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## DEFYING DNA: RETHINKING THE ROLE OF THE JURY IN AN AGE OF SCIENTIFIC PROOF OF INNOCENCE

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*In 1946, public outrage erupted after a jury ordered Charlie Chaplin to support a child who, according to apparently definitive blood tests, was not his. Half a century later, juries have again defied apparently definitive evidence of innocence, finding criminal defendants guilty based on a confession or eyewitness notwithstanding exculpatory DNA test results. One might expect judges in such cases to direct an acquittal, on grounds that the evidence is legally insufficient because no rational juror could find guilt beyond a reasonable doubt. Yet few, if any, do. Instead, courts defer to juries when they form an actual belief in guilt based on testimonial evidence, however weak, and even when contradicted by highly compelling evidence of innocence. In this Article, I argue that guilty verdicts defying DNA uniquely upend three assumptions underlying this deference doctrine. First, that juries are particularly good at determining credibility, and that the public believes this to be so. Second, that reserving credibility as the province of the jury maintains systemic legitimacy by avoiding trial by machine. Third, that the reasonable doubt standard should focus on jurors' actual belief in guilt rather than solely on the quantum and quality of proof. After explaining why the deference doctrine is unjustified, I propose changes to sufficiency law that would foreclose convictions in the face of evidence difficult to reconcile with guilt, while also ensuring that judges do not place science on an epistemic pedestal or intrude upon the jury's role as voice and conscience of the community.*

#### INTRODUCTION

It brings discredit upon the legal profession and it makes a mockery of a court of justice to permit a jury to accept or reject in accordance with their prejudices a fact capable of exact scientific determination. . . . Shades of Jeremy Bentham! What would he say of men of law who reach such stupid results—who are so arrogant and contemptuous of men of science?<sup>1</sup>

<sup>1</sup> Arthur John Keeffe et al., *Sense and Nonsense About Judicial Notice*, 2 STAN. L. REV. 664, 670-71 (1950).

The “stupid result[]” lamented by Professor Arthur John Keeffe and his colleagues in the *Stanford Law Review* in 1950 was the verdict in a paternity suit against Charlie Chaplin.<sup>2</sup> The core of Chaplin’s defense consisted of unchallenged blood tests excluding Chaplin as a possible father. Nonetheless, the jury found for the plaintiff based on her testimony that she slept with no other man during the relevant period, and a California appellate court upheld the verdict.<sup>3</sup> Courts in the same era also upheld guilty verdicts in criminal cases under similar facts.<sup>4</sup> *Chaplin* inspired a flurry of bad press, with the *Boston Herald* declaring that “California has in effect decided that black is white, two and two are five, and up is down.”<sup>5</sup>

Professor Keeffe might have felt similar outrage over the recent conviction of Juan Rivera. Rivera was prosecuted in Illinois for the rape and murder of a young girl despite a DNA test result excluding him as a possible source of semen in the girl’s vagina. The state relied on jailhouse informant testimony and a confession given after Rivera had endured four days of unrecorded interrogation and had suffered what a nurse described as a “psychotic episode.”<sup>6</sup> The state argued to the jury that the presence of the other man’s semen in the eleven-year-old victim’s vagina must have resulted either from her coincidentally having had consensual sex with another man shortly before Rivera raped and killed her, or from contamination of the rape kit sample with sperm of another man sometime in the twenty-four hours after the girl’s autopsy.<sup>7</sup> The state offered no evidence of contamination, and its only evidence of consensual sex was that the girl had been forced to perform oral sex at age eight, knew how to masturbate, and was wearing “red lace panties” the day of her murder.<sup>8</sup> The jury convicted Rivera, and the trial court denied his motion for judgment of acquittal notwithstanding the verdict.<sup>9</sup>

In reporting the *Rivera* verdict, the *New York Times* decried “the prosecution’s case against DNA.”<sup>10</sup> And *Rivera* is not an isolated case.

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<sup>2</sup> *Id.* at 671.

<sup>3</sup> *Berry v. Chaplin*, 169 P.2d 442, 450 (Cal. Dist. Ct. App. 1946) (“The credibility of Miss Berry, like that of all other witnesses, was a matter for the jury to decide. Having heard all of the testimony, including extensive cross-examination of each witness by opposing counsel, the jury made its determination and the verdict will not be disturbed.”).

<sup>4</sup> Juries in numerous cases from the 1930s to the 1950s found defendants guilty of “bastardy” or “begetting a child” notwithstanding apparently definitive blood tests excluding the defendant as the father. *See infra* Part II.

<sup>5</sup> *Jury vs. Science*, BOS. HERALD, Apr. 19, 1945, at 20, *quoted in* Jules B. Greene, Comment, “Blood Will Tell!,” 1 MERCER L. REV. 266, 274 (1950); *see also infra* notes 124-62.

<sup>6</sup> *See* Brief of Appellant at 2-3, 12-17, 27, *People v. Rivera*, 962 N.E.2d 53 (Ill. App. Ct. 2011) (No. 09-1060); *see also Rivera*, 962 N.E.2d at 60.

<sup>7</sup> *Rivera*, 962 N.E.2d at 62-63; Brief of Appellant, *supra* note 6, at 20, 23.

<sup>8</sup> *Rivera*, 962 N.E.2d at 62-63; Brief of Appellant, *supra* note 6, at 19-20, 67-68 n.34.

<sup>9</sup> *Rivera*, 962 N.E.2d at 60.

<sup>10</sup> *See* Andrew Martin, *The Prosecution’s Case Against DNA*, N.Y. TIMES, Nov. 27,

Numerous other prosecutions have been pursued, often successfully, in the face of similar DNA exclusions.<sup>11</sup> Scholars have similarly called such decisions to prosecute “petty and delusional,”<sup>12</sup> based on “ridiculous claims” of guilt,<sup>13</sup> and “against all logic.”<sup>14</sup>

For all the outrage over such “delusional” prosecutions, one might wonder why the system would allow them to end in guilty verdicts. After all, according to the Supreme Court in *Jackson v. Virginia*,<sup>15</sup> a criminal defendant has a constitutional right to a directed verdict of acquittal if “[no] rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt.”<sup>16</sup> Why do courts not simply find the evidence in cases like *Chaplin* and *Rivera* insufficient as a matter of law, and remove them from the jury’s consideration?

The answer is that our sufficiency law actually *encourages* deference to verdicts, particularly in cases like *Chaplin* and *Rivera*. Few criminal cases end in directed acquittal, and “there appears to be universal agreement that,” even after *Jackson*, “appellate courts almost never reverse convictions on sufficiency grounds.”<sup>17</sup> Those cases that do involve a successful motion for judgment of acquittal or sufficiency challenge on appeal typically involve a prosecutor failing to present any evidence whatsoever on an essential element of the charged offense, or a weak, purely circumstantial case.<sup>18</sup> In contrast, courts are almost never willing to direct an acquittal where the state offers testimonial evidence of guilt, such as Mr. Rivera’s confession or Chaplin’s alleged lover’s eyewitness account. Instead, as the Supreme Court itself has commanded, “the trial court . . . is not to . . . assess the credibility of witnesses when it judges the merits of a motion for acquittal.”<sup>19</sup> The Court reaffirmed

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2011, at MM44, available at <http://www.nytimes.com/2011/11/27/magazine/dna-evidence-lake-county.html>.

<sup>11</sup> See *infra* Part III.C.

<sup>12</sup> Aviva Orenstein, *Facing the Unfaceable: Dealing with Prosecutorial Denial in Postconviction Cases of Actual Innocence*, 48 SAN DIEGO L. REV. 401, 419 (2011); see also Fred C. Zacharias, *The Role of Prosecutors in Serving Justice After Convictions*, 58 VAND. L. REV. 171, 173 (2005) (describing “prosecutors’ ethical duty to serve justice after convictions are complete” as “particularly neglected”).

<sup>13</sup> Orenstein, *supra* note 12, at 419.

<sup>14</sup> Samuel R. Gross et al., *Exonerations in the United States 1989 Through 2003*, 95 J. CRIM. L. & CRIMINOLOGY 523, 526 n.8 (2005).

<sup>15</sup> 443 U.S. 307 (1979).

<sup>16</sup> *Id.* at 324.

<sup>17</sup> Chad M. Oldfather, *Appellate Courts, Historical Facts, and the Civil-Criminal Division*, 57 VAND. L. REV. 437, 478 (2004).

<sup>18</sup> See discussion *infra* Part I.

<sup>19</sup> *Burks v. United States*, 437 U.S. 1, 16-17 (1977); see also Jon O. Newman, *Beyond “Reasonable Doubt,”* 68 N.Y.U. L. REV. 979, 997 (1993) (“So when the Supreme Court formulated its standards for testing sufficiency in civil and criminal cases, it naturally directed reviewing judges not to weigh the credibility of witnesses.”).

this principle in *Jackson*, essentially reverting – in cases involving testimonial evidence – to an understanding of “reasonable doubt” as merely ensuring jurors’ actual belief in guilt rather than as a judicially enforceable proof standard to guard against factually inaccurate verdicts of guilt.<sup>20</sup>

This blind deference to jury verdicts in cases involving testimonial evidence of guilt appears to stem from two sets of questionable assumptions about the accuracy and acceptability of verdicts. First, that the jury is uniquely good at determining credibility, and that the public views it as such.<sup>21</sup> Second, that reserving credibility exclusively for the jury is necessary to assuage the public’s fear of a futuristic alternative, in the form of machine-like lie detectors or “truth machine”-type evidence that might trump a jury’s own weighing of the evidence, and that the reliability of such evidence is not commensurate with the mesmerizing effect it would have on jurors.<sup>22</sup>

Yet the public outrage over *Rivera*, coupled with the DNA exoneration movement, reveal once and for all that these assumptions are unjustified. On the accuracy front, jurors are not particularly good at determining credibility or weighing evidence, and scientific evidence, under the right circumstances, holds much promise for enhancing the reliability of trials. On the acceptability front, the advent of CourtTV, DNA exonerations, and cases like *Rivera* have blown the cover on the jury. There is little evidence to suggest the public still views the jury as a particularly reliable lie detector, and in fact, the outrage over *Chaplin* and *Rivera* seems to indicate that the public is more than willing to allow “truth machines” to trump the jury’s credibility findings, at least when such evidence suggests innocence.

I have two aspirations for this Article. First, I hope to offer a coherent explanation for how the doctrine of blind deference in cases involving testimonial evidence has become such an intransigent part of sufficiency law, even in the face of technological advances, the controversies of the *Chaplin* era, and the *Jackson* Court’s ostensible commitment to enforcing “reasonable doubt” as a standard of factual proof meant to protect defendants from wrongful conviction. In doing so, I explain how cases defying apparently definitive scientific evidence of innocence, like *Rivera*, finally force us to acknowledge that the assumptions underlying the blind deference rule are unjustified. I also underscore the context-specific nature of scientific evidence,

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<sup>20</sup> See discussion *infra* Part I. See generally JAMES Q. WHITMAN, THE ORIGINS OF REASONABLE DOUBT 12-13 (2007) (explaining the prevalence of so-called “moral comfort procedures” in Western legal history that are “designed to guarantee that judges in capital cases, and people like them, can take away with them a necessary dose of moral comfort”).

<sup>21</sup> See discussion *infra* Part I. See generally George Fisher, *The Jury’s Rise as Lie Detector*, 107 YALE L.J. 575, 577 (1997) (“We say that lie detecting is what our juries do best. In the liturgy of the trial, we name the jurors our sole judges of credibility and call on them to declare each witness truth-teller or liar.”).

<sup>22</sup> See discussion *infra* Part I.

however, by explaining how reported DNA exclusions in cases less compelling than *Rivera* can be erroneous or consistent with guilt.

Second, I hope to offer a new vision for sufficiency law in an age of scientific evidence of innocence. To be sure, abandoning the “jury as lie detector” myth raises as many difficult questions as it answers. For example, in a case where the defendant allegedly confesses, should starkly numerical evidence of innocence, such as an eighty-five percent accurate neuroimaging-based lie detector test indicating the defendant’s lack of deception, be enough to render the case legally insufficient? In a statutory rape case, if a DNA test shows a 99.9% chance that the defendant has fathered a child of the victim, should the judge – while avoiding the constitutional prohibition against directing a verdict of guilt – instruct the jury that the law views such tests as conclusive on the issue of paternity? I explore such questions, and explain how specific reforms might best protect against wrongful convictions, avoid placing scientific evidence on an epistemic pedestal, circumvent other thorny issues raised by “acquittal by machine,” and preserve the jury trial right. Such reforms include applying a comparative, rather than probability-threshold, standard of proof that considers exculpatory evidence; linking the level of deference to a jury’s guilty verdict not to whether the case involves testimonial evidence, but to how much the jury’s *true* expertise – bringing its folk wisdom and community values to factfinding – is implicated; avoiding fixes treating science as legally conclusive; and expanding the *corpus delicti* rule to require proof of the perpetrator’s identity independent of the defendant’s confession.

In Part I, I describe the origins of current sufficiency law and identify the questionable assumptions underlying our blind deference to juries’ credibility findings and assessment of weight of the evidence. In Part II, I explain how the *Chaplin* era revealed the public’s willingness to trust science and the intractability of the blind deference rule before the age of DNA. In Part III, I explore *Rivera* and similar cases involving DNA exclusions, in the process explaining how a reported exclusion might be erroneous or consistent with guilt. In Part IV, I argue for a new sufficiency regime, one that abandons blind deference to juries on issues of credibility and takes compelling evidence of innocence seriously, but that also recognizes the fallibility of science and respects the unique voice the jury brings to factfinding.

#### I. WHY THE JURY’S VERDICT IN CASES WITH TESTIMONIAL EVIDENCE ENJOYS NEAR-BLIND DEFERENCE ON SUFFICIENCY REVIEW

In this Part, I set the stage for understanding the historical significance of cases like *Chaplin* and *Rivera* – that is, what their resolution signals about our changing views of the proper role of the jury and science in criminal adjudication – by briefly describing how sufficiency review has come to be so deferential to juries’ verdicts of guilt in cases involving testimonial evidence, even with the advent of scientific evidence of innocence.

A. *Reasonable Doubt – from “Moral Certainty” to Ostensible “Factual Proof” Requirement*

Even on its face, the blind deference rule in cases involving testimonial evidence seems to contradict the principle, ostensibly established by the Supreme Court in 1979 in *Jackson v. Virginia*,<sup>23</sup> that “reasonable doubt” is a factual proof requirement to be enforced by judges for the benefit of would-be wrongfully accused defendants. To understand how this contradiction has been able to remain uncorrected, it is worth remembering how controversial *Jackson*’s embrace of this principle actually was, and how closely the blind deference rule tracks an older understanding of “reasonable doubt” that *Jackson* purported to, but ultimately failed to, extinguish.

