id. at 371 (citation omitted).
84. Id. at 372–73.
85. See id. at 371.
86. Id. at 371–72.
87. Id. at 384–85.
88. Id. at 385.
89. Id. at 387 (quoting Brief of Defendant-Appellant at 78, State v. Skakel, 888 A.2d 985 (Conn. 2006) (No. 16844)).
90. See id.
In another case, State v. Robinson, the prosecutor’s use of images and text during closing argument was called into question when the prosecutor displayed the elements of arson next to the image of a curtain engulfed in flames. Although the court found that this misconduct was not cause for a reversal, it stated, “[T]he trial court should not have permitted the display and the prosecutor should have known better than to have used it.” The flaming curtains were irrelevant to the case and were not admitted into evidence; the entire purpose of this image was “to distract or to prejudice,” and its use was “dangerous, unnecessary, and in error.” Despite this seemingly strong condemnation, however, the court did not take any steps toward punishing the prosecutor for the prejudicial closing statements.

Perhaps the courts’ leniency toward the prosecution’s use of technology in both the Skakel and Robinson cases was due to a desire to allow prosecutors and defenders some flexibility during closing argument. In Skakel, the Supreme Court of Connecticut stated, “We are mindful . . . that ‘closing arguments often have a rough and tumble quality about them, [and that] some leeway must be afforded to the advocates in offering arguments to the jury in final argument.’” However, a recognition of the “rough and tumble quality” of closing arguments should not be an invitation for the abuse of technology. High-tech closing arguments pose the additional problem of potentially being more prejudicial because they can include effective multimedia presentations that are more persuasive to the lay juror. The court should take a stronger role in ensuring that prosecutors do not act unethically while making high-tech closing arguments. Even when a prosecutor believes the use of technology is not misleading, courts should be more hesitant to allow overly dramatic presentations, rather than allowing prosecutors free rein in their closing argument.

92. Id. at *3.
93. Id.
94. Id.
95. See infra Part IV.
97. Prosecutors will also sometimes resort to inflammatory arguments outside of the context of high-tech cases. In a recent U.S. Court of Appeals for the Eighth Circuit case, Weaver v. Bowersox, 438 F.3d 832 (8th Cir. 2006), the court criticized a prosecutor’s use of inflammatory statements. The prosecutor in Weaver made various colorful statements about the role of the jury and his own personal opinion about the death penalty. First, the prosecutor analogized the jurors’ role to that of a soldier in battle:

I know there’s a movie, Patton, and in the movie, George Patton was talking to his troops because the next day they were going to go out in battle and they were scared as young soldiers. And he’s explaining to them that I know that some of you are going to get killed and some of you are going to do some killing tomorrow morning. And they all knew that. And he was going to try to encourage them that sometimes you’ve got to kill and sometimes you’ve got to risk death because it’s right. He said: But tomorrow when you reach over and put your hand in the pile of goo that a moment before was your best friend’s face, you’ll know what to do.

Id. at 836. This vivid imagery was supplemented by statements about the prosecutor’s personal belief in the death penalty and about the prosecutor’s special position of authority to
II. WHAT IMPACT DOES THE "TRUTH MACHINE" OF DNA HAVE ON PROSECUTION ETHICS?

DNA technology can operate as a kind of truth machine, ensuring justice by identifying the guilty and clearing the innocent.98

determine whether to seek the death penalty. Id. at 840. The argument thus emphasized the prosecutor's opinion at the expense of the judgment of the jurors. Finally, the prosecutor stated that executing the defendant was necessary to prevent drug criminals from taking over society and noted,

It strikes right at the heart of our system. You’ve got to look beyond William Weaver. This isn’t personal. This is business. You people represent the entire community. You represent society. You have to give a message here. You have to tell the William Weavers . . . and you have to be willing to look them right in the eye when you do it, that there’s a point at which we won’t allow you to go. And when you do, prison’s too good. It’s the death penalty. Sometimes killing is not only fair and justified; it’s right. Sometimes it’s your duty. There are times when you have to kill in this life and it’s the right thing to do. . . .

This case—I guess it’s the one that just cries out to you to say protect the community. The drug dealers, they are taking our streets away from us. Are we going to take them back? Are we going to let them have the streets or are we going to fight back? If the drug peddlers are going to run our community, then all is lost. Then there’s no point in having jurors. The death penalty applies in some cases. It applies in this case.

ld. at 836. The defendant was convicted of murdering a prospective witness in a drug case, but the Eighth Circuit granted habeas corpus relief from his death sentence due to the prosecutor’s impermissibly inflammatory penalty phase arguments. Id. at 842. The Supreme Court granted a writ of certiorari and heard oral argument on the case. Although during oral argument the Court discussed the prosecutor’s improper statements, the writ was dismissed as improvidently granted due to a procedural issue. See Roper v. Weaver, 127 S. Ct. 2022, 2024 (2007) (discussing whether the court of appeals’ application of the more stringent standard of review mandated by the Antiterrorism and Effective Death Penalty Act of 1996, Pub. L. 104-132, 110 Stat. 1214, was consistent with Court’s interpretation of the statute).

In a recent U.S. Court of Appeals for the Ninth Circuit case, United States v. Sine, 493 F.3d 1021 (9th Cir. 2007), the prosecutor used inflammatory statements from an earlier civil trial in a criminal trial. Id. at 1024. In Sine, the defendant was a lawyer accused of helping run a pyramid scheme that defrauded victims of millions of dollars. Id. at 1023. He reassured investors that the scheme was legitimate and backed by millions of dollars in collateral, and when the pyramid scheme collapsed Sine began filing lawsuits to recover the value of the collateral in order to establish a good faith defense. Id. at 1023–24. During the civil trial about the defendant’s lawsuits to recover the collateral, the judge stated, “The record presently before the court is rife with chicanery, mendacity, deceit, and pretense. The versions each [defendant] has given about his activities, whether in court or out, ring false.” Id. at 1027. The judge also noted that “Sine holds in his hands a bottomless bucket, has done absolutely nothing to see that it gets filled, and is unlikely ever to do so.” Id. These statements were not formally entered into record, but the prosecution provided “a thorough account of the order for the jury” so the jury was aware of the “sordid details” of the prior litigation. Id. at 1028. The prosecutor also stressed the fact that a judge had made these statements and found Sine’s activities to be fraudulent. Id. at 1029–30. Despite finding that the statements were improper, the court held that the prosecutor’s actions were harmless error, so Sine’s criminal conviction was not overturned. Id. at 1024.

A. An Introduction to DNA Evidence

Deoxyribonucleic acid (DNA) is "the blueprint of life." Deoxyribonucleic acid (DNA) is "the blueprint of life." The double helix of the DNA structure, resembling a twisted ladder, is generally recognizable even if the complexities of DNA typing are not readily understood. The tremendous power of DNA as a forensic identification tool comes from the fact that no two human beings, with the exception of identical twins, have the same DNA sequence. When DNA evidence is introduced against an accused at trial, the prosecutor's case can take on an aura of invincibility. The jury will hear that a DNA profile extracted from biological material on crime scene evidence matches the DNA profile of the defendant. That match will be expressed in terms of a statistic purported to represent the degree to which the two samples are associated by greater than random chance in a relevant population, for example, "the probability of this DNA having come from another Caucasian is 1 in 12,000." The importance of DNA in criminal investigations has been lauded by one court as the "the single greatest advance in the 'search for truth', and the goal of convicting the guilty and acquitting the innocent, since the advent of cross-examination." Currently, DNA evidence is admissible in every state and federal jurisdiction. Rapid advances in technology have changed the way the police can build a case against a suspect; solve old, previously unsolvable crimes; identify the real perpetrator of a crime; and free persons who have been wrongly convicted. Using current short tandem repeat DNA technology (STR-DNA), forensic analysts can obtain

102. See Gov't of V.I. v. Byers, 941 F. Supp. 513, 527 (D.V.I. 1996) ("There is something very primal about DNA and genetic science that lends itself to a posture of 'mythic infallibility.'").
107. Id. at 381 ("No other scientific technique has gained such widespread acceptance so quickly. No other technique is as complex 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.") (citations omitted)).
profiles from minute traces of biological material, which previously could not be tested because the sample was too small or was degraded. DNA profiles have been obtained from several different sources, including miniscule samples of saliva, semen, sweat, skin cells, and

108. See Ian Findlay et al., DNA Fingerprinting from Single Cells, 389 Nature 555 (1997) (noting that short tandem repeat DNA (STR-DNA) profiles can often be obtained from even a single cell of biological material).

109. The first DNA test, restriction fragment length polymorphism (RFLP), required a relatively large sample of biological material (a minimum of 100,000 cells containing DNA). Forensic analysts had to have a sample of biological material that was at least the size of a quarter. Subsequent development of polymerase chain reaction (PCR) testing of DNA revolutionized DNA testing by allowing samples of DNA contained in biological evidence to be copied without affecting the original sample. The PCR amplification technique can be used to reproduce millions of copies of the DNA contained in a few, for example, 50 to 100, cells. Initially PCR testing was directed at a specific region of the DNA, the DQ-alpha loci. Nat'l Inst. of Justice, Postconviction DNA Testing: Recommendations for Handling Requests 26-27 (1999). STR technology evaluates thirteen specific regions (loci) that are found on DNA. The use of PCR with STR sequences is employed in the majority of laboratories that conduct DNA analysis. See Kobylinsky et al., supra note 100, at 90 (reporting that PCR short tandem repeat analysis is the "method of choice" in forensic laboratories).

110. Nat'l Inst. of Justice, Using DNA to Solve Cold Cases 5 (2002) (noting that if a biological sample was degraded "by environmental factors such as dirt or mold, RFLP analysis may have been unsuccessful at yielding a result. Newer technologies could now be successful in obtaining results").

111. For example, evidence that one defendant's DNA matched DNA obtained from saliva samples found on the victim's breasts resulted in his conviction for robbery and rape. See Henry Fitzgerald Jr., Texas Man Convicted in Lauderdale Rape, S. Fla. Sun-Sentinel, July 31, 1997, at 1B.

Ray Krone, who spent ten years in prison, some of those on death row, was exonerated after DNA testing done on the saliva and blood found on the victim implicated a man named Kenneth Phillips. Krone was convicted and sentenced to death for the murder of a woman who was stabbed to death and left in the restroom of a bar where she worked. Little physical evidence was found, except for bite marks left on the neck and the breast of the victim. Investigators heard that Krone helped the victim close the bar on the night of the murder, and he was arrested and charged. Styrofoam impressions of Krone's teeth were taken for comparison with the bite marks on the victim. At trial, an odontologist testified that the bite marks on the victim matched the impression Krone made on the styrofoam. Krone, who testified he was at home at the time of the murder, was convicted and sentenced to death. Krone was successful in obtaining a new trial but was convicted after retrial and sentenced to life imprisonment. See State v. Krone, 897 P.2d 621, 622 (Ariz. 1995) (ordering a new trial because Krone had been prejudiced by the state's failure to disclose a crucial piece of evidence in the form of a videotape which "attempted to show a match between Krone's teeth" and the victim's wounds); Craig M. Cooley, Reforming the Forensic Science Community to Avert the Ultimate Injustice, 15 Stan. L. & Pol'y Rev. 381, 437 (2004) (using Ray Krone's story as an example of the potential fallacies of bite mark identification); Henry Weinstein, Death Penalty Foes Mark a Milestone Crime: Arizona Convict Freed on DNA Tests Is Said to Be the 100th Known Condemned U.S. Prisoner to Be Exonerated Since Executions Resumed, L.A. Times, Apr. 10, 2002, at A16 (reporting on the exoneration of Ray Krone).

112. Investigators of the unsolved Green River Killer cases relied upon previously unavailable STR-DNA testing to identify Gary Ridgway as the perpetrator of those crimes. Although the detectives in that case had originally taken vaginal swabs from the victims and tested them using older DNA technology, the samples were too small to reveal conclusive results. However, when the swabs were retested using the STR-DNA method, Ridgway's
cellular material found in the root of a hair. A newer DNA test, using mitochondrial (mtDNA) technology, can extract profiles from the shafts of

DNA profile was revealed and the infamous cases were solved. See Eric Sorensen, Advances in DNA Tests Led to Arrest, Seattle Times, Dec. 1, 2001, at A8.

Calvin Johnson served over fifteen years in prison before being exonerated for his 1983 rape, sodomy, and burglary convictions. Forensic analysis was conducted on the semen taken from the vaginal swabs from the victim. The blood typing showed that the semen came from an ABO type-O secretor, matching Johnson and about forty percent of the African-American population. In 1997, PCR-based DNA testing on the vaginal swab and cervical slides from the rape kit established that Johnson was not the source of the sperm found on the vaginal slide. See Innocence Project, Know the Cases: Calvin Johnson, http://www.innocenceproject.org/Content/186.php (last visited Oct. 29, 2007).

113. Investigators in California reopened a seventeen-year-old murder case where the victim was abducted from an ATM machine and then stabbed to death. A DNA profile taken from sweat on a blue paisley cap found in the victim’s car led to the arrest of Tyrone Hamel. At the time of his arrest, Hamel was serving a life term in a Texas prison for two rapes and four robberies. See S.L. Wykes & Jessie Seyfer, DNA Links Texas Inmate to ‘88 Killing of Woman: Rapist to Face Charges in Death of Lawyer, San Jose Mercury News, July 11, 2005, at 3A.

Stephan Cowans was exonerated after a DNA profile taken from saliva on a glass used by the perpetrator of an assault did not match Cowans’s DNA profile. Cowans was convicted of multiple crimes associated with an assault on a police officer. Jurors heard that the assailant shot a police officer after wrestling the gun away from the officer during a physical struggle. The assailant then shot at a resident of the neighborhood, before breaking into a home. The assailant drank from a glass of water in the house and left behind a baseball cap, the gun, and a sweatshirt. Two fingerprint technicians testified that a fingerprint lifted from a glass used by the assailant matched Cowans’s print. Cowans was convicted and sentenced to thirty to forty-five years in prison. In 2003, the state agreed to release the glass, baseball hat, and sweatshirt for DNA testing. Profiles obtained from the glass and the hat matched each other, but did not match Cowans. The state asked to have the sweatshirt tested, and again, the profile matched the profiles from the glass and the hat, but did not match Cowans. In 2004, Cowans was exonerated after serving six years in prison. See Jonathan Saltzman & Mac Daniel, Man Freed in 1997 Shooting of Officer: Judge Gives Ruling After Fingerprint Revelation, Boston Globe, Jan. 24, 2004, at A1.

114. In 2000, the mother of a five year old was raped in her home while her son slept in an adjacent room. The rapist forced her to shower after the rape in order to eliminate DNA evidence. However, the victim saved skin scrapings hidden under her fingernails, and analysts obtained a profile from the scrapings that was linked to Nicholas Stanishia in 2004. Stanishia was found guilty in March 2006 and sentenced to sixty-two years in prison. See Richard Willing, Many DNA Matches Aren’t Acted On, USA Today, Nov. 20, 2006, at 1A.

James O’Donnell was exonerated after a DNA profile found in the victim’s fingernail scrapings and on swabs taken from the victim’s bite mark matched each other, but excluded O’Donnell as the contributor. See O’Donnell v. State, 808 N.Y.S.2d 266, 267–68 (App. Div. 2005); Innocence Project, Know the Cases: James O’Donnell, http://www.innocenceproject.org/Content/228.php (last visited Oct. 29, 2007).