The concept of “beyond a reasonable doubt” as a standard of proof enforceable by judges, rather than merely a description given to jurors of the state of mind they should reach before convicting someone, is of recent vintage. Legal historian James Whitman has theorized that the concept of “reasonable doubt” began not primarily as a legal proof hurdle, but as a means of assuring jurors in a more religious age that they should feel “moral[ly] comfort[able]” condemning a guilty defendant.<sup>24</sup> According to Whitman, jurors in the premodern world, who typically knew about the crime and the parties involved, had little reason to be uncertain of the defendants’ factual guilt.<sup>25</sup> Rather, their verdict was typically confirming “what everybody already knew, or strongly suspected.”<sup>26</sup> This preoccupation with the “souls of the jurors”<sup>27</sup> became a problem for the system during the rise of humanism and revival of skepticism, when jurors were hesitant to convict on less than “metaphysical certainty.”<sup>28</sup> As Barbara Shapiro and others have explained, scholars and naturalists met this challenge by distinguishing between “mathematical” evidence “established by logical demonstration such as the proofs in geometry” and “moral” evidence, the ambiguous, impressionistic evidence “based on testimony and secondhand reports of sense data,” that jurors actually encountered in real cases.<sup>29</sup> While unable to promise “mathematical certainty,”<sup>30</sup> moral evidence could promise “moral certainty,” the highest level of certainty “possible from human, and necessarily fallible,

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<sup>23</sup> 443 U.S. 307 (1979).

<sup>24</sup> WHITMAN, *supra* note 20, at 12-13.

<sup>25</sup> *Id.* at 152.

<sup>26</sup> *Id.* at 19.

<sup>27</sup> *Id.* at 3.

<sup>28</sup> Elisabeth Stoffelmayr & Shari Seidman Diamond, *The Conflict Between Precision and Flexibility in Explaining “Beyond a Reasonable Doubt,”* 6 PSYCHOL. PUB. POL’Y & L. 769, 770 (2000).

<sup>29</sup> See Barbara J. Shapiro, “To a Moral Certainty”: *Theories of Knowledge and Anglo-American Juries 1600–1850*, 38 HASTINGS L.J. 153, 157-58 (1986).

<sup>30</sup> See ARTHUR P. WILL, A TREATISE ON THE LAW OF CIRCUMSTANTIAL EVIDENCE 303 (1896) (contrasting “mathematical” with “moral certainty”).

sources.”<sup>31</sup> The “moral certainty” standard, according to Whitman, was actually “designed to make conviction easier” by assuaging “the fears of those jurors who might otherwise refuse to pronounce the defendant guilty.”<sup>32</sup> In turn, to be convinced “beyond a reasonable doubt” was to have moral certainty. Even as the reasonable doubt instruction emerged in the United States in the mid-1800s, its focus was still on “moral certainty” based on “moral evidence.”<sup>33</sup>

Historian Barbara Shapiro has questioned Whitman’s thesis that the “moral certainty” concept originated in theology as a means of providing moral comfort to jurors.<sup>34</sup> According to Shapiro, the “moral certainty” language primarily reflected a concern with factfinding and the need to solve the epistemological problem of lack of absolute certainty in a world of moral evidence.<sup>35</sup> Whether or not the “reasonable doubt” requirement was a “factual proof procedure by design,”<sup>36</sup> there seems to be agreement that, as society became more mobile and factual uncertainty crept into more trials, “reasonable

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<sup>31</sup> Robert C. Power, *Reasonable and Other Doubts: The Problem of Jury Instructions*, 67 TENN. L. REV. 45, 65 (1999); see also *Victor v. Nebraska*, 511 U.S. 1, 10-11 (1994) (“Moral evidence has for its subject the real but contingent truths and connections, which take place among things actually existing. . . . With regard to moral evidence, there is . . . real evidence on both sides. On both sides, contrary presumptions, contrary testimonies, contrary experiences must be balanced.” (quoting 1 WORKS OF JAMES WILSON 518-19 (James DeWitt Andrews ed., Chicago, Callaghan & Co. 1896))).

<sup>32</sup> WHITMAN, *supra* note 20, at 216.

<sup>33</sup> *Commonwealth v. Webster* offers the first commonly cited reasonable doubt instruction from American courts:

[E]very thing relating to human affairs, and depending on moral evidence, is open to some possible or imaginary doubt. It is that state of the case, which . . . leaves the minds of jurors in that condition that they cannot say they feel an abiding conviction, to a moral certainty, of the truth of the charge . . . . [T]he evidence must establish the truth of the fact to a reasonable and moral certainty; a certainty that convinces and directs the understanding, and satisfies the reason and judgment . . . . This we take to be proof beyond reasonable doubt . . . .

59 Mass. (5 Cush.) 295, 320 (1850); see also *Victor*, 511 U.S. at 11-12 (describing moral certainty as “equivalent” to reasonable doubt and discussing history of concepts).

<sup>34</sup> See Barbara J. Shapiro, *The Beyond Reasonable Doubt Doctrine: ‘Moral Comfort’ or Standard of Proof?*, 2 L. & HUMAN. 149, 173 (2008) (“[T]he available evidence does not support a deep-seated and persisting fear for the souls of jurors as the dominant motivation behind [the standard]. Rather the evidence, particularly that surrounding the satisfied conscience, moral certainty and beyond reasonable doubt, points to a concern for accurate fact-finding and the ‘this world’ fate of defendants.”). Whitman explained in response that his thesis is simply that moral comfort, and not accurate factfinding, was the predominant concern of jurors in premodern trials, and that any history of the reasonable doubt standard should reflect that reality. See James Q. Whitman, *Response to Shapiro*, 2 L. & HUMAN. 175, 177 (2008).

<sup>35</sup> See Shapiro, *supra* note 34, at 167.

<sup>36</sup> WHITMAN, *supra* note 20, at 25.



doubt” morphed into “a fact-finding principle, . . . a heuristic formula” to “help guide the individual juror in the effort to achieve sufficient certainty about uncertain facts.”<sup>37</sup> As such, the standard was satisfied so long as – but only if – the jury had an actual “belief in the truth of events,”<sup>38</sup> such that the evidence was sufficient “to satisfy [their] understanding and conscience.”<sup>39</sup> That is, even in its new life as a factfinding principle, the standard focused not on a measure of the objective probability of guilt but on jurors’ subjective states of mind, and was satisfied so long as jurors had an actual belief in guilt.

As American judges faced factually uncertain cases with weak evidence, they also began to assert, in the late 1800s, the ability to direct an acquittal.<sup>40</sup> Still, the standard focused on the subjective state of mind of the juror, and the jurors themselves were to determine whether they had attained “moral certainty” – an “actual belief” in guilt. So long as the evidence was of a nature to allow such a belief, a judge deferred to the verdict. Thus, the prevailing view was that a directed verdict was only appropriate where the state’s case was devoid of evidence on an essential element.<sup>41</sup> If there was “some evidence” on each element, the verdict was upheld. And while a few courts imposed a higher standard as to when circumstantial evidence could be deemed sufficient to inspire an “actual belief,”<sup>42</sup> testimonial evidence was always sufficient: when jurors personally believed a confession or eyewitness, that belief was given absolute deference, with jurors free to deem all other contrary evidence incredible by implication.<sup>43</sup>

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<sup>37</sup> *Id.* at 202.

<sup>38</sup> WILLIAM WILLS, AN ESSAY ON THE PRINCIPLES OF CIRCUMSTANTIAL EVIDENCE 6 (Sir Alfred Wills ed., 5th ed. 1905) (defining such “belief” as underlying concept of “moral certainty”).

<sup>39</sup> THOMAS STARKIE, A PRACTICAL TREATISE OF THE LAW OF EVIDENCE, AND DIGEST OF PROOFS, IN CIVIL AND CRIMINAL PROCEEDINGS 577 (Benjamin Gerhard ed., Philadelphia, T. & J.W. Johnson, Law Booksellers 1842).

<sup>40</sup> See, e.g., Abraham S. Goldstein, *The State and the Accused: Balance of Advantage in Criminal Procedure*, 69 YALE L.J. 1149, 1157 & n.22 (1960) (discussing the development of the judge’s power to direct verdicts).

<sup>41</sup> See *Thompson v. City of Louisville*, 362 U.S. 199, 206 (1960) (holding that a conviction violates due process where the state presents “no evidence” of an essential element of a crime); Goldstein, *supra* note 40, at 1158 (describing the early tests courts applied before applying a directed verdict).

<sup>42</sup> Some courts applied a heightened standard in cases involving only circumstantial evidence of guilt, finding that evidence was incapable of inspiring moral certainty – an actual belief – where “the inculpatory facts” were not “incompatible with the innocence of the accused, and incapable of explanation upon any other reasonable hypothesis than that of his guilt.” WILLS, *supra* note 38, at 262. Other courts expressly rejected this standard, holding that this was “not the generally accepted rule” and that “beyond a reasonable doubt is a direction to the jury, not a rule of evidence.” *United States v. Valenti*, 134 F.2d 362, 364 (2d Cir. 1943).

<sup>43</sup> See, e.g., D. Michael Risinger, *Unsafe Verdicts: The Need for Reformed Standards for*

Not surprisingly, then, the understanding of most lower courts before *Jackson v. Virginia* in 1979 was that the reasonable doubt standard simply described “the state of mind required of the factfinder in a criminal case and not of the actual quantum and quality of proof necessary to support a criminal conviction.”<sup>44</sup> The *Jackson* majority purported to reject that view, holding that a defendant has a constitutional right to judgment of acquittal if “[no] rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt.”<sup>45</sup> The Court viewed this right as a necessary corollary to the due process right, recognized by the Court nine years earlier in *In re Winship*, not to be convicted of a crime unless the government convinced a jury of guilt “beyond a reasonable doubt.”<sup>46</sup>

In a scathing concurrence, Justice Stevens took the opposing view, insisting that the jury itself must determine what is “rational,” and that there is no “appreciable risk” of an erroneous verdict once a properly instructed jury finds a defendant guilty beyond a reasonable doubt.<sup>47</sup> In Stevens’ view, so long as the jury was told it had to attain moral certainty, and there was evidence to support the guilty verdict, the judge’s job was done.

While *Jackson* purported to impose a duty on the trial judge to “determine whether the record evidence could reasonably support a finding of guilt beyond a reasonable doubt,”<sup>48</sup> it undercut its holding by stating that the jury still had free rein to determine the credibility of witnesses,<sup>49</sup> and by leaving untouched its declaration one year before *Jackson* that “the trial court . . . is not to . . . assess the credibility of witnesses when it judges the merits of a motion for acquittal.”<sup>50</sup> A handful of scholars have noted that the *Jackson* standard has

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*the Trial and Review of Factual Innocence Claims*, 41 HOUS. L. REV. 1281, 1314 (2004) (explaining that the sufficiency standard in a criminal case “essentially means accepting at face value all testimonial evidence in favor of the verdict and assuming all testimonial evidence to the contrary to have been rejected on credibility grounds”).

<sup>44</sup> *Jackson v. Virginia*, 443 U.S. 307, 318 n.11 (1979); see Oldfather, *supra* note 17, at 472 (“On the one hand, due process could require merely that the fact finder be accurately instructed that it must apply the reasonable doubt standard, which was the position that the courts of appeals had generally taken [before *Jackson*].”).

<sup>45</sup> *Jackson*, 443 U.S. at 319.

<sup>46</sup> 397 U.S. 358, 364 (1970).

<sup>47</sup> *Jackson*, 443 U.S. at 333 (Stevens, J., concurring) (“Indeed, the very premise of *Winship* is that properly selected judges and properly instructed juries act rationally, that the former will tell the truth when they declare that they are convinced beyond a reasonable doubt, and the latter will conscientiously obey and understand the reasonable-doubt instructions they receive before retiring to reach a verdict, and therefore that either factfinder will itself provide the necessary bulwark against erroneous factual determinations. To presume otherwise is to make light of *Winship*.”).

<sup>48</sup> *Id.* at 318.

<sup>49</sup> *Id.* at 319 (describing its new rule as “giv[ing] full play to the responsibility of the trier of fact fairly to resolve conflicts in the testimony”).

<sup>50</sup> *Burks v. United States*, 437 U.S. 1, 16-17 (1977); see also Newman, *supra* note 19, at

turned out to be no different than the “some evidence” standard that preceded it.<sup>51</sup> Indeed, judges hardly ever revisit jurors’ credibility findings<sup>52</sup> or decisions about what weight to give testimonial evidence in relation to other evidence of guilt or innocence,<sup>53</sup> even when a defendant’s liberty is at stake. Though some states have doctrines declaring a case legally insufficient if the state’s evidence is “inherently incredible,” such doctrines are exceedingly narrow – often looking only to whether a witness’s testimony is contradictory or physically impossible, without considering whether it is incredible by inference from other evidence – and rarely invoked to overturn a verdict.<sup>54</sup> More than thirty years after *Jackson*, “there appears to be universal agreement that appellate courts almost never reverse convictions on sufficiency grounds.”<sup>55</sup>

By perpetuating the blind deference rule in cases involving testimonial evidence, *Jackson* ensured that so long as jurors came to personally believe a confession or eyewitness, their guilty verdict would almost surely escape

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997 (“It has been an article of faith among judges steeped in the Anglo-American jury tradition that the credibility of witnesses is for the jury and not for the appellate court. So when the Supreme Court formulated its standards for testing sufficiency in civil and criminal cases, it naturally directed reviewing judges not to weigh the credibility of witnesses.”).

<sup>51</sup> See, e.g., Keith A. Findley, *Innocence Protection in the Appellate Process*, 93 MARQ. L. REV. 591, 602 (2009) (“Although the Supreme Court in *Jackson* cautioned against equating this rule with the ‘no-evidence’ standard, most courts have applied the standard so deferentially that in practice they uphold convictions unless there is essentially no evidence supporting an element of the crime.”); John C. Jeffries, Jr. & William J. Stuntz, *Ineffective Assistance and Procedural Default in Federal Habeas Cases*, 57 U. CHI. L. REV. 679, 726 (1990) (“While this standard sounds hard to meet in the abstract, in practice it is even harder: simple insufficiency-of-the-evidence relief on federal habeas is almost unheard of.”); Newman, *supra* note 19, at 996 (“[C]ourts do not take seriously their obligation to assess sufficiency of evidence in light of the ‘reasonable doubt’ standard. They end their inquiry upon noticing the existence of ‘some’ evidence of guilt.”); Oldfather, *supra* note 17, at 478 (“There need not be a great practical difference between review under *Jackson* and review under *Thompson*.”).

<sup>52</sup> See, e.g., Findley, *supra* note 51, at 602; Newman, *supra* note 19, at 996.