Anthony Hicks served five years in prison before DNA tests on the root of a single hair cleared him of rape and robbery charges. He was convicted of sexual assault in Wisconsin in 1991, on the basis of eyewitness testimony and microscopic hair examination. DNA analysis subsequently proved that the hairs, which had been attributed to Hicks, were not his. See Innocence Project, Know the Cases: Anthony Hicks, http://www.innocenceproject.org/Content/177.php (last visited Oct. 29, 2007).
hairs or dried bones. Although it has become widely available only in the last few years, mtDNA analysis has nonetheless proven an effective and highly reliable technique to definitively exclude\(^{116}\) (or include)\(^{117}\) an individual as the person who deposited one or more hairs at a crime scene.\(^ {118}\)

Computer technology and the Combined DNA Index System (CODIS) have joined with the advances in STR-DNA testing to create a "powerful crimefighting tool."\(^ {119}\) CODIS is a vast, computerized state and federal registry of STR-DNA profiles from convicted felons, unsolved crime scene evidence, and missing persons, based on the thirteen genetic markers common to STR-DNA testing systems.\(^ {120}\) The registry allows law enforcement to compare hundreds of thousands of profiles to one another. There are currently more than four and a half million unique STR-DNA profiles from convicted felons in CODIS.\(^ {121}\) This rapidly expanding data bank has allowed law enforcement agencies to solve thousands of "cold cases" in a manner that is simply unprecedented—some of them decades old and with no leads before the data bank "hit" identified the real perpetrator.\(^ {122}\) In many cases, use of the CODIS data bank has identified

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116. Mitochondrial (mtDNA) technology analyzes DNA found in the mitochondrial part of the cell, whereas RFLP and PCR techniques analyze DNA extracted from the nucleus of a cell. Thus, "[o]ld remains and evidence lacking nucleated cells—such as hair shafts, bones, and teeth—that are unamenable to STR and RFLP testing may yield results if mtDNA analysis is performed." Nat'l Inst. of Justice, supra note 110, at 6. The first mtDNA exoneration in the nation occurred in 2000 in the case of William Gregory of Kentucky. In 1993, Gregory was convicted of two rapes that occurred in the Kentucky apartment complex where he lived. At trial, both victims positively identified Gregory as the rapist. The perpetrator had worn pantyhose from one of the victims' apartments as a mask and left it behind at the crime scene. The pantyhose contained five "Negroid" hairs that came from the perpetrator. At trial, the prosecution presented the expert testimony of a state hair examiner, who had concluded that each of the hairs recovered by police from the pantyhose was consistent with Gregory's own. In 1999, however, after all of Gregory's other challenges to his conviction had been denied; he obtained a court order for mtDNA testing. The results showed that all five hairs had the same mtDNA profile, but none of them could have come from Gregory, leading to his exoneration and release from prison in 2000. See Butch John, Lawmaker Calls for More Use of DNA Tests, Courier-Journal (Louisville, Ky.), July 6, 2000, at A1; Mark Schaver, DNA Evidence Frees Man Convicted in Rape Case, Courier-Journal (Louisville, Ky.), July 6, 2000, at A1.

117. In one recent case, "DNA analysis of a single hair (without the root) found deep in the victim's throat provided a critical piece of evidence used in a capital murder conviction." Nat'l Inst. of Justice, What Every Law Enforcement Officer Should Know About DNA Evidence 3 (1999).

118. But see Edward K. Cheng, Mitochondrial DNA: Emerging Legal Issues, 13 J.L. & Pol'y 99, 118 (2005) (lauding mtDNA as an important and exciting development in forensic technology, but cautioning that its evidentiary weight is not equivalent to nuclear DNA).


120. Nat'l Inst. of Justice, supra note 110, at 6, 9–10. Other types of DNA profiles, such as RFLP and mtDNA profiles, cannot be matched through CODIS. Id. at 7.


the true perpetrator after an erroneously convicted inmate has been exonerated through postconviction DNA tests. In a study of the first 200 DNA exonerations, the Innocence Project found that in thirty-seven percent of the cases, the true perpetrator was found.

**B. Ethics and Evidence Issues Raised by DNA Evidence**

The response of prosecutors to this powerful adjudicator of the truth has varied. Initially, some prosecutors expressed skepticism about DNA evidence, while others embraced the technology’s power to identify and convict offenders. More recently, prosecutors have lamented the so-called “CSI effect” as promoting unrealistic expectations among jurors that every criminal case must be proven through the use of forensic science.

In order to solidify the case against Buckland, police submitted semen samples from both crimes to Jeffreys, who had developed a process he called “DNA fingerprinting,” for analysis and comparison against Buckland’s blood sample. Jeffrey’s conclusion, which stunned the police and the community, was that Buckland was not the perpetrator. The DNA tests confirmed that both girls had been raped by the same perpetrator, but Buckland was not that man. Buckland became the first person in the world to be cleared through the use of DNA tests. When their prime suspect was excluded from consideration, police embarked upon a campaign of “voluntary” blood testing, obtaining samples from over 5000 men in the environs of the crime. The results of this first-reported DNA dragnet did not identify the rapist. However, it did lead the police to Colin Pitchfork. A coworker revealed that Pitchfork had persuaded him to provide a sample in his stead. The ruse was eventually uncovered and Pitchfork was arrested in 1987. After his arrest, Pitchfork confessed to the crimes and subsequent DNA tests linked him to the crimes. See Lee & Tirnady, supra note 99, at 1–2. For a fuller account of the Narborough Village cases, see Joseph Wambaugh, The Blooding (1989).

123. The unique power of DNA typing to exonerate, as well as incriminate, came to light the first time it was used in a criminal investigation. In 1986, Scotland Yard called upon Dr. Alec Jeffreys, who had developed a process of DNA typing while at Leicester University, to assist in the investigation of two brutal rape and strangulation cases. The murders occurred in two neighboring villages in Narborough, England. Police soon focused on a suspect, Richard Buckland, who provided a graphic confession after several hours of interrogation. In it, he described details of the crime that police proclaimed were only known to the killer.

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126. See, e.g., Jean L. Marx, *DNA Fingerprinting Takes the Witness Stand*, Science, June 17, 1988, at 1616, 1616 (quoting an enthusiastic lawyer in the Palatka, Florida, district attorney’s office as saying that DNA typing was “the greatest boon to forensic medicine and law since fingerprinting”).

127. See generally Simon A. Cole & Rachel Dioso-Villa, *CSI and Its Effects: Media, Juries, and the Burden of Proof*, 41 New Eng. L. Rev. 435 (2007) (reviewing scholarship and news accounts of the “CSI Effect”). The authors identified at least six different claims which were labeled the “CSI Effect”: “strong prosecutor’s effect”; “weak prosecutor’s effect”; “defendant’s effect”; “producer’s effect”; “professor’s version”; and “police chief’s version.” Id. at 447–52. The authors suggest that “even if there were a CSI Effect it would not be raising the burden of proof, but merely reinforcing the, already quite high, standard.” *Id.* at 467–68.
In at least one instance, a prosecutor has lied about the results of DNA tests in direct violation of state law and the code of professional conduct. As with any type of highly technical evidence, there are also examples of prosecutors unintentionally misrepresenting the evidence at trial because they do not understand the science. Finally, postconviction DNA requests present prosecutors with the greatest challenge as they confront tensions between their roles as “ministers of justice” and their desire to safeguard a conviction. The next sections will explore the ethics and evidence issues arising when DNA evidence is gathered during a criminal investigation, when it is offered by the prosecution at trial, and when it is sought by an inmate who wishes to access the evidence to prove his or her innocence.

1. Criminal Investigation

In *Brady v. Maryland*, the U.S. Supreme Court stated that “the suppression by the prosecution of evidence favorable to an accused upon request violates due process where the evidence is material . . . to guilt . . . irrespective of the good faith or bad faith of the prosecution.” The Court relied heavily on the necessity of fundamental fairness in criminal trials in fashioning this rule, noting that “our system of the administration of justice suffers when any accused is treated unfairly.” When exculpatory DNA results are obtained during the course of a criminal investigation the prosecutor has a duty to disclose the results to the defense. Failure to do so is a clear violation of case law and the rules of professional conduct.

The recent Duke lacrosse case highlights the importance of recognizing and disclosing exculpatory DNA evidence. In March 2006, an African-American woman, who was a single mother and a college student at a historically black institution in North Carolina, reported that she had been raped by three white men at a house party attended by members of Duke University’s lacrosse team. She told investigators that she had been hired to entertain the party as an exotic dancer, and that while at the house...
she was brutally gang raped. The cases garnered substantial media attention because they raised sensitive issues of race, class, and gender inequality. The Durham, North Carolina, prosecutor, Michael B. Nifong, was quick to pursue rape charges against Duke lacrosse team members Reade W. Seligmann, David F. Evans, and Collin Finnerty. A state laboratory conducted forensic analysis and concluded that none of the lacrosse players’ semen, saliva, or blood was found on the woman or on her clothes. Nifong then hired a private laboratory to conduct more sophisticated testing on the rape kit swabs and the woman’s underwear. Those tests revealed traces of sperm and other DNA material from several men, none of which was from the three accused or any of their teammates. Shockingly, the exculpatory information was not revealed to defense counsel. Instead, the director of the private laboratory and Nifong, after discussing the analysis results during two meetings, agreed to provide the defense with an incomplete report that did not include the favorable results. Furthermore, Nifong repeatedly represented to the trial court that the incomplete report contained all the information that had been discovered by the private laboratory.

After the initial furor over the case, state officials began to realize that the investigation clearly showed that there was insufficient evidence to bring any charges, and that the case was not even a close call. The North Carolina attorney general stated that the lacrosse players had been wrongly accused by an “unchecked” and “overreaching” district attorney who, in addition to withholding the exculpatory DNA evidence, ignored contradictory evidence, such as alibi evidence from time-stamped photographs and cell phone records, and instead relied on the stripper’s “faulty and unreliable” accusations. Aside from the prosecutor’s disregard of evidence tending to establish the lacrosse players’ innocence, the other evidence used in the case was inaccurate. For example, the photo lineup procedure was full of errors and contradictions and “appeared to

134. Id.
135. See Susan Hanley Kosse, Race, Riches & Reporters—Do Race and Class Impact Media Rape Narratives? An Analysis of the Duke Lacrosse Case, 31 S. Ill. U. L.J. 243, 276–78 (2007) (examining media coverage to determine whether race and class played a role in the excitation or vilification of either the complainant or the defendants, and concluding that the press reported evenhandedly by sharing unflattering information about all the participants).
138. Id.
139. Id.
140. Id.
142. Barstow & Wilson, supra note 137.
143. Wilson & Barstow, supra note 136.
144. Id.
violate Durham, state, and federal guidelines.\textsuperscript{145} Nifong instructed the police to show the woman pictures only of lacrosse team members, rather than also including “filler” photographs of people who could not possibly be suspects.\textsuperscript{146}

In the rush to convict the lacrosse players, Nifong “pushed forward unchecked” and “a community and a state lost the ability to see clearly.”\textsuperscript{147} The wrongfully accused team members were left to deal with hostility from faculty and students, in addition to a myriad of legal issues.\textsuperscript{148} Although the lacrosse players broke the rules by having a party that March night, they did not deserve to be so aggressively pursued by a prosecutor who lacked fundamental evidence to charge them with the crime. Meanwhile, Nifong resigned from his position as district attorney and has been disbarred as a result of his activities in the Duke lacrosse case.\textsuperscript{149} The North Carolina State Bar complaint alleged that Nifong repeatedly stated that he had turned over all evidence that would potentially benefit the defense, and that his actions constituted “systematic abuse of prosecutorial discretion . . . prejudicial to the administration of justice.”\textsuperscript{150} The North Carolina State Bar’s recognition that Nifong’s activities were unacceptable serves as a reminder to prosecutors everywhere that they must exercise care when pursuing charges and disclosing evidence.

The Duke lacrosse case is a clear example of the harm that can occur when a prosecutor intentionally withholds exculpatory DNA evidence from the defense and the court. However, when prosecutors have credible DNA evidence that matches a defendant, it is less clear to what extent they may disclose that evidence to the media prior to, and during the course of, the trial. All lawyers are prohibited by the rules of professional conduct from trying their cases in the press. They cannot make statements to the media that have a “substantial likelihood of materially prejudicing an adjudicative proceeding.”\textsuperscript{151} In addition to the general rule governing lawyers, prosecutors have a special obligation not to make extrajudicial statements prior to trial, unless the statements are “necessary to inform the public of the nature and extent of the prosecutor’s action and . . . serve a legitimate law enforcement purpose.”\textsuperscript{152} Under the Model Rules of Professional Conduct, a prosecutor must

\textsuperscript{145} Id.
\textsuperscript{146} Id.
\textsuperscript{147} Id.
\textsuperscript{151} Model Rules of Prof’l Conduct R. 3.6(a) (2007).
\textsuperscript{152} Id. R. 3.8(f).
refrain from making extrajudicial comments that have a substantial likelihood of heightening public condemnation of the accused and exercise reasonable care to prevent investigators, law enforcement personnel, employees or other persons assisting or associated with the prosecutor in a criminal case from making an extrajudicial statement that the prosecutor would be prohibited from making.\textsuperscript{153}

The rule recognizes that a prosecutor may taint a jury pool through excessive publicity, but in truth prosecutors are rarely sanctioned for violating this rule.\textsuperscript{154} Although prosecutors may reveal to the media that forensic analysis has established a match between crime scene evidence and a defendant, they must not express personal opinions about the guilt of the accused or about whether a crime has occurred.\textsuperscript{155}

2. During Trial

The basic theory of DNA typing and most laboratory techniques are widely accepted in the scientific world and will pass through the judicial “gate-keeper” standard of \textit{Daubert v. Merrell Dow Pharmaceuticals, Inc.},\textsuperscript{156} and meet the \textit{Frye v. United States}\textsuperscript{157} requirement that the method be generally accepted within the scientific community.\textsuperscript{158} There is “usually no dispute” regarding the admissibility of polymerase chain reaction (PCR)

\begin{flushleft}
\textsuperscript{153} Id.
\textsuperscript{154} See Ronald D. Rotunda & John S. Dzienkowski, Legal Ethics: Lawyer’s Deskbook on Professional Responsibility § 3.8-2(e) n.38 (2007 ed.). According to Rotunda and Dzienkowski, In a world of ubiquitous publicity about trials, Maryland Attorney Grievance Commission v. Gansler, 377 Md. 656, 835 A.2d 548 (2003), represents a relatively rare reprimand for it. Respondent, the State’s Attorney for one of Maryland’s largest counties, had held press conferences about highly publicized cases and reporting evidentiary details, prior criminal records, and alleged confessions and offered plea deals. The Maryland Supreme Court agreed with Gansler that “information contained in a public record” includes all information made public from any source, including the media. Thus, publicly revealing a defendant’s criminal record is permissible, even if prejudicial to the defendant, if the speaker can show that a private citizen could discover the record from public documents. Confessions, however, could not be so discovered, nor could information about plea discussions, so Gansler’s reference to them was improper. Further, the fact Gansler was a public official was important, the Court said. “Prosecutors are held to even higher standards of conduct than other attorneys due to their unique role as both advocate and minister of justice. . . . [Moreover,] a prosecutor’s opinion of guilt is much more likely to create prejudice, given that his or her words carry the authority of government and are especially persuasive in the public eye.” 835 A.2d at 572. The Court concluded that a formal reprimand, issued publicly, would adequately deter future violations of professional standards.

\textsuperscript{155} See Victoria Ward, \textit{Da Nifong Faces State Ethics Charges}, Chronicle (Duke Univ.), Jan. 11, 2007, at 1 (noting that a seventeen-page complaint against Nifong by the North Carolina State Bar included allegations that he made “improper statements expressing his personal opinions about the guilt of the accused and whether a crime had occurred”).