<sup>53</sup> See Risinger, *supra* note 43, at 1314.

<sup>54</sup> See, e.g., *Iowa v. Smith*, 508 N.W.2d 101, 103 (Iowa Ct. App. 1993) (“The testimony of a witness may be so impossible and absurd and self-contradictory that it should be deemed a nullity by the court.” (quoting *Graham v. Chi. & Nw. Ry. Co.*, 199 N.W. 708, 711 (Iowa 1909)) (internal quotation marks omitted)). The doctrine was invoked most often in the rape context in imposing a corroboration requirement on complainant testimony deemed “inherently improbable.” See, e.g., *State v. Ross*, 449 P.2d 369, 373 (Idaho 1968) (quoting *State v. Elsen*, 187 P.2d 976, 978 (Idaho 1947)).

<sup>55</sup> Oldfather, *supra* note 17, at 478; see Findley, *supra* note 51, at 602 (explaining that courts rarely decide cases on sufficiency grounds); cf. Jeffries Jr. & Stuntz, *supra* note 51, at 726 (“[S]imple insufficiency-of-the-evidence relief on federal habeas is almost unheard of.”).

review, however irrational. But why? How did courts come to be so deferential to guilty verdicts turning on issues of credibility?

B. *Jury as "Lie Detector"*

The answer is, first and foremost, that the system has vested in the jury more and more power over "lie detecting" to capitalize on the jury's ability to hide the flaws in its decisionmaking. As George Fisher has explained, the criminal justice system faced a potential legitimacy crisis as other insurers of truthful testimony were discredited. While the system's source of public trust after abolition of trial-by-ordeal lay in the "perceived divine power of the oath to compel truthful testimony,"<sup>56</sup> piecemeal reforms over the centuries eviscerated the persuasive power of the oath. First, the rule allowing the defense to present a case in criminal trials,<sup>57</sup> then rules allowing *sworn* testimony by the defendant and defense witnesses,<sup>58</sup> and finally the scaling back of labyrinthine witness competence rules by the end of the Civil War<sup>59</sup> all removed historical barriers to conflicting sworn testimony. In doing so, these reforms exposed the oath as ineffective.

In contrast to the oath, the jury's process of assessing competing witnesses' veracity was largely shielded from public view, thus "protect[ing] it from the sort of embarrassing public failures that so regularly threatened the oath."<sup>60</sup> The jury verdict was "almost immune from contradiction,"<sup>61</sup> and rarely if ever proven to be inaccurate after the fact. Thus, the system slowly but surely "shift[ed] lie-detecting authority to the jury . . . until the jury had absorbed near-complete autonomy over the factfinding process."<sup>62</sup>

While the jury is actually not particularly skilled at lie detecting,<sup>63</sup> the system's promotion of the idea that "lie detecting is what our juries do best"<sup>64</sup> has largely worked, even as science has offered potentially more reliable lie detectors. A federal judge explained in refusing to admit polygraph evidence, "[t]he most important function served by a jury is in bringing its accumulated experience to bear upon witnesses testifying before it, in order to distinguish truth from falsity. . . . I am not prepared to rule that the jury system is as yet outmoded."<sup>65</sup> And the Supreme Court, in upholding a rule excluding polygraphs from military courts, recently reaffirmed that the jury "are presumed to be fitted" for "[d]etermining the weight and credibility of witness

<sup>56</sup> Fisher, *supra* note 21, at 580.

<sup>57</sup> *Id.* at 602.

<sup>58</sup> *Id.* at 656.

<sup>59</sup> *Id.* at 671-97.

<sup>60</sup> *Id.* at 705.

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

<sup>62</sup> *Id.* at 705-06.

<sup>63</sup> *Id.* at 707.

<sup>64</sup> *Id.* at 577.

<sup>65</sup> *United States v. Stromberg*, 179 F. Supp. 278, 280 (S.D.N.Y. 1959).

testimony” by “their natural intelligence and their practical knowledge of men and the ways of men.”<sup>66</sup>

The system’s deference to verdicts turning on issues of credibility, as compared to statistical or circumstantial evidence, may also stem from a concern over acceptability of verdicts and a belief that the public views jurors as uniquely in a position to judge courtroom demeanor:

The public will usually defer to jury verdicts in cases that depend on the credibility of witnesses. Credibility assessments are subjective and indeterminate; the jurors, by their proximity and attentiveness to the witnesses and evidence, stand in the best position to make these assessments. Most people recognize this circumstance and defer to whatever decision the jurors reach. Thus, the structure of the trial process is well suited to induce public acceptance of the verdict in cases that turn on the credibility of witnesses.<sup>67</sup>

In short, the public’s “unguarded confidence that jurors are up to th[e] task”<sup>68</sup> of accurate lie detecting has, at least until recently, removed any potential cognitive dissonance stemming from the system’s reliance on the jury to resolve credibility disputes.

Now, as one federal judge put it, it is no less than “an article of faith among judges steeped in the Anglo-American jury tradition that the credibility of witnesses is for the jury.”<sup>69</sup> The Supreme Court itself has declared that “[a] fundamental premise of our criminal trial system is that ‘the *jury* is the lie detector.’”<sup>70</sup> Indeed, when Judge Jon Newman suggested in a 1993 lecture that courts should no longer “defer blindly” to jurors’ assessments of witness credibility in their sufficiency analyses, he acknowledged that he was “moving past the provocative to the heretical!”<sup>71</sup> Fisher’s article, written in 1997, predicted that juries would be granted even more autonomy over factfinding in the future and that, “in all likelihood, the soundness of [the jury’s] answers *will remain forever hidden*.”<sup>72</sup>

Yet the soundness of the jury’s answers has not remained “forever hidden.” With the dawn of CourtTV in the 1990s, the ability to observe witness

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<sup>66</sup> United States v. Scheffer, 523 U.S. 303, 313 (1998) (quoting Aetna Life Ins. Co. v. Ward, 140 U.S. 76, 88 (1891)).

<sup>67</sup> See, e.g., Charles Nesson, *The Evidence or the Event? On Judicial Proof and the Acceptability of Verdicts*, 98 HARV. L. REV. 1357, 1370 (1985) (describing how cases turning on circumstantial evidence are less likely to inspire deference to the verdict, because such evidence “is available for anyone to assess, and any interested observer stands in as good a position as the juror to make an evaluation”).

<sup>68</sup> Fisher, *supra* note 21, at 578.

<sup>69</sup> Newman, *supra* note 19, at 997.

<sup>70</sup> *Scheffer*, 523 U.S. at 313 (alteration in original) (quoting United States v. Barnard, 490 F.2d 907, 912 (9th Cir. 1973)).

<sup>71</sup> Newman, *supra* note 19, at 997-98.

<sup>72</sup> Fisher, *supra* note 21, at 708 (emphasis added).

demeanor is no longer a unique jury advantage. And, in any event, social science has debunked the theory that humans accurately judge credibility based on demeanor.<sup>73</sup> Moreover, as evidence has become more transparent and definitive, the potential exists for jurors' credibility findings to be rendered irrelevant or proven wrong. Indeed, the public has now borne witness to over 300 DNA exonerations of citizens wrongfully convicted by juries who credited confessions and eyewitnesses.<sup>74</sup>

If the cover has been blown on the jury, why has our sufficiency doctrine not caught up with our new, more realistic view of the jury's evidence-weighting capabilities? The DNA exonerations are not simply a failure of the juries in those cases, but a collective failure of our legal mechanisms to guard against wrongful convictions. One reason may be that while we have seen a jury's belief in testimonial evidence proven misplaced after the fact by DNA or other newly discovered evidence of innocence, the jury's belief in confessions or eyewitnesses has not – at least until *Rivera*, and arguably earlier in *Chaplin* – been shown to be patently irrational *at the time of trial* based on the evidence they were presented.<sup>75</sup> Thus, courts have generally not been forced to choose between upholding an irrational verdict based on testimonial evidence of guilt and explicitly abandoning the blind deference doctrine. But there is an additional reason the “jury as lie detector” myth has had such staying power, beyond the mistaken assumption that the myth is true and that the public believes it is true: the jury, for all its faults, is at least a *human* factfinder.

### C. *Fear of Trial by Machine and Jury Obsolescence*

What if science offered either a reliable lie detector or a form of evidence so definitive that it rendered any conflicting live testimony, and the jury's view of it, irrelevant or wrong by implication? A full fifteen years ago, Mirjan Damaška was already writing of the “creeping scientization of factual inquiry” and how “the importance of the human senses for factual inquires has begun to

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<sup>73</sup> See, e.g., *id.* at 578 & n.5, 707 & nn.606-07 (“Our unguarded confidence that jurors are up to this task is the more remarkable for being so probably wrong. There is little evidence that regular people do much better than chance at separating truth from lies.” *Id.* at 578.); John B. Meixner, *Liar, Liar, Jury's the Trier? The Future of Neuroscience-Based Credibility Assessments in the Court*, 106 NW. U. L. REV. 1451, 1463-73 (2012) (reviewing literature on jurors' ability to assess credibility based on demeanor and contextual cues).

<sup>74</sup> See *Know the Cases*, INNOCENCE PROJECT, <http://www.innocenceproject.org/know> (last visited Aug. 11, 2013) (over 300 exonerations as of August 2013). I use “exoneration” to mean public acknowledgment by state officials that a previously convicted defendant is factually innocent.

<sup>75</sup> None of the DNA exonerees' many sufficiency challenges succeeded in the original trials. See Brandon Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 112 (2008).

decline.”<sup>76</sup> Live witnesses have given way to the “silent testimony” of machines,<sup>77</sup> and are no longer the ideal mode of proof:

Live witness testimony may have been the best possible means of proving guilt in the eighteenth century . . . . It hardly follows that it is the best possible means today. On the contrary, the greatest advance in criminal procedure of the past generation – the increasing range and accuracy of forensic evidence, including DNA – depends on the scientific analysis of physical evidence, not on live testimony.<sup>78</sup>

As a result, “common sense” now “compete[s] with scientific data in establishing the factual predicate” for a verdict.<sup>79</sup> And even nonscientific forms of modern evidence have offered the promise of being so definitive as to render the jury irrelevant. The Supreme Court in *Scott v. Harris* reversed a lower court’s decision allowing a motorist’s excessive force case to go the jury and remanded for entry of summary judgment on grounds that a videotape – with no evidence of being “doctored or altered”<sup>80</sup> – made clear the motorist was driving recklessly and “no reasonable jury could conclude otherwise.”<sup>81</sup> The majority invited any member of the public to view the videotape on its website.<sup>82</sup>

Courts, at least outwardly, have embraced this new era of transparent and scientific evidence and its promise of higher levels of certainty. Indeed, since the early days of the scientific era, the system has openly bragged about its use of scientific advances in adjudication.<sup>83</sup> Over a century ago, we “celebrated” the new medium of photography as a “machinery of truth.”<sup>84</sup> With the advent of the use of ABO blood typing in court, scholars excitedly declared that “blood will tell [the truth]” and that vexing issues like paternity could now “be solved with absolute certainty.”<sup>85</sup> And now, in the new millennium, we tout

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<sup>76</sup> MIRJAN DAMAŠKA, EVIDENCE LAW ADRIFT 143 (1997).

<sup>77</sup> *Id.*

<sup>78</sup> WILLIAM J. STUNTZ, THE COLLAPSE OF AMERICAN CRIMINAL JUSTICE 227 (2011).

<sup>79</sup> DAMAŠKA, *supra* note 76, at 144.

<sup>80</sup> *Scott v. Harris*, 550 U.S. 372, 378 (2007).

<sup>81</sup> *Id.* at 386.

<sup>82</sup> *Id.* at 378 n.5; *see also* discussion *infra* Part IV (describing subsequent empirical study showing that mock jurors watching *Scott* videotape engaged in “motivated cognition” and came to very different conclusions about whether driver was reckless).

<sup>83</sup> *See, e.g.*, 2 WIGMORE, EVIDENCE § 875 (2d ed. 1923) (“A legal practice which has admitted the evidential use of the telephone, the phonograph, the dictograph, and the vacuum-ray, within the past decades, cannot be charged with lagging behind science.”); Notes and Legislation, *Scientific Gadgets in the Law of Evidence*, 53 HARV. L. REV. 285, 285 (1939) (“It is the perennial boast of the law that in the ascertainment of facts it will avail itself of any accepted scientific discovery.”).

<sup>84</sup> Jennifer L. Mnookin & Nancy West, *Theaters of Proof: Visual Evidence in Call Northside 777*, 13 YALE J.L. & HUMAN. 329, 344 (2001).

<sup>85</sup> Greene, *supra* note 5, at 266-67.

forensic DNA typing as a “truth machine” capable of determining guilt or innocence with near certainty.<sup>86</sup>

Yet as a culture, we also fear giving machines – and their promise of revealing the truth with absolute certainty – too much power over our lives. As Jennifer Mnookin states in explaining courts’ initial reluctance to admit photographs in the 1800s, “[e]vidence that offered an exceptionally high degree of certainty was at one and the same time the ideal toward which the system strove and the El Dorado that might threaten the system altogether.”<sup>87</sup> Such reluctance “was part of a much broader judicial ambivalence toward technologically-produced ways of knowing that both promised and threatened to provide authoritative knowledge – and thus both promised and threatened to eliminate human judgment from the process of legal fact-finding.”<sup>88</sup> Similarly, shortly after the polygraph first came on the scene, the resistance to its admission was linked by scholars to a fear of being tried by machines rather than humans:

The fear or distrust of lie detectors is in part due to the conception that the machine itself will become a “witness” . . . . Perhaps the most deep-rooted prejudice . . . [is] the belief that the lie detector may replace the fact finding function of the jury. . . . Judicial thought is not yet oriented to have an inanimate machine attack the credibility of a witness.<sup>89</sup>

Courts seem to have reconciled this mistrust of trial by machine with an ostensible commitment to technology’s promise of greater accuracy in adjudication by attacking the *reliability* of any machine results that might threaten the jury’s factfinding role in cases involving testimonial evidence, either by creating a better lie detector or by offering factual proof so definitive as to trump the jury’s weighing of testimonial evidence.<sup>90</sup> With respect to the

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<sup>86</sup> See generally MICHAEL LYNCH ET AL., TRUTH MACHINE: THE CONTENTIOUS HISTORY OF DNA FINGERPRINTING (2008).

<sup>87</sup> Jennifer L. Mnookin, *The Image of Truth: Photographic Evidence and the Power of Analogy*, 10 YALE J.L. & HUMAN. 1, 57 (1998).

<sup>88</sup> Mnookin & West, *supra* note 84, at 368-69.