\textsuperscript{156} 509 U.S. 579 (1993).
\textsuperscript{157} 293 F. 1013, 1014 (D.C. Cir 1923).
\textsuperscript{158} Kobilinsky et al., \textit{supra} note 100, at 197–207.
\end{flushleft}
and STR-DNA analysis, so long as the typing is properly conducted, under
conditions that prevent contamination of the evidence and establish a proper
chain of custody for the evidence.\textsuperscript{159}

More controversy has arisen over the use of genetics statistics as a means
of establishing a “match” between the crime scene evidence and the
defendant.\textsuperscript{160} Courts have reversed cases where prosecutors presented
evidence that the profile between the crime scene evidence “matched” that
of the defendant.\textsuperscript{161} Courts have also expressed concern about the way that
analysts describe the frequency with which a particular DNA profile
appears in the population at large\textsuperscript{162} and the way in which the frequency is
calculated.\textsuperscript{163} As the DNA Advisory Board has explained,

\begin{quote}
[T]here are alternate methods for assessing the probative value of DNA
evidence. Rarely is there only one statistical approach to interpret and
explain the evidence. . . . [T]he philosophy and experience of the user, the
legal system, the practicality of the approach, the question(s) posed,
available data, and/or assumptions [all affect the choice of approach].\textsuperscript{164}
\end{quote}

When fairly presented, “the random match probability represents the
chance or probability that a person randomly selected from the general
population is the actual source of the DNA sample recovered rather than the
defendant. . . . Random match probabilities are often broken down into
various reference populations by race and ethnicity.”\textsuperscript{165}

In what has become known as the “prosecutor’s fallacy,” random match
probability statistics have been misrepresented as source probability
statistics. A court described this phenomenon in the following manner:

\begin{quote}
[S]uppose the FBI’s evidence establishes that there is a one in 10,000
chance of a random match. The jury might equate this likelihood with
source probability by believing that there is a one in 10,000 chance that
the evidentiary sample did not come from the defendant. This equation of

\textsuperscript{159} Id. at 207–08.
(“[T]he concern that has given courts the most pause in admitting DNA evidence involves
the methods for characterizing the implications of an observed degree of similarity in DNA
types.”).
\textsuperscript{161} See, e.g., State v. Cauthron, 846 P.2d 502, 503 (Wash. 1993) (reversing a rape
conviction because “testimony that Cauthron’s DNA ‘matched’ the perpetrator was admitted
in error, in that it was unsupported by valid probability statistics”).
\textsuperscript{162} See, e.g., United States v. Yee, 134 F.R.D. 161, 181 (N.D. Ohio 1991) (“Without the
probability assessment, the jury does not know what to make of the fact that the patterns
match: the jury does not know whether the patterns are as common as pictures with two
eyes, or as unique as the Mona Lisa.”).
\textsuperscript{163} See, e.g., State v. Vandebogart, 616 A.2d 483, 493–94 (N.H. 1992) (holding that
the FBI’s method for estimating population frequencies had not found general acceptance in
the field of population genetics).
\textsuperscript{164} FBI, Statistical and Population Genetics Issues Affecting the Evaluation of the
Frequency of Occurrence of DNA Profiles Calculated from Pertinent Population Database(s)
\textsuperscript{165} Jennifer Eckroth, Note, Tainted DNA Evidence and Post-Conviction Reversals in
Houston, Texas: Suggested Solutions to Curb DNA Evidence Abuse, 31 Am. J. Crim. L. 433,
random match probability with source probability is known as the prosecutor's fallacy.\textsuperscript{166}

Given society's trust in the reliability of DNA typing as a tool for forensic identification, it is imperative that the prosecutor not misrepresent the evidentiary value of the DNA evidence.\textsuperscript{167}

The case of Josiah Sutton highlights the miscarriage of justice that occurs when a prosecutor misrepresents the value of DNA evidence at trial. In October 1998, a woman was abducted from her Houston apartment complex and raped by two men in the backseat of her car.\textsuperscript{168} Five days later, the victim was driving her car near her home when she saw Josiah Sutton and his friend on the street.\textsuperscript{169} She notified police that she believed that Sutton and his friend were her attackers, and they were arrested.\textsuperscript{170} The two men provided samples of body fluids for comparison against evidence found on the victim's clothing, in the rape kit, and taken from the backseat of the car.\textsuperscript{171} At Sutton's trial, the victim identified Sutton as one of the men who attacked her, and a Houston Police Department crime laboratory analyst testified that DNA from semen found in the rape kit was a unique match to Josiah Sutton's DNA.\textsuperscript{172} Later analysis of the case revealed that the DNA found in the rape kit would be a match to approximately one in every fifteen African-American males.\textsuperscript{173} The crime laboratory witness's testimony also omitted evidence of DNA from a second semen sample, found in the backseat of the victim's car, which would have excluded Sutton as the rapist.\textsuperscript{174}

William Thompson, a DNA expert and professor at University of California–Irvine reviewed the transcripts and laboratory reports in the Sutton case. In his report of the case, Thompson noted that the prosecutor repeatedly told the analyst at trial that he was only interested in talking about the samples that incriminated Sutton.\textsuperscript{175} At one point the analyst

\hspace{1em} \textsuperscript{166} United States v. Chischilly, 30 F.3d 1144, 1157 (9th Cir. 1994) (citing Jonathan J. Koehler, \textit{Error and Exaggeration in the Presentation of DNA Evidence at Trial}, 34 Jurimetrics J. 21, 27 n.24 (1993)) (noting “instances where courts, commentators and expert witnesses have committed such source probability errors”).


\hspace{1em} \textsuperscript{169} Id.

\hspace{1em} \textsuperscript{170} Id.

\hspace{1em} \textsuperscript{171} Id.


\hspace{1em} \textsuperscript{173} Id. at 2.

\hspace{1em} \textsuperscript{174} Khanna, \textit{supra} note 168.

\hspace{1em} \textsuperscript{175} \textit{See} Thompson, \textit{supra} note 172, at 6.
mentioned the sample, labeled "#1 unknown sample" in some of the lab notes, which came from the semen stain found in the back of the victim's car.\textsuperscript{176} The prosecutor responded by saying, "I don't want to talk about the unknown sample. Okay?"\textsuperscript{177} As a result of this exchange, as well as the rest of his review, Thompson was left with the "strong impression" that the prosecutor knew about the problems with the laboratory analysis and took care to avoid eliciting testimony about the semen sample found in the backseat of the car.\textsuperscript{178}

The Sutton case is even more poignant because Sutton, who asserted his innocence throughout the investigation, sought independent DNA testing during the trial.\textsuperscript{179} In his appeal, he claimed that his attorney was ineffective for not obtaining independent testing that would have been exculpatory.\textsuperscript{180} The appellate court ruled that Sutton did not establish he was prejudiced by the claimed deficiency in his attorney's performance.\textsuperscript{181} The court found appellate counsel did not produce any evidence of independent DNA analysis that would vindicate Sutton or raise questions about his innocence.\textsuperscript{182} Finally, it stated that the government's DNA evidence implicating Sutton and leading to the dismissal of charges against others who were originally accused of the crime was not seriously challenged.\textsuperscript{183} Sutton served four and a half years of a twenty-five-year prison sentence before his case was reopened as a result of an investigation into the Houston Police Department crime laboratory.\textsuperscript{184}

3. Postconviction DNA Requests

a. Prosecutors' Responses to Postconviction DNA Requests

Requests for postconviction DNA testing have brought mixed responses from prosecutors. Some prosecutors have readily agreed to the requests and welcomed the work of innocence projects. Newly elected Dallas County District Attorney Craig Watkins, shortly after being sworn in, announced that he would allow the Texas Innocence Project to "review hundreds of Dallas County cases dating back to 1970 to decide whether DNA tests should be conducted."\textsuperscript{185} Watkins's response is a refreshing change in a

\textsuperscript{176} Id.
\textsuperscript{177} Id.
\textsuperscript{178} See Thompson, supra note 172, at 6–7.
\textsuperscript{180} Id.
\textsuperscript{181} Id. at *2.
\textsuperscript{182} Id.
\textsuperscript{183} Id.
county that has had “more post-conviction DNA exonerations than any other county in the nation and more than at least two states.”

In Santa Clara County, the district attorney’s office has an internal Innocence Project that works in conjunction with the Northern California Innocence Project at Santa Clara University. The culture is such that district attorney employees are awarded if they find truly innocent persons who are charged with crimes.

Other prosecutors have actively resisted inmates’ efforts to establish their innocence through postconviction DNA testing. Various scholars have explored the reasons for prosecutors’ resistance to claims of postconviction innocence. Daniel Medwed explains that there are institutional, psychological, and personal barriers, as well as political pressures, that prevent prosecutors from confronting postconviction claims of innocence. Incentives at prosecutors’ offices for winning, such as career advancement, bonuses, and public posting of individual and office-wide conviction rates, combined with the prosecutors’ desire to appear tough on crime to the public, create a conviction-oriented mentality among prosecutors.

Medwed argues that this conviction-oriented mentality encourages conviction at every trial, which increases the chance of conviction of an innocent person, especially considering the fact that the prosecutor’s weaker cases are the ones that go to trial. This mentality also causes prosecutors to become emotionally tied to the convictions they win and causes some prosecutors to tie their self-worth to their conviction ratio.

Further, as a result of the limited information prosecutors receive about a case and the belief that police arrest only guilty people, prosecutors often develop “tunnel vision,” which causes them to put on “blinders” to exonerating evidence and to focus only on incriminating evidence. These factors lead prosecutors to become intensely committed to the belief in a defendant’s guilt, which results in resistance to DNA testing in the postconviction stage. This resistance is compounded by the fear that postconviction innocence claims will open Pandora’s box, causing the public to question the effectiveness and credibility of the individual

186. Id.
188. Id.
190. See generally Medwed, supra note 14.
191. Id. at 134–37.
192. Id. at 135–36.
193. Id. at 136, 138.
194. Id. at 140–43.
195. Id.
prosecutor on the case, and of the entire prosecutor's office. Some prosecutors fear that postconviction claims will uncover evidence of prosecutorial misconduct. Medwed notes that prosecutorial resistance to postconviction innocence claims also results from the overwhelming numbers of unmeritorious postconviction innocence claims because prosecutors develop an understandable skepticism and concern about the cost of DNA testing.

Keith Findley and Michael Scott specifically address tunnel vision as a factor that derails the search for truth from the investigation stage to the postconviction stage. They explain that tunnel vision is a natural human tendency that is more often the product of the human condition as well as institutional and cultural pressures, than of maliciousness or indifference. Findley and Scott argue that tunnel vision often is a result of police and prosecutors focusing too quickly or exclusively on one suspect or suspects.

Alafair Burke addresses four types of cognitive biases that result in tunnel vision: confirmation bias, selective information processing, belief perseverance, and the avoidance of cognitive dissonance. Confirmation bias is the human tendency to seek to confirm, rather than disconfirm, a hypothesis. Selective information processing causes people to overvalue information that is consistent with their preexisting theories and to undervalue information that challenges those theories. Belief perseverance refers to the human tendency to continue to adhere to a theory.
even after the evidence underlying the theory is disproved.\textsuperscript{205} Avoidance of cognitive dissonance can cause people to adjust their beliefs to maintain existing self-perceptions.\textsuperscript{206} Another bias, the reiteration effect—where confidence in the truth of an assertion naturally increases if the assertion is repeated—makes it increasingly difficult over time for police and prosecutors to consider alternative perpetrators or theories of a crime.\textsuperscript{207} Findley and Scott explain that these biases, especially belief perseverance, are responsible for prosecutorial resistance to the possibility of innocence before a DNA test, and even after a DNA test excludes the suspect as the perpetrator.\textsuperscript{208}

Burke explains that a prosecutor’s belief in guilt strengthens after a jury returns a guilty verdict, and this belief continues to taint the prosecutor’s analysis of any new evidence submitted by the defense postconviction.\textsuperscript{209} Evidence conflicting with this belief in guilt results in cognitive dissonance on the part of a prosecutor. Because the conviction of an innocent person is inconsistent with the ethical prosecutor’s belief that charges should be brought only against suspects who are actually guilty, the ethical prosecutor seeks to avoid cognitive dissonance by clinging to the original belief in guilt, refusing to believe that she took part in a wrongful conviction. Burke argues, “[F]rom this perspective, prosecutorial bias against postconviction exculpatory evidence is not an indication of corrupt ethics. Rather, it may indicate a deep but biasing adherence to the edict that prosecutors should only do justice.”\textsuperscript{210}

Peter Joy argues that prosecutorial misconduct and resistance to postconviction DNA testing is “largely the result of three institutional conditions: vague ethics rules that provide ambiguous guidance to prosecutors; vast discretionary authority with little or no transparency; and inadequate remedies for prosecutorial misconduct, which create perverse incentives for prosecutors to engage in, rather than refrain from, prosecutorial misconduct.”\textsuperscript{211}

b. Constitutional and Statutory Rights to Postconviction DNA Testing

The question of whether an inmate is entitled as a matter of constitutional right to postconviction DNA testing has not been addressed by the U.S. Supreme Court. Seth Kreimer and David Rudovsky argue that “postconviction access to DNA evidence is constitutionally mandated in any case in which DNA tests could either (1) definitively demonstrate

\begin{footnotesize}
\textsuperscript{205} \textit{Id.}  \\
\textsuperscript{206} \textit{Id.}  \\
\textsuperscript{207} Findley & Scott, supra note 199, at 319.  \\
\textsuperscript{208} \textit{Id.}  at 313.  \\
\textsuperscript{209} Burke, supra note 202, at 1612–14.  \\
\textsuperscript{210} \textit{Id.}  \\
\textsuperscript{211} Peter A. Joy, The Relationship Between Prosecutorial Misconduct and Wrongful Convictions: Shaping Remedies for a Broken System, 2006 Wis. L. Rev. 399, 400.
innocence, or (2) provide substantial grounds for a claim of innocence sufficient to permit the defendant to pursue postconviction or habeas relief.\footnote{212} And indeed, many courts have relied on \textit{Brady v. Maryland} in finding a right to postconviction DNA testing in cases where that technology did not exist at the time of trial.\footnote{213} For example, in \textit{Wade v. Brady},\footnote{214} the court held that the Due Process Clause provides a substantive right to postconviction DNA testing where testing could raise serious doubts about the original verdict.\footnote{215} In \textit{Wade}, the petitioner sought on due process grounds DNA testing of blood and semen used eight years before in his felony murder trial.\footnote{216} The court concluded that Robert Wade had stated a claim for violation of due process rights, holding that the government "may only legitimately deny access to [DNA] testing if it has a compelling reason to do so."\footnote{217} It found that the societal interest in fundamental fairness and the integrity of the criminal justice system mandates DNA testing when "DNA evidence can prove that a miscarriage of justice was perpetrated by an earlier verdict."\footnote{218} Other interests, such as the state's interest in avoiding the administrative and judicial costs of allowing access to DNA testing and the government's interest in preserving the finality of adjudications at trial, are subordinate.\footnote{219}

Fred Zacharias argues that \textit{Brady v. Maryland} and its progeny alone do not create a prosecutorial duty to make genetic samples available for testing because \textit{Brady} applies to evidence a prosecutor knows to be material and exculpatory, and DNA evidence is neither until after it is tested.\footnote{220} He notes that innocence statutes and some case law have created a limited

\begin{itemize}
    \item \footnote{212}{Kreimer & Rudovsky, \textit{supra} note 189, at 556–57.}
    \item \footnote{213}{See, e.g., Toney v. Gammon, 79 F.3d 693, 700 (8th Cir. 1996) (reversing the district court's refusal to permit a habeas petitioner alleging ineffective assistance of counsel to conduct DNA tests that were not available at time of trial, where the petitioner consistently maintained his innocence and claimed the test results could exonerate him); Godschalk v. Montgomery County Dist. Att'y Office, 177 F. Supp. 2d 366 (E.D. Pa. 2001) (holding that \textit{Brady} requires DNA testing); Sewell v. State, 592 N.E.2d 705, 708 (Ind. Ct. App. 1992) (concluding that fundamental fairness requires the release of evidence for DNA testing when it has exculpatory potential); Dabbs v. Vergari, 570 N.Y.S.2d 765, 767–69 (Sup. Ct. 1990) (holding that due process under \textit{Brady} requires DNA evidence with high exculpatory potential to be discoverable after conviction); Commonwealth v. Brison, 618 A.2d 420, 423–26 (Pa. Super. Ct. 1992) (concluding that due process requires testing of DNA material due to its extraordinary accuracy in matching cellular material to individuals). \textit{But see} State v. El-Tabech, 610 N.W.2d 737, 746–47 (Neb. 2000) (holding that there is no constitutional right to demand judicial consideration of newly discovered evidence after the statutory time limit has expired for seeking a motion for new trial based on newly discovered evidence—and that this is true even if the new evidence establishes the defendant's factual innocence).}
    \item \footnote{214}{460 F. Supp. 2d 226 (D. Mass. 2006).}
    \item \footnote{215}{\textit{Id.} at 249.}
    \item \footnote{216}{\textit{Id.} at 229.}
    \item \footnote{217}{\textit{Id.} at 231.}
    \item \footnote{218}{\textit{Id.}}
    \item \footnote{219}{\textit{Id.} at 248 (noting that "none of these interests is adversely affected by DNA testing").}
    \item \footnote{220}{Fred C. Zacharias, \textit{The Role of Prosecutors in Serving Justice After Convictions}, 58 \textit{Vand. L. Rev.} 171, 192 (2005).}
\end{itemize}
prosecutorial duty to provide genetic evidence for testing. Because of the great amount of discretion granted to prosecutors in the postconviction phase, Zacharias proposes the imposition of several prosecutorial duties in these proceedings. Prosecutors should consider whether to disclose newly discovered evidence to the defense, however probative or exculpatory that evidence is, once the prosecutor has determined that the evidence is pertinent. Prosecutors should also be aware of new technology and methods for testing evidence, and should identify criteria for determining when these developments justify a new prosecutorial response.