<sup>89</sup> James R. Richardson, *Scientific Evidence in the Law*, 44 KY. L.J. 277, 285-86 (1955); see also Mnookin & West, *supra* note 84, at 369 (explaining that resistance to polygraph admission reflected judicial ambivalence toward its epistemic authority). Numerous courts thereafter invoked the specter of “trial by machine” to exclude polygraph evidence. See, e.g., *United States v. Bursten*, 560 F.2d 779, 785 (7th Cir. 1977) (“[J]udges loathe the specter of trial by machine, wherein each man’s sworn testimony may be put to the electronic test.”); *People v. Barbara*, 255 N.W.2d 171, 194 (Mich. 1977) (“Further concern is based on a fear that by use of the polygraph, we run dangerously close to substituting a trial by machine for a trial by jury.”).

<sup>90</sup> Unlike a lie detector, a photograph – or blood test or DNA-typing results – purports merely to establish a fact, such as whether the defendant is the source of certain trace evidence that at most affects credibility of witnesses by inference. See *United States v. Scheffer*, 523 U.S. 303, 313 (1998) (“Unlike other expert witnesses who testify about factual matters outside the jurors’ knowledge, such as the analysis of fingerprints, ballistics,



photograph, courts highlighted that photographs could be easily manipulated;<sup>91</sup> “[p]hotographs could lie, making any presumption of accuracy unwarranted.”<sup>92</sup> Courts also succeeded in “demot[ing] the photograph from the nearly irrefutable to the merely illustrative” by labeling it “demonstrative evidence” rather than substantive evidence.<sup>93</sup> That is, the photograph was not independent of a witness’s testimony; rather, it merely aided the witness in explaining what he or she had perceived.

Analogously, in upholding a per se ban on polygraph evidence in military courts, the Supreme Court in *United States v. Scheffer* relied on the lack of scientific consensus on the polygraph’s reliability. The Court noted field studies finding that “control question”<sup>94</sup> polygraph tests had an accuracy rate “‘little better than could be obtained by the toss of a coin,’ that is, 50 percent.”<sup>95</sup> The Court reasoned that the jury was perfectly good at lie detecting and that the polygraph, with its “aura of infallibility,” might be given “excessive weight” by jurors, who might “abandon their duty to assess credibility” as a result.<sup>96</sup> By casting its concerns with the polygraph as reliability based rather than simply fear based, the Court simultaneously lionized the jury and portrayed itself as open to the theoretical possibility of a more reliable lie detector.

Of course, the more reliable such machinery becomes, the more courts will either have to capitulate and admit the evidence (as in the case of DNA), or abandon reliability-based concerns and revert simply to invoking the “jury as lie detector” principle. Verdicts defying DNA, like *Rivera*, are now appearing and forcing courts to choose between upholding a seemingly irrational verdict and abandoning the blind deference rule. But other technologies, such as more advanced lie-detecting machines, could force the same issue in the future. As

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or DNA found at a crime scene, a polygraph expert can supply the jury only with another opinion, in addition to its own, about whether the witness was telling the truth.”).

<sup>91</sup> Mnookin, *supra* note 87, at 58-59.

<sup>92</sup> *Id.* at 58.

<sup>93</sup> *Id.*

<sup>94</sup> A “control question” test is one that asks the questioned party a series of “control questions” intended to set a baseline response that then determines, based on indicia such as systolic blood pressure, whether the party is being truthful when asked incriminating questions of real interest. Mnookin & West, *supra* note 84, at 313 n.9.

<sup>95</sup> *Id.* at 310 (quoting W.G. Iacono & D.T. Lykken, *The Scientific Status of Research on Polygraph Techniques: The Case Against Polygraph Tests*, in 1 MODERN SCIENTIFIC EVIDENCE § 14-5.3, at 629 (1997)); see also Meixner, *supra* note 73, at 1455.

<sup>96</sup> *United States v. Scheffer*, 523 U.S. 303, 313-14 (1998). This theme runs through culture as well: in describing the depiction of a lie detector in the film *Call Northside 777*, Jennifer Mnookin and Nancy West observe that, while the film depicts the polygraph as reliable, its focus on the graphs the machine produces and the “jargon-filled” explanation of the process by the machine’s creator “effectively distances viewers from the very machine they are apparently being encouraged to admire, instilling in them a mistrust of its scientific complexity.” Mnookin & West, *supra* note 84, at 357-58.

one commentator predicted in 1955, “[s]hould the time come when a lie detector is regarded as infallible in its findings, then to the extent used it will replace the jury.”<sup>97</sup> Even now, neuroimaging-based lie detectors such as “no lie MRI” are commercially available<sup>98</sup> and have been proffered, though not admitted, as evidence of witness credibility in American criminal cases.<sup>99</sup> Yet in the United States, admission of brain scans for lie-detecting purposes is not close to being a reality,<sup>100</sup> at the very least because there is no scientific consensus on the reliability of such evidence.<sup>101</sup>

Of course, the choice to admit results from a machine-like lie detector or “truth machine” evidence would not signal the complete obsolescence of the jury at the hands of science. For example, a lie detector only speaks to whether a witness is purposely lying; the jury would still have a role in determining whether the test was conducted properly, whether the witness was honest but mistaken, the importance of the witness’s account to the defendant’s guilt or innocence, and – even if such a lie detector somehow definitively proved the defendant’s factual guilt – whether to acquit through its general verdict, that is nullify, notwithstanding such proof.<sup>102</sup> The jury will play a similar role in a case involving DNA testing results indicating guilt, or a DNA exclusion for which there are bona fide reliability concerns or that is wholly consistent with compelling evidence of guilt.<sup>103</sup>

The more difficult dilemma for those who would perpetuate the blind deference rule would be if an apparently reliable lie detector were somehow dispositive and indicated that the defendant was innocent, and the jury

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<sup>97</sup> Richardson, *supra* note 89, at 285-86.

<sup>98</sup> See Henry T. Greely, *Law and the Revolution in Neuroscience: An Early Look at the Field*, 42 AKRON L. REV. 687, 698 (2009) (“[A]t least two companies are already selling fMRI-based lie detection in the United States.”).

<sup>99</sup> See, e.g., *United States v. Semrau*, No. 08-10074 MI/P, 2010 WL 6845092, at \*14 (W.D. Tenn. June 1, 2010) (excluding defense-proffered fMRI results under *Daubert*).

<sup>100</sup> See, e.g., Greely, *supra* note 98, at 688; Julie Seaman, *Black Boxes: fMRI Lie Detection and the Role of the Jury*, 42 AKRON L. REV. 931, 932, 938 (2009) (describing a case where defendant offered a brain scan supporting her insistence that she did not intentionally poison a child in her care and later explaining that a “very reliable lie detector today is still science fiction” (citing Sean A. Spence et al., ‘Munchausen’s Syndrome by Proxy’ or a ‘Miscarriage of Justice’?: An Initial Application of Functional Neuroimaging to the Question of Guilt Versus Innocence, 23 EUR. PSYCHIATRY 309, 309-10 (2007))). Such evidence has been admitted in England. See Seaman, *supra*, at 932.

<sup>101</sup> See generally Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant’s Past Mental States*, 62 STAN. L. REV. 1119 (2010) (describing issues surrounding the use of fMRI brain imaging as evidence).

<sup>102</sup> See, e.g., Meixner, *supra* note 73, at 1473 (explaining that a lie detector “makes no direct claims as to whether the witness is lying or telling the truth,” so it “provides substantive evidence and leaves the credibility assessment itself to the jury”).

<sup>103</sup> See discussion *infra* Part III.

nonetheless convicted based on, say, a confession or eyewitness.<sup>104</sup> In that case, the system would be forced either to explicitly choose the machine's results over the jury's crediting of the confession or eyewitness and overturn the verdict, or explicitly choose the jury's results over the machine's results, thus acquiescing in a verdict that is objectively likely to be, and likely to be viewed by the public as,<sup>105</sup> demonstrably inaccurate.

Accordingly, while the photograph and film have since been admitted as substantive evidence,<sup>106</sup> such evidence has presented little threat to the blind deference rule. The public still understands that photographs can easily be manipulated, thus making the apparently definitive photograph a rare bird.<sup>107</sup> And photographs, while often probative of a material trial issue, are not often dispositive of the ultimate issue of guilt or innocence. To be sure, a jury has acquitted a defendant in spite of filmic evidence that many citizens believed definitively proved guilt, for example, the Rodney King case.<sup>108</sup> But in the King case, critics did not view the jury as incompetent at credibility determinations, but as racists.<sup>109</sup> When the jury acquits in the face of arguably transparent evidence of guilt, the public has no way of knowing the motivation underlying the acquittal. While the legitimacy of the jury as an institution might suffer from apparent nullifications,<sup>110</sup> the value vindicated through the de facto nullification power is not the jury's role as lie detector, but the jury's

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<sup>104</sup> Imagine, for example, the English poisoning case mentioned *supra* note 100, but with a lie detector deemed sufficiently reliable.

<sup>105</sup> I do not purport to resolve the long-standing debate about which systemic goal – accuracy or acceptability of verdicts – should be paramount. I do claim that, to the extent courts have invoked acceptability concerns to perpetuate the blind deference rule, such concerns are unfounded in an era of cases like *Chaplin* and *Rivera*.

<sup>106</sup> See Mnookin & West, *supra* note 84, at 376 (“Judges generally allowed defendants to present motion picture evidence that revealed that a plaintiff’s injuries were less severe than the plaintiff claimed.”).

<sup>107</sup> But see, e.g., *Scott v. Harris*, 550 U.S. 372, 378 (2007) (relying on a videotape when there was no evidence in the case that the videotape had been doctored).

<sup>108</sup> See, e.g., Jennifer Medina, *Police Beating Victim Who Asked ‘Can We All Get Along?’*, N.Y. TIMES, June 18, 2012, at A1, available at <http://www.nytimes.com/2012/06/18/us/rodney-king-whose-beating-led-to-la-riots-dead-at-47.html> (“Many people thought the video alone would lead to the conviction of the officers.”); *Bush on Los Angeles Riots*, HISTORY (Apr. 29, 1992), <http://www.history.com/speeches/bush-on-los-angeles-riots#bush-on-los-angeles-riots> (reporting then-President George H.W. Bush’s statement that “what you saw and what I saw . . . was revolting” with respect to the videotape after the acquittal).

<sup>109</sup> See, e.g., Dustin F. Robinson, Note, *Bad Footage: Surveillance Laws, Police Misconduct, and the Internet*, 100 GEO. L.J. 1399, 1400 (2012) (discussing the national dialogue on racism following the King verdict).

<sup>110</sup> The O.J. Simpson case is another example of an acquittal that many citizens viewed as contrary to overwhelming evidence of guilt, including DNA. But that case, for many reasons, is a difficult one from which to draw generalizations. Many viewed the acquittal as an act of nullification rather than a failure to credit the State’s witnesses. And a decent portion of the public felt that the DNA evidence had been effectively rebutted as unreliable.

role as a check on state power.<sup>111</sup> Thus, cases like Mr. King's may tarnish the jury's reputation, but not its reputation as lie detector. Nor do they require the system to publicly choose sides in a conflict between man and machine.

There is perhaps an irony in using reliability-based rationales to keep out scientific evidence that, if allowed, would risk the tyranny of too much accuracy. Courts have, with similar irony, deployed the trope of "hard science versus soft science" to promote, rather than to denigrate, the jury's credibility-determining prowess. Thus, for example, courts have been resistant to allowing expert witnesses to testify on subjects such as false confessions and the unreliability of cross-racial eyewitness identification. The justifications for excluding such experts have typically been that the social science underlying such subjects is not sufficiently rigorous to support the expert's conclusions;<sup>112</sup> that such experts encroach on the jury's credibility-determining role;<sup>113</sup> and that the subject is not a proper one for expert testimony because the conclusions are not beyond the jury's understanding.<sup>114</sup> On this last point, courts tout not only jurors' common sense ability to understand the potential flaws of eyewitness identifications and heavy-handed interrogation techniques, but also their unique opportunity to hear counsel expose such flaws through cross examination and closing arguments.<sup>115</sup> Thus, not only does the "jury as lie detector" doctrine allow courts to maintain their ambivalence toward science, but courts' ambivalence toward science – including their ostensible

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<sup>111</sup> *E.g.*, *United States v. Dougherty*, 473 F.2d 1113, 1132-34 (D.C. Cir. 1972) ("This so-called right of jury nullification is put forward in the name of liberty and democracy . . .").

<sup>112</sup> *See, e.g.*, Matthew J. Reedy, Note, *Witnessing the Witness: The Case for Exclusion of Eyewitness Expert Testimony*, 86 NOTRE DAME L. REV. 905, 917 (2011) (discussing studies showing lack of scientific consensus on theories underlying eyewitness expert testimony on various factors such as weapons focus, effect of stress, and cross-racial identification).

<sup>113</sup> *See, e.g.*, *State v. Goldsby*, 650 P.2d 952, 954 (Or. Ct. App. 1982) (justifying the per se rule of exclusion for eyewitness-identification experts because such experts invade the "province of the jury").

<sup>114</sup> *See, e.g.*, *Johnson v. State*, 438 So. 2d 774, 777 (Fla. 1983) ("[A] jury is fully capable of assessing a witness' ability to perceive and remember, given the assistance of cross-examination and cautionary instructions, without the aid of expert testimony."); Deborah Davis & Elizabeth F. Loftus, *The Dangers of Eyewitnesses for the Innocent: Learning from the Past and Projecting into the Age of Social Media*, 46 NEW ENG. L. REV. 769, 782 (2012) (observing that during oral arguments in *Perry v. New Hampshire*, 132 S. Ct. 716 (2012), "[t]he [Supreme Court] justices' comments . . . seem[ed] to express confidence in jurors' ability to recognize and discount unreliable identifications – despite the wealth of scientific research contradicting such an assumption – and to view Perry's argument [that the Court should recognize a due process right to reliable identifications] as invading the province of the jury").

<sup>115</sup> *See, e.g.*, *Commonwealth v. Simmons*, 662 A.2d 621, 631 (Pa. 1995) (excluding eyewitness identification expert in part because jury was able to see defendant "attack the witnesses' credibility and point out inconsistencies of all the eyewitnesses at trial through cross-examination and in his closing argument").

commitment to the objectivity and rigor of “hard science” – helps to maintain the jury’s hegemony over assessing and weighing testimonial evidence.

Another dynamic affecting courts’ hesitance to treat exculpatory scientific evidence as dispositive might simply be their particular hesitance to trust evidence when it is wielded as a sword by criminal defendants. In a recent opinion declining to recognize a constitutional right to postconviction DNA testing, for example, the Supreme Court expressed concern over the “dilemma” of “how to harness DNA’s power to prove innocence without unnecessarily overthrowing the established system of criminal justice.”<sup>116</sup> In his concurrence, Justice Alito emphasized that forensic DNA typing is fallible, and went to great lengths to detail the possible ways in which errors could occur.<sup>117</sup> Similarly, the Court’s harsh treatment of the polygraph was in a case where the evidence was proffered by the defense.<sup>118</sup> More generally, scholars have noted courts’ tendency to be harsher on defendant-proffered scientific evidence under the *Daubert* standard.<sup>119</sup>

One question not explicitly addressed in this exploration of courts’ treatment of scientific evidence is why there were no examples before the age of scientific evidence of juries rendering guilty verdicts contrary to apparently definitive proof of innocence. Such a case would not have forced our hand with respect to choosing science over the jury, but it would have exposed the jury as being less than competent at determining credibility. Part of the answer is that the public did not view the evidence of innocence typically offered 150 years ago – alibi witnesses, third-party confessions, recanting by state witnesses – as definitive. Instead, its probative value was a direct function of the truthfulness and perceptive abilities of the testifying witness, subject to human follies. The few compilations of wrongful convictions of the factually innocent before the 1990s<sup>120</sup> have typically involved convicted felons whose claims of factual innocence are compelling but inherently “vulnerable to skepticism.”<sup>121</sup>

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<sup>116</sup> See *Dist. Attorney’s Office v. Osborne*, 557 U.S. 52, 62 (2009).

<sup>117</sup> *Id.* at 80-84 (Alito, J., concurring).

<sup>118</sup> See *United States v. Scheffer*, 523 U.S. 303, 313-14 (1998).

<sup>119</sup> See, e.g., David L. Faigman, *The Daubert Revolution and the Birth of Modernity: Managing Scientific Evidence in the Age of Science*, 46 U.C. DAVIS L. REV. 893, 927 (2013) (“Social scientists have increasingly raised the issue whether courts, in fact, employ *Daubert* more lackadaisically in criminal trials – especially in regard to prosecution evidence . . .”).

<sup>120</sup> See, e.g., EDWIN BORCHARD, *CONVICTING THE INNOCENT* (1932). I use the term “factually innocent” as compared to “wrongfully convicted,” a broader term that would include those whose factual innocence is contestable but whose conviction was deemed unfair based on prosecutorial misconduct, erroneously admitted evidence, and the like.

<sup>121</sup> See Jay D. Aronson & Simon A. Cole, *Science and the Death Penalty: DNA, Innocence, and the Debate over Capital Punishment in the United States*, 34 L. & SOC. INQUIRY 603, 609-10 (2009) (describing disagreement in the legal profession about the factual innocence of those included in such compilations, and arguing that “with a few exceptions, cases of innocence have always been contestable” before DNA (citation

Tellingly, the most glaring type of evidence that exposed the jury after the fact as having been mistaken in its credibility findings led to a change in doctrine. In a few celebrated cases, a defendant confessed to a murder, only to have the alleged murder victim show up alive years later.<sup>122</sup> To avoid such an embarrassing failure of criminal justice in the future, most jurisdictions have adopted a *corpus delicti* rule requiring that the state offer some evidence beyond a mere confession that a crime has occurred (that is, a dead body with stab wounds).<sup>123</sup>

## II. MODERN TIMES: CHARLIE CHAPLIN AND THE JURY'S DEFIANCE OF BLOOD TESTING IN PATERNITY CASES

In this Part, I describe the first historical episode in which juries appeared to render guilty verdicts contrary to apparently definitive scientific proof of innocence. These cases for the first time presented a "perfect storm" of prosecutors who pursued cases, and juries who convicted, notwithstanding evidence of innocence that the public deemed absolutely definitive and dispositive of the case. In doing so, such cases questioned the system's sanguinity about the accuracy and acceptability of verdicts under the "jury as lie detector" regime, and potentially threatened the blind deference rule. While the rule survived the *Chaplin* era, these paternity-blood-test cases are instructive for envisioning the public's response to a sufficiency doctrine that allows "acquittal by machine," and the willingness of a desperate legal system, if pushed, to treat scientific evidence as conclusive.

ABO blood typing was introduced for the first time by a defendant in a criminal case in 1931.<sup>124</sup> The defendant was accused of the crime of "bastardy,"<sup>125</sup> the then-prevailing term for begetting a child out of wedlock, and introduced a blood test purporting to show with certainty that he could not have fathered the child in question.<sup>126</sup> The jury convicted him anyway.<sup>127</sup> But

omitted)).

<sup>122</sup> See, e.g., BORCHARD, *supra* note 120, at xv ("[T]here are four [cases] for murder in which the alleged 'murdered' person later turned up alive and well."); David A. Moran, *In Defense of the Corpus Delicti Rule*, 64 OHIO ST. L.J. 817, 817 (2003).

<sup>123</sup> See Moran, *supra* note 122, at 817-18 ("By the end of the nineteenth century, the corpus delicti rule had been adopted in some form by almost all American jurisdictions.").

<sup>124</sup> *Commonwealth v. Zammarelli*, 17 Pa. D. & C. 229, 229 (Ct. Quarter Sessions of Pa., Fayette Cnty. 1931) (bastardy proceeding in which defendant was found guilty notwithstanding undisputed blood test showing nonpaternity, but the court granted a new trial).

<sup>125</sup> Other crimes of that era that also rose or fell on a showing of paternity included "begetting a child" and seduction. See Greene, *supra* note 5, at 273 (describing blood typing's potential exculpatory use in criminal rape, fornication, bastardy, or seduction trials); Gerald Robin Griffin, Note, *Blood Grouping Tests in Bastardy Proceedings*, 40 KY. L.J. 200, 200 (1952) (describing criminal bastardy cases involving blood-typing evidence offered by the defense to prove nonpaternity).

<sup>126</sup> *Zammarelli*, 17 Pa. D. & C. at 229-31 (discussing how ABO blood typing works and

the trial court granted a new trial in the interests of justice.<sup>128</sup> In contrast, four years later, the California Supreme Court in *Arais v. Kalensnikoff* upheld a trial court's refusal to grant a new trial in a civil case under similar circumstances.<sup>129</sup>

The most famous of these blood-typing cases was a 1943 paternity suit against Charlie Chaplin, brought by his former lover Joan Berry.<sup>130</sup> The core of Chaplin's defense consisted of unchallenged blood tests excluding him as the father, but the jury found for Berry based on her testimony that she slept with no other man during the relevant period.<sup>131</sup> A California appellate court upheld the verdict, declaring that "[t]he credibility of Miss Berry, like that of all other witnesses, was a matter for the jury to decide. Having heard all of the testimony, including extensive cross-examination of each witness by opposing counsel, the jury made its determination and the verdict will not be disturbed."<sup>132</sup>

By the time of its decision, the *Chaplin* court represented the "orthodox view" on the matter in both civil and criminal cases.<sup>133</sup> To be sure, a sizeable minority of courts did not uphold such verdicts.<sup>134</sup> Those courts tended to emphasize what they viewed as the unassailable objectivity of the blood tests and the "disinterested witnesses" who conducted them,<sup>135</sup> as compared to the plaintiff's biased testimony. Even so, none of these courts removed the case from the jury before verdict or granted a motion for judgment notwithstanding the verdict (JNOV) on grounds that the plaintiff's or prosecution's evidence

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how it can demonstrate definitive nonpaternity).

<sup>127</sup> *Id.* at 229.

<sup>128</sup> See Frederick R. Dixon, Recent Decisions, *Bastardy Proceedings – Blood Grouping Tests*, 2 W. RES. L. REV. 83, 86 & n.26 (1950) (citing *Zammarrelli*, 17 Pa. D. & C. at 229).

<sup>129</sup> 74 P.2d 1043, 1047 (Cal. 1937). *Arais* was a civil bastardy proceeding, not criminal. *Id.* at 1045.

<sup>130</sup> See *Berry v. Chaplin*, 169 P.2d 442, 444 (Cal. Dist. Ct. App. 1946).

<sup>131</sup> *Id.* at 450.

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

<sup>133</sup> Malcolm McDermott, *The Proof of Paternity and the Progress of Science*, 1 How. L.J. 40, 50 (1955).

<sup>134</sup> See, e.g., *Jordan v. Mace*, 69 A.2d 670 (Me. 1949) (granting a new trial in a paternity suit based on blood test results); *Comm'r of Welfare ex rel. Tyler v. Costonie*, 97 N.Y.S.2d 804 (N.Y. App. Div. 1950) (granting a new trial in a paternity suit based on blood testing); *State v. Wright*, 17 N.E.2d 428, 431 (Ohio Ct. App. 1938) ("[I]f, as testified by the expert, this science of blood grouping has been so developed and has proved so accurate that it is not only admissible, but of very high value, the woman who has been promiscuous in her relations can no longer make her selection of the male to be charged and secure a verdict against him through the natural sympathy aroused in a jury."). It appears that the "European view" was also "to treat the results of such tests as conclusive where they exclude parentage, provided no valid question is raised as to their accuracy." McDermott, *supra* note 133, at 50.

<sup>135</sup> *Jordan*, 69 A.2d at 672.

was legally insufficient.<sup>136</sup> Rather, they at most granted the defendant a new trial in the interests of justice, a not meaningless remedy but one that is highly discretionary, appealable even in criminal cases, and could end in conviction or adverse judgment on retrial by a second jury.<sup>137</sup> At least one commentator noted the dilemma this practice created: "Conceivably, of course, on retrial, the jury could once again return a verdict of guilty in the teeth of the same medical testimony, which would require another trial at which they could again return a verdict of guilty, necessitating yet another trial *ad infinitum*."<sup>138</sup> Thus, even those courts that overturned verdicts avoided having to reject as a matter of law a jury's credibility finding based on contrary scientific data.

Courts adopting the majority view pursued two lines of reasoning in upholding the jury verdict in the face of contrary blood tests. First, that it was the prerogative of the jury to disregard evidence it did not credit, whether scientific or otherwise. As a Maine court put it, "[t]he determination of such an issue . . . is not transferred from the courtroom to the laboratory . . ."<sup>139</sup> Second, that the blood tests were not reliable enough to trump the jury. For example, one Ohio court, in upholding a refusal to grant a JNOV in a criminal bastardy case, questioned whether such tests would produce different results in the presence of genetic mutations, in "bleeders" (those whose blood fails to coagulate), or in "hybrids" (those whose blood contains more than one type).<sup>140</sup> Similarly, the *Chaplin* court warned that the reliability of such tests might be compromised by an untrained serologist, commercial serum, or failure to repeat the test.<sup>141</sup> Some commentators blamed a "cultural lag" and a "refusal to recognize scientific advances" for the fact that "the value of blood tests is lost

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<sup>136</sup> *Id.* at 670 (granting a new trial); *Tyler*, 97 N.Y.S.2d at 804 (also granting a new trial); *Wright*, 17 N.E.2d at 429 (sustaining the lower court's grant of a new trial and mentioning the dismissal of the motion for a JNOV).

<sup>137</sup> *See, e.g.*, Herbert R. Baer, *Radar Goes to Court*, 33 N.C. L. REV. 355, 369 (1955) (cataloging cases in which courts set aside verdicts of guilty and ordered new trials based on exculpatory blood test paternity results); Leo Kearney O'Drudy Jr., Comment, *Blood Grouping Test Results*, 3 VILL. L. REV. 180, 180 (1958) (pointing out the curious result that in Pennsylvania exculpatory blood testing is grounds for a new trial but not a directed verdict).

<sup>138</sup> O'Drudy Jr., *supra* note 137, at 180 (discussing the result in *Commonwealth v. Zammarelli*, 17 Pa. D. & C. 229 (Ct. Quarter Sessions of Pa., Fayette Cnty. 1931)).

<sup>139</sup> *Jordan v. Davis*, 57 A.2d 209, 210 (Me. 1948); *see also* *Berry v. Chaplin*, 169 P.2d 442, 451 (Cal. Dist. Ct. App. 1946) ("When scientific testimony and evidence as to facts conflict, the jury or the trial court must determine the relative weight of the evidence.").

<sup>140</sup> *State ex rel. Slovak v. Holod*, 24 N.E.2d 962, 963 (Ohio Ct. App. 1939).

<sup>141</sup> *Berry*, 169 P.2d at 451 ("[T]he infallibility of the results of blood tests depends upon the skill employed in making them. Errors are reported due to (1) the lack of training of the serologist; (2) the use of commercial sera; (3) the failure to make a counter-test." (citing Madeline Schoch, *Determination of Paternity by Blood-Grouping Tests: The European Experience*, 16 S. CAL. L. REV. 177, 190 (1943))).



to [] courts in some jurisdictions.”<sup>142</sup> As with the polygraph, however, courts’ deployment of such reliability-based arguments against blood tests might have been a means of professing a concern for accuracy while seeking to avoid having to privilege a fact proven by a machine over a jury’s credibility finding.

The problem for courts this time around was that the blood results in *Chaplin* appeared unassailable. The *Boston Herald* declared shortly after the *Chaplin* decision that “California has in effect decided that black is white, two and two are five and up is down.”<sup>143</sup> Legal commentators were also highly critical of the verdict.<sup>144</sup> Scholars used the rhetoric of absolute certainty to describe the blood-typing results,<sup>145</sup> and chastised courts for “allow[ing] juries to follow their natural inclination to protect the infant to overcome scientific fact.”<sup>146</sup> They argued that the historic “accomplishment” of being able to prove facts with scientific certainty was one that “testimonial evidence – confusing, vindictive and recriminating – cannot effect [sic].”<sup>147</sup>

Some commentators predicted a potential crisis in systemic legitimacy stemming from such verdicts, with one declaring that “[c]onfidence in the courts has been somewhat shaken by the decisions directly against scientific fact,”<sup>148</sup> and another that “a conviction based on a finding of paternity by a jury

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<sup>142</sup> Note, *The Rules of the Road and Radar*, 33 VA. L. REV. 71, 72 (1947).

<sup>143</sup> *Jury vs. Science*, *supra* note 5, at 20, *quoted in* Greene, *supra* note 5, at 274.

<sup>144</sup> See, e.g., Baer, *supra* note 137, at 369 (“If the blood grouping tests establish that the accused could not have fathered the child in question, shall we permit a jury verdict to the contrary to stand and convict the defendant when the incontrovertible scientific data shows he could not have been guilty?”); Keeffe et al., *supra* note 1, at 670-71 (stating the verdict makes a “mockery” of the court system).

<sup>145</sup> See, e.g., *Commonwealth v. D’Avella*, 162 N.E.2d 19, 21 (Mass. 1959) (“The reliability of such tests to prove nonpaternity is well established as a scientific fact.”); Greene, *supra* note 5, at 267 (stating that blood tests allow paternity to “be solved with absolute certainty”); Note, *supra* note 142, at 72 (“[W]hen they result in exclusion, they provide us with incontrovertible and inexorable proof of the defendant’s non-paternity.” (quoting Sidney B. Schatkin, *Law and Science in Collision: Use of Blood Tests in Paternity Suits*, 32 VA. L. REV. 886, 890 (1946)) (internal quotation marks omitted)).