Ultimately, it is important to remember that a prosecutor’s resistance to postconviction DNA testing can lead to two terrible injustices. First, it can result in the prolonged incarceration of an innocent person. Second, it can prevent identification of the true perpetrator, who remains free to commit further crimes. In 1996, Douglas Warney was convicted of murder based almost entirely on his in-depth confession. The confession appeared reliable because it contained details of the crime not known to the general public. Ten years later, Warney sought DNA testing of biological evidence collected at the crime scene, including blood and tissue recovered from under the victim’s fingernails. His counsel proffered that a match between a DNA profile obtained from the evidence and a CODIS profile of someone other than Warney would prove Warney’s innocence. Prosecutors responded by arguing that this outcome would not prove innocence because portions of Warney’s confession made reference to an accomplice. The postconviction court ruled that the possibility that DNA testing could result in a match of an individual on file with the felon DNA database was “too speculative and improbable” to grant testing.

While the postconviction court’s denial of Warney’s request was on appeal, prosecutors chose to conduct DNA testing on their own initiative. This testing excluded Warney as the source of the DNA found at the crime scene and revealed a profile of an unknown male perpetrator. Prosecutors then ran the recovered profile through the state’s DNA database. This additional investigatory step identified the DNA from the crime scene as belonging to Eldred Johnson, Jr. When contacted by the authorities, Johnson told investigators he did not know Warney and that he acted alone in killing the victim. Douglas Warney’s case illustrates the harm that occurs when an innocent man “languishes in prison while the true offender stalks his next victim.”

221. Id. at 193–98.
222. Id. at 177–78.
223. Id. at 179.
226. Id.
III. THE ETHICS OF PROSECUTORS’ USE OF HIGH-TECH EVIDENCE AND THE CONSEQUENCES FOR THE MISUSE OF SUCH EVIDENCE

In addition to the need for strict standards in the presentation of evidence, prosecutors must also consider a number of ethical issues related to the use of certain kinds of evidence. First, the use of high-tech evidence is often expensive. The use of high-tech evidence may make it impossible for opposing counsel to counter effectively the animation or closing argument, and this may unfairly favor the prosecution because it often has more resources to finance this kind of evidentiary presentation. The prosecutor does act in an adversarial role, and perhaps should be free to use whatever methods are available to obtain a conviction, just as the defense attorney may utilize any ethical method of defense. However, a prosecutor’s role is not that of a simple adversary. The prosecutor serves a dual role, balancing the role of an adversary with the need to serve justice in a broader sense, which may include refraining from the use of expensive technology if the defendant is unable to match the complexity of presentation. No matter how effective or desirable a computer-generated exhibit might be to a prosecutor, the defendant’s ability to respond meaningfully is a matter of fundamental fairness. It is not necessary for the defendant to be able to match the prosecutor’s high-tech presentation, but the prosecutor should consider the potential prejudice that might result if a defendant is unable to challenge the prosecutor’s exhibit. Due to these concerns, the Washington Supreme Court has established Access to Justice Technology Principles:

Access to a just result requires access to the justice system. Use of technology in the justice system should serve to promote equal access to justice and to promote the opportunity for equal participation in the justice system for all. Introduction of technology or changes in the use of technology must not reduce access or participation and, whenever possible, shall advance such access and participation.

At a minimum, more courts should establish these kinds of guidelines to ensure that defendants are able to adequately respond to the prosecution’s evidence, even if a defendant has few resources. More importantly, courts should strictly enforce these general guidelines, and also consider adoption of more stringent guidelines. As the use of high-tech evidence becomes more prevalent, courts should take the opportunity to develop workable standards that can be applied consistently.

228. See Adam T. Berkoff, Comment, Computer Simulations in Litigation: Are Television Generation Jurors Being Misled?, 77 Marq. L. Rev. 829, 852 (1994) (citing costs of $1000 to $4000 per second for computer simulations); Alan Gahtan, Computer Technology Invades Litigation Practice (Nov. 6, 1995), http://www.gahtan.com/alan/articles/ctechlit.htm (citing average costs of $1000 per second for computer animations).

229. See Boyle, supra note 28, at 383.

Even if the prosecution’s use of high-tech evidence could be matched, or at least adequately answered, by the defendant, the use of high-tech evidence may not be appropriate in every situation. If the prosecution can make the same presentation in a low-tech fashion, the use of a high-tech presentation may be unnecessary and overly expensive. The use of high-tech evidence can be very costly, in terms of both time and money. Not only must the prosecution expend scarce public resources to pay for the creation of such an exhibit, but also a substantial portion of the trial may be devoted to examining how the prosecution created the evidence. In the previously mentioned case of Commonwealth v. Serge, the fifteen-second computer-generated animation cost between $10,000 and $20,000, and a “substantial portion of the trial was consumed” explaining this animation. Judge Ronald Castille wrote a concurrence in Serge to comment on the prosecutor’s use of high-tech evidence: “I fully trust that a jury can ‘get the picture’—it certainly could have gotten an equivalent picture here—through more balanced, economical and old-fashioned means, such as testimony and diagrams.” Although flashy images and simulations may catch a juror’s attention, the expenditure of huge amounts of money and time may be unnecessary.

The misuse of evidence not only harms defendants, but also causes great damage to the credibility of the criminal justice system. In the Duke lacrosse case, Attorney General Roy Cooper remarked that the prosecution in that case raised broader questions about North Carolina’s criminal justice system. The American Judicature Society recently convened a national conference to examine the problem of wrongful convictions, in recognition of the fact that false convictions have damaged trust and faith in the justice system. This damage can have long-lasting effects and may hamper the efforts of ethical prosecutors and law enforcement agents.

A prosecutor generally receives relatively light punishment for the unethical use of evidence, leaving little incentive for a prosecutor to change his or her unethical behavior. Although a judge may describe a prosecutor’s behavior as “‘unforgivable,’ ‘intolerable,’” ‘beyond reprehension,’ and ‘illegal, improper and dishonest,’” these attorneys usually face little personal responsibility for their actions and may even advance significantly in their careers.

231. See Bennett, supra note 33, at 286.
233. Id. at 1189.
234. Id. at 1189–90.
236. Alan D. Sobel, Restoring Confidence in the Criminal Justice System, 86 Judicature 64 (2002).
237. See Armstrong & Possley, supra note 18.
238. Id.; see also Robert H. Aronson, Professional Responsibility: Education and Enforcement, 51 Wash. L. Rev. 273, 313 n.122 (1976). Armstrong and Possley comment that, of the 381 cases of homicide defendants who received new trials because of prosecutorial misconduct, “[o]ne [prosecutor] was fired, but appealed and was reinstated
Direct punishment of prosecutors is rare; instead the cases involving the misuse of evidence are either dismissed or retried. The curative admissibility doctrine is another method that usually spares a prosecutor from personal punishment, while allowing the defendant to introduce otherwise inadmissible evidence to remove the prejudice caused by the improper admission of evidence offered by the prosecutor.\textsuperscript{239} Prosecutors may see the lack of direct punishment as an invitation to continue the behavior because the worst result is the dismissal or retrial of a case. Judges can help to curtail such behavior, however, if the conduct has adverse consequences. For example, prosecutorial misconduct that prompts a mistrial at the defendant’s request erects a double jeopardy bar against retrial if the conduct was intended to provoke the defense to seek a mistrial and the conduct was meant to avert an acquittal.\textsuperscript{240} The Texas Court of Criminal Appeals applied this double jeopardy bar when the prosecution failed to disclose evidence related to the defendant’s self-defense claim in a murder case and the defense was compelled to seek a mistrial as a result of this withholding of evidence.\textsuperscript{241}
IV. PROPOSED REMEDIES FOR PROSECUTORS’ MISUSE OF EVIDENCE