<sup>146</sup> Griffin, *supra* note 125, at 203; see also CHARLES T. MCCORMICK, *HANDBOOK OF THE LAW OF EVIDENCE* 381-82 (1954) (suggesting that the *Chaplin* court should not have “sustained” the verdict because it was contrary to “incontrovertible physical facts”); Greene, *supra* note 5, at 274 (“The *Chaplin* case is obviously wrong.”); Richardson, *supra* note 89, at 289 (describing the *Chaplin* jury as having “capriciously disregarded conclusive scientific evidence in finding the defendant the legal father” and asking, “Is the jury’s fact-finding function so sacred that it should be guaranteed to the extent of overriding scientifically established facts?”); Felver A. Rowell Jr., Comment, *Admissibility of Evidence Obtained by Scientific Devices and Analysis*, 6 ARK. L. REV. 181, 193 (1952) (“[I]f the serological tests show a mistake or attempted imposition [of liability against the wrong man] the jury should not be allowed to ratify the error.”).

<sup>147</sup> Greene, *supra* note 5, at 267.

<sup>148</sup> Comment, *Blood-Test Results as Conclusive Proof of Non-Paternity*, 44 J. CRIM. L. CRIMINOLOGY & POLICE SCI. 472, 477 (1953).

in the teeth of evidence of negative blood grouping results whose accuracy of administration has gone unchallenged directly, would engender in most a strong feeling that justice had not been done . . . ."<sup>149</sup>

Even those who were not wholly critical of *Chaplin* typically argued not that the jury was as reliable as science, but that such courts were simply faithfully following current doctrine, which expressed a preference for the jury and its ability to decide cases on extralegal grounds. One scholar admonished that "[i]f the objection is that such an objective [allowing the trial jury to be an 'escape valve' from strictly applied law] is invalid when it ignores scientific proof, then it must be remembered that science seeks to establish certain discovered truths while the law seeks to control human behavior."<sup>150</sup> Yet the same scholar questioned whether the "safety valve" rationale could survive, given this new and exciting means of proof: "Having progressed from 'magic' to 'science' in manifestations of proof, to what extent is the fact-finding prerogative of juries to be legitimately exercised through disregarding scientific proof in maintaining 'elasticity'?"<sup>151</sup> Another scholar cited *Chaplin* in declaring that "modern methods of proof of scientific facts have rendered many aspects of the jury system not only obsolete, but an actual impediment to fact finding."<sup>152</sup>

Some called for dramatic reforms that would foreclose verdicts like *Chaplin*. The National Conference of Commissioners on Uniform State Laws argued, in support of a uniform law on paternity that would treat a blood test exclusion as conclusive of nonpaternity, "[f]or a court to permit the establishment of paternity in cases where it is scientifically impossible to arrive at that result would seem to be a great travesty on justice."<sup>153</sup> And an article in the *Yale Law Journal* in 1943 went so far as to suggest a constitutional amendment to allow judges to direct verdicts of *guilt* in cases "where a scientific finding should control the outcome of the case, and the undisputed scientific evidence points one way."<sup>154</sup>

Certain of these reforms were, in fact, adopted, and courts began to grant discretionary relief more often. States like California passed statutes modeled after the Uniform Act on Blood Tests to Determine Paternity, statutes that declared blood test results conclusive with respect to the issue of paternity, at least where the results established that the defendant was not the father and all

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<sup>149</sup> O'Drudy Jr., *supra* note 137, at 189.

<sup>150</sup> Richardson, *supra* note 89, at 303.

<sup>151</sup> *Id.* at 301.

<sup>152</sup> Frederick K. Beutel, *An Outline of the Nature and Methods of Experimental Jurisprudence*, 51 COLUM. L. REV. 415, 428 (1951) (citing *Berry v. Chaplin*, 169 P.2d 442 (Cal. Dist. Ct. App. 1946)).

<sup>153</sup> NAT'L CONF. ON UNIF. STATE LAWS, HANDBOOK OF THE NATIONAL CONFERENCE ON UNIFORM STATE LAWS & PROCEEDINGS OF THE ANNUAL CONFERENCE MEETINGS IN ITS SIXTY-FIRST YEAR 434 (1952) [hereinafter *HANDBOOK*].

<sup>154</sup> Hubert W. Smith, *Scientific Proof*, 52 YALE L.J. 586, 605 n.53 (1943).

testifying experts agreed on the results.<sup>155</sup> Notably, the presumption held even if the parties introduced evidence questioning the reliability of the test, so long as the experts agreed. In this sense, the experts, rather than the jury, “[we]re made the triers of fact.”<sup>156</sup> In criminal actions, the Uniform Act provided that “the court may direct a verdict of acquittal upon the conclusions of all the experts, . . . otherwise the case shall be submitted for determination upon all the evidence.”<sup>157</sup> While courts still generally steered clear of directing acquittals pursuant to such laws, they began routinely to grant new trials on a discretionary basis in such cases. By 1958, the new “majority view” of courts was to treat unchallenged blood test results as “conclusive” when they showed nonpaternity.<sup>158</sup>

And yet, even after the *Chaplin* era, the blind deference rule survived. Why? Put differently, why did the public’s outrage over jury verdicts contrary to scientific proof of innocence in the blood context not leave some permanent and trans-substantive mark on the viability of the premises underlying courts’ deference to jurors on issues of credibility? One reason might be that courts and the public viewed jurors in such cases were engaging in proprosecution “nullification.” That is, they were rendering verdicts for the plaintiff or prosecutrix notwithstanding their belief that the defendant was not the father, out of sympathy for a poor woman seduced by a wealthier man, a sense that the wealthy man could handle the financial obligation, or fear that taxpayers would otherwise have to shoulder the financial burden of raising the child.<sup>159</sup> Courts may have been motivated (or not, if they agreed with these concerns) to grant new trials, but they were likely not motivated to rethink the jury’s role as lie detector by paving new ground in sufficiency doctrine.

Courts’ reluctance to overturn these verdicts based on the blood tests may well have been due to a fear of privileging science as a matter of law. And while legislatures and the drafters of the Uniform Act did not appear to share this concern, paternity is arguably *sui generis*. A paternity case is unlike a typical “whodunit” criminal case in which only a limited amount of trace

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<sup>155</sup> See, e.g., CAL. CIV. PROC. CODE § 1980.1-.7 (West 1953). Specifically, several states enacted wholesale the Uniform Act on Blood Tests to Determine Paternity, which stated that in civil actions “[i]f the court find that the conclusions of all the experts . . . are that the alleged father is not the father of the child, the question of paternity shall be resolved accordingly.” HANDBOOK, *supra* note 153, at 445.

<sup>156</sup> McDermott, *supra* note 133, at 60.

<sup>157</sup> HANDBOOK, *supra* note 153, at 435.

<sup>158</sup> O’Drudy Jr., *supra* note 137, at 181 & n.7.

<sup>159</sup> See, e.g., Steuart Henderson Britt, *Blood-Grouping Tests and the Law: The Problem of the ‘Cultural Lag,’* 21 MINN. L. REV. 671, 699 (1937) (“A decision can easily rest on sympathy for a particular woman or it can rest on addiction to the vague symbols of ‘Womanhood’ and ‘Mother.’ The judge and jury may hear how a poor, innocent girl was taken advantage of by a hard, cruel man. He is a rascal, they may say, even to be accused in this affair – make him pay!”); Comment, *supra* note 148, at 472 (describing the “inherent sympathy of jurors toward the unwed mother and her child”).

evidence is left by the perpetrator at the scene, and that small amount can only be tested a limited number of times. Rather, the father and child in a paternity case can be tested and retested, to ensure accuracy of results and rule out potential problems such as contamination or degradation of a sample. Presumably, the mere possibility of confirmatory retesting significantly reduces any incentive for serologists to exaggerate or be sloppy in their work. Moreover, even those courts taking the “conclusive” view allowed for an exception if the jury found that the tests were administered improperly,<sup>160</sup> and generally were able to grant the defendant discretionary relief without using sufficiency as a remedy. And in cases involving crimes like bastardy and begetting, paternity was by definition dispositive. Thus, a tidy legislative fix – allowing directed verdicts so long as the tests were undisputed by experts – was uniquely possible in criminal cases directly turning on paternity.

Decisions like *Chaplin* were also in line with the prevailing view at the time that “reasonable doubt” was simply a description of the subjective state of mind jurors needed to convict, not a rule of evidence to be enforced by courts. Because the paternity cases typically involved at least the testimony from a woman that the defendant had fathered her child, there was plenty of evidence upon which a juror could base a personal belief in guilt. Perhaps judges were happy to leave such verdicts as unreviewable; jurors could then act as “bagmen,” rendering an irrational guilty verdict that had the benefit of avoiding another ward of the state. Still, to quell outrage, the judge could always grant a new trial, delegating responsibility to yet another jury.

Finally, cultural trends intervened and simply decreased the number of cases in play. For example, the ubiquity of birth control reduced the number of contested paternity proceedings,<sup>161</sup> and many of the crimes in which proof of nonpaternity would be dispositive were taken off the books.<sup>162</sup>

In sum, the lessons from the *Chaplin* era were twofold. First, that the public, at least in some limited circumstances, will not abide a jury finding contrary to definitive evidence of innocence, even if the result is to place science on an epistemic pedestal, as the Uniform Act surely did. Second, that judges were hesitant at the time to revisit the premises underlying the sufficiency doctrine,

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<sup>160</sup> See, e.g., *Jordan v. Mace*, 69 A.2d 670, 672 (Me. 1949) (“The jury has the duty to determine if the conditions existed which made the biological law operative. That is to say, were the tests properly made?”). It is not clear from the sources how the judge knew that the jury had found this particular fact. *Id.* Today, special interrogatories asking such specific questions of the jury are highly disfavored because of the fear that they intrude upon the defendant’s right to a general verdict. See discussion *infra* Part IV.B.

<sup>161</sup> See, e.g., Linda Fitts Mischler, *Personal Morals Masquerading as Professional Ethics: Regulations Banning Sex Between Domestic Relations Attorneys and Their Clients*, 23 HARV. WOMEN’S L.J. 1, 35 (2000) (mentioning reduced number of illegitimacy claims as birth control became widely available).

<sup>162</sup> See, e.g., Heidi Meinzer, Essay, *Idaho’s Throwback to Elizabethan England: Criminalizing a Civil Proceeding*, 34 FAM. L.Q. 165, 167, 169-70 (2000) (observing that paternity proceedings have largely shifted from criminal to civil court).

even in the face of public outrage. Perhaps judges were hesitant because of a belief that juries are good at their job, a desire not to treat scientific evidence as exceptional, or a commitment to the view that “reasonable doubt” places no burden on them to independently enforce a factual proof requirement. Because courts were able to survive this legitimacy crisis through legislative fixes specific to blood typing and discretionary relief on a case-by-case basis, the system had no need to reconsider the premises underlying its sufficiency doctrine. That is, until the DNA revolution.

### III. DEFYING DNA: GUILTY VERDICTS NOTWITHSTANDING EXCULPATORY DNA RESULTS

With the advent of DNA typing, courts are being forced, for the first time since the *Chaplin* era, to choose between upholding guilty verdicts that defy apparently definitive proof of innocence, and abandoning the blind deference rule. In this Part, I explain why the age of DNA has uniquely allowed this conflict to surface; how reported DNA exclusions, while apparently definitive in cases like *Rivera*, can be erroneous or consistent with guilt; and how courts have handled sufficiency challenges in such cases thus far.

#### A. *DNA: The New Truth Machine*

Since 1989, over 300 convicted defendants in the United States have been exonerated through DNA testing.<sup>163</sup> In the vast majority of cases in which a defendant has sought DNA testing of biological material believed to belong to the perpetrator – such as semen from a rape kit – and the testing has shown a DNA “exclusion,” that is, that the defendant is excluded as a potential source of the material, the prosecution has dismissed the case (if pretrial) or sought to vacate the conviction and has agreed to a public exoneration.<sup>164</sup> While many prosecutors at first were resistant to the spate of DNA-based challenges to convictions,<sup>165</sup> most eventually have found it untenable to argue otherwise in the court of public opinion, in which DNA is widely viewed as a “truth

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<sup>163</sup> See Press Release, Innocence Project, Louisiana Man on Death Row for 15 Years Becomes 300th Person Exonerated by DNA Evidence (Sept. 28, 2012), available at [http://www.innocenceproject.org/Content/Louisiana\\_Man\\_on\\_Death\\_Row\\_for\\_15\\_Years\\_Becomes\\_300th\\_Person\\_Exonerated\\_by\\_DNA\\_Evidence.php](http://www.innocenceproject.org/Content/Louisiana_Man_on_Death_Row_for_15_Years_Becomes_300th_Person_Exonerated_by_DNA_Evidence.php). I use “exoneration” to mean public acknowledgment by state officials that a previously convicted defendant is factually innocent.

<sup>164</sup> See, e.g., BRANDON GARRETT, CONVICTING THE INNOCENT: WHERE CRIMINAL PROSECUTIONS GO WRONG 230 (2011).

<sup>165</sup> Simon A. Cole & Michael Lynch, *The Social and Legal Construction of Suspects*, 2 ANN. REV. L. & SOC. SCI. 39, 47 (2006) (“Such exonerations often were obtained only after strenuous efforts to reopen the cases in the face of formidable procedural hurdles. District attorneys sometimes resisted such efforts, while expressing strong confidence in the eyewitness testimony, confessions, and other forms of ordinary and forensic evidence that led to the original convictions.”).

machine” providing definitive proof of guilt or innocence.<sup>166</sup> Indeed, there is “broad public opinion accept[ing] DNA findings as definitive.”<sup>167</sup>

In other cases, however, prosecutors have steadfastly refused to acquiesce in a would-be exoneration and have instead insisted upon pursuing a prosecution even after a DNA exclusion comes to light.<sup>168</sup> Some of these cases have ended in acquittals, others in convictions.<sup>169</sup>

Why were there no infamous episodes of jury verdicts of guilt contrary to apparently definitive scientific proof of innocence between *Chaplin* and the advent of DNA testing? The answer is likely a combination of factors. For instance, many older forensic methods, such as ABO typing in cases not involving paternity, are much less discriminating than DNA and therefore more likely to show a coincidental match with an innocent defendant. Moreover, older methods are viewed as less reliable than DNA<sup>170</sup> and are less likely to be dispositive because the presence or absence of the evidence does not necessarily suggest the defendant’s innocence or another person’s guilt.<sup>171</sup>

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<sup>166</sup> See LYNCH ET AL., *supra* note 86; Aronson & Cole, *supra* note 121, at 617 (“But, in an environment of scarce epistemological resources, the costs of disbelieving DNA evidence are too high. As Zimring (2003) observes, ‘DNA exonerations [sic] end the debate about whether a reversal or nonprosecution is really an exoneration. A broad public opinion accepts DNA findings as definitive, so there is no tactical advantage to prosecutors denying definitive DNA results as establishing innocence.’” (quoting FRANKLIN E. ZIMRING, *THE CONTRADICTIONS OF AMERICAN CAPITAL PUNISHMENT* 159 (2003))); Radley Balko, *How Many More Are Innocent?*, REASON (May 2010), <http://reason.com/archives/2010/04/29/how-many-more-are-innocent> (“The certainty of DNA testing means we can be positive the 250 defendants listed in the Innocence Project report didn’t commit the crimes for which they were convicted.”).

<sup>167</sup> Aronson & Cole, *supra* note 121, at 617.

<sup>168</sup> The procedural posture of such cases is typically that the trial court has granted the defendant a new trial based on the new DNA evidence, and the government has insisted upon going forward with the trial rather than agreeing to vacate the conviction. In other cases, pretrial testing excludes the defendant but the state refuses to drop the case. In some cases, prosecutors have declined to further prosecute but have publicly stated their continued belief in the defendant’s guilt. See, e.g., Tom Kertscher, *Prosecutors Won’t Retry Innocence Project Case*, J. SENTINEL ONLINE (July 27, 2009), <http://www.jsonline.com/news/milwaukee/51793602.html> (stating that prosecutors in Robert Lee Stinson case claimed that staleness of case, and not belief in innocence based on DNA exclusion, animated their decision not to prosecute).

<sup>169</sup> See discussion *infra* Part III.C.

<sup>170</sup> See, e.g., Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 CALIF. L. REV. 721, 724 (2007) (referring to “new, more reliable methods” of forensic testing).

<sup>171</sup> For example, a burglar often leaves no fingerprints at the crime scene, and someone whose fingerprints are at the scene might well have been innocently present. While these possibilities are also true of some cases involving DNA, the inferences to be drawn from the lack of DNA at a crime scene or the presence of DNA in, say, an intimate sample or blood on the murder weapon are stronger than in the fingerprint example.

Finally, older methods, unlike DNA, are limited to certain types of materials (for example bodily fluids) or are less likely to be left behind or recoverable and testable in very small quantities.<sup>172</sup> In short, DNA is different in part because it is so often apparently reliable, it is often apparently dispositive of guilt or innocence, and it appears in many different types of cases.

Part of the story here might be that DNA testing – because of its complexity, laboratory backlogs, and ability to preserve the evidence for long periods of time – is often conducted long after other evidence of a suspect’s guilt, such as a confession, has been collected. Scholars have theorized that prosecutors have a difficult time abandoning coherent narratives of guilt once they have been constructed – an “anchoring effect.”<sup>173</sup> Under the “belief perseverance” theory, this remains the case even if compelling evidence surfaces to contradict the narrative.<sup>174</sup> Jurors might also feel particularly alienated by the complexity of DNA but feel empowered by the accessibility of contrary impressionistic evidence, like a confession or eyewitness.<sup>175</sup> Or, perhaps it could be that they simply do not understand the probative value of DNA as well as they understand more visual forms of forensic evidence such as fingerprints and handwriting. Perhaps confessions are uniquely likely to be shown false by DNA, in part because police are more likely to want to extract a confession in rape and homicide cases, the cases most likely to involve DNA evidence.

In turn, jurors are particularly likely to overvalue confession evidence.<sup>176</sup> Confessions are “widely perceived” by the public “to be trustworthy,” and prosecutors reinforce this view.<sup>177</sup> Confessions are persuasive in part because

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<sup>172</sup> States now proceed with prosecutions based on low copy number DNA testing, involving a very small amount of testable materials, as low as 100 picograms. *See, e.g.,* Bert-Jaap Koops & Maurice Schellekens, *Forensic DNA Phenotyping: Regulatory Issues*, 9 COLUM. SCI. & TECH. L. REV. 158, 161 (2008).

<sup>173</sup> *See, e.g.,* Orenstein, *supra* note 12, at 42 (explaining various psychological theories to explain prosecutors’ insistence on going forward in spite of exculpatory DNA).

<sup>174</sup> *See, e.g.,* Lisa Kern Griffin, *Narrative, Truth, and Trial*, 101 GEO. L.J. 281, 313 (2013).

<sup>175</sup> *See, e.g.,* Findley, *supra* note 51, at 630 (“But scientific evidence can be extremely complex, and therefore beyond the grasp of lay jurors. With little ability to critically evaluate the soundness of the scientific evidence presented to them, jurors are often left with little to fall back on except impressionistic credibility determinations.”).

<sup>176</sup> As interrogators have relied more and more on purely psychological means of coercion, eliminating any evidence of physical torture, the intuitive force of confession evidence has only grown stronger. *See, e.g.,* Saul M. Kassin & Katherine Neumann, *On the Power of Confession Evidence: An Experimental Test of the Fundamental Difference Hypothesis*, 21 L. & HUM. BEHAV. 469, 472 (1997) (empirical study showing that confession evidence is “more potent” compared to eyewitness identification testimony and bad character evidence); Saul M. Kassin et al., *Police-Induced Confessions: Risk Factors and Recommendations*, 34 L. & HUM. BEHAV. 3, 6-7, 9 (2010) (discussing the reforms brought about through judicial concern with juror overreliance on confession evidence).

<sup>177</sup> DAN SIMON, IN DOUBT: THE PSYCHOLOGY OF THE CRIMINAL JUSTICE PROCESS 161

most people who confess are guilty, most confessions are corroborated or deceptively appear to be so,<sup>178</sup> and the public does not appreciate the extent to which, in a post-*Miranda* world, false confessions can be the product of psychological rather than physical coercion.<sup>179</sup> While the psychological literature is now rich on how false confessions are constructed by police,<sup>180</sup> most defendants have difficulty affording false confession experts,<sup>181</sup> and some courts – including the trial court in *Rivera*<sup>182</sup> – have excluded testimony from such experts.<sup>183</sup> In one study, 81% of 125 cases involving false confessions ended in conviction.<sup>184</sup>

In any event, cases like *Rivera* appear to be the first time since the *Chaplin* era that courts have been faced with such stark evidence of inaccurate credibility findings by the jury.

B. *Why a Reported DNA Exclusion Might Be Erroneous or Consistent with Guilt*

While the paternity context uniquely lent itself to a legislative fix that treated exculpatory blood tests as conclusive, DNA exclusion evidence – except in very limited circumstances – cannot so easily be treated as conclusive without delving into the facts of the case. This Section provides a brief overview of the ways in which a reported DNA exclusion might either be an erroneous exclusion or, even if a true exclusion, consistent with guilt. In doing so, I do not mean to suggest that any of these possibilities would be plausible under the facts in any given case. This is only intended to underscore that DNA is error prone and context driven, even as a tool of exoneration, and

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(2012).

<sup>178</sup> Saul Kassin has written about the phenomenon of “corroboration inflation,” where confessions corrupt other seemingly corroborative evidence from lay witnesses and forensic experts. See Saul M. Kassin, *Why Confessions Trump Innocence*, 67 AM. PSYCHOLOGIST 431, 440-41 (2012).

<sup>179</sup> See generally Richard A. Leo & Richard J. Ofshe, *The Consequences of False Confessions: Deprivations of Liberty and Miscarriages of Justice in the Age of Psychological Interrogation*, 88 J. CRIM. L. & CRIMINOLOGY 429, 492 (1998) (“The sixty false confessions described in this article dispel the myth . . . that the physiological interrogation methods [police] advocate do not cause suspects to confess to crimes they did not commit. In fact, the opposite is true.”).

<sup>180</sup> See, e.g., RICHARD LEO, POLICE INTERROGATION AND AMERICAN JUSTICE 165-94 (2008) (explaining how police “construct[] culpability” by continuing interrogation until they extract a confession “story” that they view as consistent with their theory of guilt).

<sup>181</sup> See, e.g., Brandon Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 85 & n.113 (2008).

<sup>182</sup> See *People v. Rivera*, 962 N.E.2d 53, 55 (Ill. App. Ct. 2011).

<sup>183</sup> See *supra* notes 112-14 and accompanying text.

<sup>184</sup> See Steven A. Drizin & Richard A. Leo, *The Problem of False Confessions in the Post-DNA World*, 82 N.C. L. REV. 891, 946 (2004).



to explain the universe of possibilities so that the reader might understand the issues facing a judge on sufficiency review.

While DNA is surely different from older forensic methods, DNA testing results do not by definition rule out guilt. If the crime is “begetting a child,” then definitive proof of nonpaternity is necessarily definitive proof of innocence.<sup>185</sup> But if the crime is rape, the absence of the defendant’s DNA, or even the presence of someone else’s DNA in semen in the rape kit, requires an additional inference or set of inferences to prove innocence. In some rape and homicide cases, no DNA is recovered from the crime scene. Such a result may in some circumstances be highly exculpatory. For example, if an alleged victim of sexual assault reports that the defendant ejaculated inside her, but testing on a rape kit recovered immediately after the alleged assault shows no semen or other biological material other than the victim’s DNA, then the defense may have a strong argument that the complainant is lying or mistaken. Still, the result is not necessarily inconsistent with guilt. The government may have a coherent theory as to why the victim had reason to lie about that detail of the story but not others, or that the victim reasonably but mistakenly thought the perpetrator ejaculated. In other cases involving no recovered DNA, the results may be even more clearly consistent with guilt. For example, in a case in which no DNA was recovered from a sample from a rape kit, the reality could be that the perpetrator used a condom or did not ejaculate. Or in a homicide case in which no DNA was recovered from the gun used to shoot the victim, the reality could be that the defendant wielded the gun but wiped it clean or used gloves.

More difficult to reconcile with the defendant’s guilt are those cases in which DNA is recovered from a tested crime scene sample, but the defendant is excluded as a potential contributor. Even so, several potential explanations exist that are consistent with guilt. For example, the defendant may have been present and aided another perpetrator, or even directly participated in the rape with someone else but used a condom or did not ejaculate – what Peter Neufeld has famously called the “unindicted co-ejaculator” theory.<sup>186</sup> Even if there is evidence only of one rapist, the defendant might be guilty if the DNA of the contributor were innocently present, such as if the victim had consensual sex shortly before the rape.<sup>187</sup> In the case of a homicide, a third party’s DNA could be on the murder weapon because the defendant stole the weapon from

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<sup>185</sup> To be clear, a defendant need not prove his factual innocence to be legally entitled to an acquittal; the state retains the burden of proving guilt beyond a reasonable doubt. My point here is to explore whether definitive proof of innocence should affect the deference given on sufficiency review to a jury’s credibility finding supporting guilt.

<sup>186</sup> See James S. Liebman, *The New Death Penalty Debate: What’s DNA Got to Do with It?*, 33 COLUM. HUM. RTS. L. REV. 527, 543 (2002); Martin, *supra* note 10, at MM44.

<sup>187</sup> Of course, the presence of sperm from another person, even if unrelated to a charged sexual assault, need not be entirely “innocent.” In the case of an underage victim, the contributor would presumably be guilty of a sex crime.

the third party and then used gloves or other masking mechanism when fatally wielding the weapon. Also, the sample could be from a location one would not necessarily expect would be linked to the perpetrator. If a third party's DNA is found on the victim's shirt in the form of epithelial cells – for example, skin cells – it could be that the victim and third party lived or worked together and that DNA “transfer” occurred.<sup>188</sup> Even a third party's blood, if found in the victim's house, could be explained by his relationship with the victim or the location of the blood.<sup>189</sup>

In addition to being potentially consistent with guilt, a DNA test result excluding the defendant might be a false negative, a result unlikely to occur in the paternity context. Evidence of contamination, interpretive error, or malfeasance could all cast doubt on a reported DNA exclusion. Contamination of a tested sample could occur for a number of reasons: running two samples through the same tube; mixing samples between collection at the crime scene and testing; using the same instrument to gather more than one sample; having the examiner herself contaminate the sample with her own DNA through saliva, sweat, or dandruff; or purposeful contamination. Yet the conditions under which such contamination would erroneously lead to a false exclusion of a suspect are presumably rare. If a third party's DNA contaminates the evidence sample before it is tested, and the defendant's DNA is also in the evidence sample, then the sample when tested should appear to be a mixture, with the defendant as a potential contributor. For example, police investigating an unsolved Michigan murder from 1969 recently conducted DNA testing on stains on the victim's clothing and found matches to two men whose DNA profiles were already in offender databases: Gary Leiterman, a sixty-two-year-old nurse with a forgery conviction, and John Ruelas, a forty-year-old convicted murderer.<sup>190</sup> But Ruelas would have been only four years old at the time of the murder.<sup>191</sup> Contamination appears to be the reason for the false match, given that both men's samples were processed in the same laboratory at the same time as the sample from the 1969 case.<sup>192</sup> To be interpreted as

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<sup>188</sup> See, e.g., DAVID S. FAIGMAN ET AL., 4 MODERN SCIENTIFIC EVIDENCE § 31:13 (2012) (discussing possibility of DNA “transfer”).

<sup>189</sup> See, e.g., Julia Terruso, *Defense Argues DNA Evidence Proves Innocence of N.J. Man Accused of 1976 Murder*, N.J. STAR-LEDGER (Dec. 4, 2012), [http://www.nj.com/union/index.ssf/2012/12/defense\\_argues\\_dna\\_evidence\\_of.html](http://www.nj.com/union/index.ssf/2012/12/defense_argues_dna_evidence_of.html) (defendant in homicide trial argued that someone else's DNA was found on wine bottle used to kill victim).

<sup>190</sup> *People v. Leiterman*, No. 265821, 2007 WL 2120514, at \*2 (Mich. Ct. App. July 24, 2007).

<sup>191</sup> Cole & Lynch, *supra* note 165, at 48; see also Murphy, *supra* note 170, at 755 n.151 (noting the unusual circumstances of this case and confirming that Ruelas would have been four years old and lived 100 miles away).

<sup>192</sup> Cole & Lynch, *supra* note 165, at 48; William C. Thompson, *Tarnish on the “Gold Standard”: Understanding Recent Problems in Forensic DNA Testing*, 30 CHAMPION 10, 10, 13 (2006) (discussing two “false ‘cold hit[s]’” due to contamination); William C. Thompson, *The Potential for Error in Forensic DNA Testing (and How That Complicates*

excluding the defendant, then, the tested sample must both include a third party's DNA and fail to include the defendant's DNA.