Although prosecutors usually receive little direct punishment, they do occasionally face adverse consequences. Judges may criticize a prosecutor’s behavior in a written opinion, admonish prosecutors off the record, inform their superiors of offensive conduct, hold a prosecutor in contempt for violating known legal requirements or otherwise showing disrespect for judicial processes, or even refer the prosecutor to the state bar for discipline.\textsuperscript{242} In the Duke lacrosse case, Attorney General Cooper also sought legislation that would give the North Carolina Supreme Court greater power to remove prosecutors so the egregious misconduct displayed in the Duke case will not recur.\textsuperscript{243} However, the kind of discipline faced by District Attorney Nifong is an exception, and is probably due to the extreme nature of his misbehavior and the amount of media focus. Nifong was ultimately disbarred for his conduct in the Duke lacrosse case when the bar unanimously found that he had engaged in “dishonesty, fraud, deceit and misrepresentation.”\textsuperscript{244} The defense attorneys for the three wrongfully charged athletes have also filed a complaint against Nifong for criminal contempt, “saying that they want him jailed.”\textsuperscript{245}

In another example of egregious prosecutorial misconduct, a former federal prosecutor faces disbarment over charges that he made a false statement to a tribunal, intentionally failed to disclose required discovery to the defense, and engaged in conduct seriously interfering with the administration of justice.\textsuperscript{246} The former prosecutor distributed “more than $140,000 in federal witness vouchers to 132 people during [a] gang trial and another murder trial—including improper payments to some witnesses, friends and relatives of witnesses, and former police officers.”\textsuperscript{247}

Other than extreme examples such as Nifong’s there is currently little specific regulation of prosecutorial ethics: “[M]ost professional codes barely distinguish between prosecutors and other lawyers. None specifically exempt prosecutors from otherwise applicable rules and most add only a handful of restrictions to those that generally govern lawyers.”\textsuperscript{248} In addition to few specific regulations directed toward prosecutors, there is little application of these regulations to prosecutors even when they do apply. The American Bar Association Standards for Criminal Prosecution

\textsuperscript{242} Id. at 504–05.
\textsuperscript{243} Wilson & Barstow, supra note 136.
\textsuperscript{245} Id.
\textsuperscript{248} See Green & Zacharias, supra note 4, at 394; see also Model Rules of Prof’l Conduct R. 3.8 cmt. 1 (2007).
address prosecutorial conduct through sentencing, and then stops. There are no standards to guide prosecutors through their ethical duties in postconviction proceedings. There is little case law on a prosecutor's duty in postconviction proceedings, and treatises on prosecutorial conduct tend to ignore postconviction duties.

Thus, professional codes typically regulate prosecutors with "a fairly light touch." Unless the situation involves "unambiguously wrongful conduct," disciplinary authorities do not generally bring actions against prosecutors, and courts usually apply professional codes less restrictively to prosecutors than to other lawyers in seemingly comparable situations. This light regulation of prosecutorial conduct does not motivate prosecutors to exercise special care in monitoring their own conduct. A wrongfully convicted defendant also has little ability to seek redress against a prosecutor. The Supreme Court has held that prosecutors are absolutely immune for their actions that were "intimately associated with the judicial phase of the criminal process." The public has little sympathy for criminals, and since a prosecutor's misconduct (for example, withholding evidence) makes the defendant look guilty, a convicted criminal has few advocates.

This essay does not suggest that every prosecutor making a minor procedural mistake should be prosecuted like former District Attorney Nifong. Prosecutorial punishment is less important than creating effective standards to guide prosecutorial behavior. Some commentators have suggested that the judiciary consider drafting separate ethical rules for prosecutors that recognize their unique role as ministers of justice:

A separate code of prosecutorial conduct would address specific prosecutorial functions, offering guidance to prosecutors and providing a basis for holding them accountable when they engage in misconduct. Codification of a separate set of rules and a separate disciplinary process for prosecutors would be a long and tedious process but would produce a

249. Model Rules of Prof'l Conduct R. 3.8(d).
250. See Zacharias, supra note 220, at 174.
251. See Green & Zacharias, supra note 4, at 397.
252. See id. at 398.
253. See id. at 398-99.
254. But see Elizabeth Napier Dewar, Note, A Fair Trial Remedy for Brady Violations, 115 Yale L.J. 1450 (2006) (suggesting that courts should instruct the jury on the duty to disclose when the government fails to fulfill its constitutional duty to disclose favorable evidence and allow the defendant to argue that the failure to disclose raises doubt about the defendant's guilt).
257. See Bruce A. Green, Prosecutorial Ethics as Usual, 2003 U. Ill. L. Rev. 1573, 1582.
more effective system that would benefit prosecutors and the public at large. 258

A separate set of ethical rules would more adequately address the prosecutor’s role in the justice system and allow for a greater understanding of ethical expectations. Prosecutors should be involved in the creation of these new standards because they will be best able to understand the unique challenges of being a prosecutor. 259

Prosecutors must also consider their role as ministers of justice in a wider societal context. Although prosecutors make most of their decisions independently, they must be held accountable to their constituents because they “formulate policies on general issues such as charging, plea bargaining, and sentencing.” 260 It is currently difficult for constituents to understand the complex decisions made by prosecutors on a daily basis, but there must be greater transparency in prosecutorial decision making. This may include articulating more specific standards and allowing for public commentary on those standards, potentially including greater public discussion about certain contentious cases.

Prosecutors should make decisions “based on articulable principles or subprinciples that command broad societal acceptance.” 261 They should be free to exercise their judgment in difficult, close cases, but they must also accept the responsibility for their decisions by being held accountable to the public. Establishing certain standards and principles to ensure neutrality outside the context of a particular case is important because it can be difficult to define these values in the midst of a case. 262 Prosecutors may also simply need to be more aware of their unintentional cognitive biases. 263 Even the most well-meaning prosecutor may have certain biases, and education can help mitigate these biases. 264 Education should also be supplemented with a running counterargument to a prosecutor’s theory of the defendant’s guilt, including playing devil’s advocate. 265

CONCLUSION

The need for strict ethical conduct by prosecutors cannot be overstated. The exoneration of wrongfully convicted persons on death row demonstrates that the criminal justice system is imperfect, and often this imperfection is a result of the misuse of high-tech and DNA evidence or

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259. Weinstein, supra note 18 (discussing a veteran deputy district attorney in Los Angeles, Lael Rubin, and the three separate committees in her office concerned with ethics, including one dealing exclusively with the office’s responsibility to turn over exculpatory information to defense lawyers).
262. Id. at 898–99.
263. See Burke, supra note 202, at 1616–18.
264. See id. at 1576 n.13.
265. See Burke, supra note 202, at 1618–20.
other prosecutorial misconduct. The increasing use of high-tech evidence has challenged traditional evidentiary standards and demonstrated the need for more specific guidelines to ensure the fair treatment of defendants. Ultimately, the solution must depend on the prosecutors themselves, since so much of their work is discretionary.

Because disciplinary authorities are often unwilling to sanction prosecutorial misconduct, unless it is outrageous, prosecutorial ethics inevitably rely heavily on self-regulation and self-enforcement. A greater understanding of the ethical requirements by prosecutors could be achieved with stricter legislative and administrative standards. In addition, supervising prosecutors should train and monitor assistant prosecutors to ensure that they understand their dual roles to convict the guilty and exonerate the innocent. This may require fellow prosecutors to act as devil’s advocates and challenge the prosecutor’s theory of the case. Prosecutors must also draw upon their lawyerly virtues and use special care to ensure that they are acting at the highest standards in each and every case, regardless of the gravity of the crime. Prosecutors’ salaries and other incentives should be based on ethical conduct, and not just on conviction rates. These special protections are important to ensure that all defendants are treated ethically and given a fair day in court.

266. See Zacharias, supra note 220, at 238.