A false negative could also result from interpretive error. For example, imagine a male defendant's DNA and one other man's DNA are actually in the tested sample. Assume also that the defendant and the other man have identical gene forms or "alleles" at several locations, or "loci," along their genetic strand, whether because of coincidence<sup>193</sup> or relatedness,<sup>194</sup> and that the two are "homozygous" – meaning they inherited the same allele, say, a "15," from their mother and father – at several loci.<sup>195</sup> With only one or two alleles showing up at each location, the mixture of the two samples might then look like a single male DNA profile that includes a few alleles that the defendant lacks, thus appearing to be an absolute exclusion of the defendant as a contributor. In reality, the defendant is a contributor to the mixture, but is masked by the other contributor.<sup>196</sup> To be sure, recent studies suggest that it would be difficult if not impossible for a two-person mixture to appear as a single-source profile because the chance of there being two or fewer alleles at all thirteen tested locations in a two-person mixture is low, unless the sample was degraded.<sup>197</sup> These same studies, however, suggest that it would be reasonably likely for an analyst to mistake a three-person mixture for a two-person mixture, due to there being four or fewer alleles at each locus.<sup>198</sup> Thus, one could imagine a false exclusion conceivably arising in a case in which the sample includes DNA from the victim, the defendant, and a third person, but the analyst mistakenly assumes the sample contains only two contributors – the

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the Use of DNA Databases for Criminal Identification) 25, 28-29 (Aug. 12, 2008) (unpublished manuscript), <http://www.councilforresponsiblegenetics.org/pageDocuments/H4T5EOYUZI.pdf> (describing examples of false cold hits due to likely contamination between samples and, later, an admitted false cold hit due to suspected contamination in New Jersey case); Maura Dolan & Jason Felch, *The Peril of DNA: It's Not Perfect*, L.A. TIMES (Dec. 26, 2008), <http://articles.latimes.com/2008/dec/26/local/me-dna26> (describing a New Jersey case with a false cold hit due to contamination).

<sup>193</sup> This is not an implausible assumption. See, e.g., Laurence D. Mueller, *Can Simple Population Genetic Models Reconcile Partial Match Frequencies Observed in Large Forensic Databases?*, 87 J. GENETICS 101 (2008) (discussing potential explanations for why a particular set of samples showed a large proportion of "locus" matches).

<sup>194</sup> See, e.g., Bruce Budowle et al., *Source Attribution of a Forensic DNA Profile*, 2 FORENSIC SCI. COMM. (2000), <http://www.fbi.gov/about-us/lab/forensic-science-communications/fsc/july2000/source.htm> (explaining that the chance of siblings matching in some populations is 1 in 40,000).

<sup>195</sup> David R. Paoletti et al., *Empirical Analysis of the STR Profiles Resulting from Conceptual Mixtures*, 50 J. FORENSIC SCI. 1361, 1362 (2005) (discussing homozygous alleles and explaining that some alleles may be effectively undistinguishable from others).

<sup>196</sup> See, e.g., *id.* at 1361 (discussing the difficulties involved in analysis of samples where there are multiple contributors).

<sup>197</sup> *Id.* at 1364.

<sup>198</sup> *Id.*

victim and one male whose profile includes alleles inconsistent with those of the defendant.

The real perpetrator might also be “masked” if the tested DNA is degraded or of a very small amount, causing one or more of his alleles to appear absent from the graphs – that is, “allelic dropout.”<sup>199</sup> Of course, if the defendant’s profile is the only profile in the sample, then an analyst should be able to easily tell that some type of allelic dropout has occurred, given that the sample has failed to yield even a full single profile. Thus, it is hard to imagine how allelic dropout would lead to a false negative in the absence of at least one other profile in the mix. But if there were at least one other profile in the sample, an analyst might mistakenly assume that the mixture is a single-source profile and that the defendant (the real perpetrator) could not have contributed to the sample.<sup>200</sup>

Yet another source of interpretive ambiguity that could conceivably lead to an incorrect inference of exclusion is the difficulty in distinguishing between machine “stutter” and true alleles. For example, in *Roberts v. United States*,<sup>201</sup> the defendant argued in a rape case that he was excluded as a contributor to DNA in a vaginal swab, known to contain the victim’s DNA and a single-male profile, because a particular allele – a “27” – showed up at a locus where the defendant did not have that allele.<sup>202</sup> The government argued that the graph peak at 27 was not an actual allele, but rather an artifact of the computer program – so-called “stutter.”<sup>203</sup> On appeal, the D.C. Court of Appeals held that Roberts had the right to argue to the jury that the presence of the peak at 27 was a true allele and, thus, that the testing excluded Roberts as a suspect.<sup>204</sup>

Finally, a false negative could conceivably be the result of malfeasance. This could take the form of deliberate laboratory contamination or deliberate planting of a person’s DNA at the crime scene or in a place one would reasonably expect only the perpetrator to leave DNA.<sup>205</sup> Malfeasance might be

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<sup>199</sup> See, e.g., Aronson & Cole, *supra* note 121, at 613 (explaining how allelic dropout could lead to interpretive errors in determining a DNA match); Douglas H. Ginsburg & Hyland Hunt, *The Prosecutor and Post-Conviction Claims of Innocence: DNA and Beyond?*, 7 OHIO ST. J. CRIM. L. 771, 785 (2010) (mentioning the problem of false negatives when a sample has degraded or is contaminated); see also *People v. McSherry*, 14 Cal. Rptr. 2d 630, 636 n.6 (Cal. Ct. App. 1992) (describing how the State’s experts opined that DNA exclusion was due to “allelic dropout” caused by degradation from the age and small quantity of the sample).

<sup>200</sup> See Paoletti et al., *supra* note 195, at 1366 (“The key factor is that the addition of more individuals (and thus more alleles) into the mixture causes the mixture to become more likely to hide any indications of subsequent individuals.”).

<sup>201</sup> 916 A.2d 922 (D.C. 2007).

<sup>202</sup> *Id.* at 932.

<sup>203</sup> *Id.*

<sup>204</sup> *Id.* at 936. The court also held that the error was harmless beyond a reasonable doubt, given the overwhelming evidence against Roberts. *Id.* at 936-37.

<sup>205</sup> See Aronson & Cole, *supra* note 121, at 626 (describing the increased possibility of

the least detectable of the possible reasons for a false exclusion, and hardest to disprove.

While these scenarios could all theoretically account for a reported DNA exclusion that is not definitive evidence of innocence, their plausibility will vary wildly depending on the circumstances of the case. Even if there were no expert disagreement with respect to whether the exclusion is a false negative, the vast possibilities in terms of reconciling the exclusion with guilt require a factfinder to delve into the circumstances of the case to determine its definitiveness. The problem that the following cases bring to light is that many prosecutors and juries have pursued and credited highly questionable theories attempting to reconcile DNA exclusions with guilt.

C. *Guilty Verdicts Contrary to DNA Exclusions Strongly Indicating Innocence*

While a reported DNA exclusion can theoretically be a false negative or consistent with guilt, there are cases in which juries have convicted, or prosecutions have proceeded, on facts suggesting that these two scenarios are at best highly unlikely. In a group of cases recently documented on *60 Minutes*,<sup>206</sup> the state obtained convictions of five juveniles in a rape-murder of a fourteen-year-old girl in Chicago based on their stationhouse confessions.<sup>207</sup> Although the semen recovered in the rape kit had a single-male DNA profile that failed to match any of the five defendants, the prosecution went forward.<sup>208</sup> The state's attorney speculated to the *60 Minutes* crew that the five men did not ejaculate and that the semen may have been the result of necrophilia – of an unrelated man having sex with the corpse.<sup>209</sup> In April 2011, the profile was run through national DNA databases and found to match a serial rapist who at the time of the crime had recently been paroled and was

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malicious planting of DNA evidence); Thompson, *supra* note 192, at 42 (discussing false positives indicating mistakes or coincidental matches).

<sup>206</sup> See *60 Minutes: Chicago: The False Confession Capital* (CBS television broadcast Dec. 9, 2012), available at <http://www.cbsnews.com/video/watch/?id=50136707n> (discussing Chicago's comparatively high prevalence of false confessions, especially from teenagers).

<sup>207</sup> See *Three Men from Cook County, Illinois, Exonerated of 1991 Rape and Murder, Exonerations of Two Others to Follow*, INNOCENCE PROJECT (Nov. 11, 2011), [http://www.innocenceproject.org/Content/Three\\_Men\\_from\\_Cook\\_County\\_Illinois\\_Exonerated\\_of\\_1991\\_Rape\\_and\\_Murder\\_Exonerations\\_of\\_Two\\_Others\\_to\\_Follow.php](http://www.innocenceproject.org/Content/Three_Men_from_Cook_County_Illinois_Exonerated_of_1991_Rape_and_Murder_Exonerations_of_Two_Others_to_Follow.php) (“After DNA testing linked a rapist to the 1991 rape and murder of a 14-year-old southwest suburban girl, a Cook County Circuit Court judge today set aside the convictions of three men who were convicted of the crime by confessions now known to be false.”).

<sup>208</sup> *60 Minutes: Chicago: The False Confession Capital*, *supra* note 206.

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

living near the victims.<sup>210</sup> All five defendants have now been publicly exonerated.<sup>211</sup>

In an Illinois case, Jerry Hobbs was charged and detained for five years for killing his eight-year-old daughter and her friend, based on his curiously flat demeanor upon reporting that he had found the girls' bodies in the woods and his confession the following morning, given after twenty hours of interrogation.<sup>212</sup> Later DNA testing on semen from oral, rectal, and vaginal swabs from his daughter, however, excluded him as the source.<sup>213</sup> After an initial examination of the body showed no evidence of sexual trauma, the prosecutor speculated that the presence of semen might have been due to the girl having played in the woods near "a place where couples go to have sex."<sup>214</sup> In 2010, police matched the profile to a twenty-one-year-old man charged with similar crimes in Virginia, who had lived near the victims at the time of the murders.<sup>215</sup> Upon dismissing the charges against Hobbs, the prosecutor admitted that "the evidence points to another individual."<sup>216</sup>

In several other cases, prosecutors have gone forward with a case notwithstanding a seemingly definitive DNA exclusion and a less than overwhelming government case built on a confession or eyewitness; in some the jury acquitted,<sup>217</sup> but in others, the jury returned a guilty verdict.<sup>218</sup> In the

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

<sup>211</sup> *Id.*

<sup>212</sup> *Hobbs v. Cappelluti*, 899 F. Supp. 2d 738, 738 (N.D. Ill. 2012) ("Police quickly identified him as a suspect and, after interrogating him for 24 hours, coerced him into falsely confessing. This confession was then used to detain him on murder charges for over five years . . ."); Martin, *supra* note 10, at MM44 (explaining that police thought Hobbs' reaction to the deaths was "odd" and devoid of emotion).

<sup>213</sup> *Hobbs*, 899 F. Supp. 2d at 750-51; Dan Hinkel, *Suit Against Prosecutors Continues*, CHI. TRIB., Nov. 18, 2012, at C5 ("Though DNA indicated his innocence in 2007, prosecutors continued to press charges until the evidence led authorities to another man in 2010, and Hobbs was freed.").

<sup>214</sup> *Hobbs*, 899 F. Supp. 2d at 751; Martin, *supra* note 10, at MM44.

<sup>215</sup> *Hobbs*, 899 F. Supp. 2d at 751.

<sup>216</sup> Dan Rozek & Vernon Clement Jones, *DNA Ends Case Against Father; Jerry Hobbs Freed After Murder Charges Dropped*, CHI. SUN TIMES, Aug. 5, 2010, at 2.

<sup>217</sup> In Washington state, postconviction DNA testing exonerated Ted Bradford after he had served nine years on rape and burglary charges. Even then, the State refilled charges only for the case to result in acquittal. See *Prosecutors Refile Charges Against Ted Bradford, Choosing His Confession over DNA Evidence that Excludes Him* [sic] *Courts* [sic] *Previously Overturned Conviction*, UNIV. WASH. SCH. L. (Oct. 24, 2008), <http://www.law.washington.edu/News/Articles/Default.aspx?YR=2008&ID=Bradford>; *Ted Bradford*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3040> (last visited Aug. 21, 2013). In a similar case, John Kogut was retried for the rape and murder of a sixteen-year-old girl based on his confession, even though postconviction DNA tests excluded him as a suspect. Robbin Topping & Chau Lam, *Despite DNA, Case Continues*, NEWSDAY, Sept. 11, 2003, at A08. The prosecutor retried the case, which resulted in an acquittal from a bench trial. *John Kogut*, NAT'L

REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3361> (last visited Aug. 21, 2013). Similarly, postconviction DNA testing showed that blood on defendant Jermaine Arrington's sweatpants did not come from the stabbing victim, but the State opted to retry in spite of this DNA evidence and eyewitness testimony inconsistencies. Maurice Possley, *Jermaine Arrington*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=2998> (last visited Aug. 21, 2013). In the case of Gerald Davis, postconviction DNA testing on rape kit samples excluded Davis and his codefendant father, and DNA testing on Davis's sheets and underwear excluded the victim, yet the State retried the case on the theory that Davis raped the victim but did not ejaculate. *Gerald Davis*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3157> (last visited Aug. 21, 2013).

<sup>218</sup> The South Carolina Court of Appeals denied a sufficiency challenge of a man charged with raping and killing his daughter in his house. The State relied on his confession and the lack of evidence of forced entry. The DNA in saliva on a bite mark and semen from a vaginal swab matched another man who had attacked several other women in the neighborhood around the same time, yet the State explained the DNA evidence by alleging that the defendant and other man worked together. *See, e.g., State v. Cope*, 684 S.E.2d 177, 179-82 (S.C. Ct. App. 2009), *aff'd* No. 27303, 2013 WL 4553427 (S.C. Aug. 28, 2013). Similarly, Bennie Starks was convicted of the 1986 rape of a sixty-eight-year-old woman when DNA testing on semen in vaginal swab excluded him. Steve Mills, *Prosecutor, DNA at Odds*, CHI. TRIB., Dec. 15, 2008, at C4. The new state's attorney dropped the case twenty-six years after the crime. J. Malcolm Garcia, *Road to Exoneration for Starks Hits Another Detour*, CHI. TRIB., Dec. 8, 2012, at C4. In the case of Entre Nax Karage, DNA testing on semen in the murder victim's vagina excluded the victim's boyfriend Karage, but the jury convicted on the theory that semen was from consensual sex before the attack. *State v. Karage*, No. 04-98-00179-CR, 1999 WL 454638, at \*2-6 (Tex. Crim. App. July 7, 1999). Karage was exonerated after the DNA matched that of a convicted sex offender. *Entre Nax Karage*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3344> (last visited Aug. 21, 2013). Clarence Elkins was convicted of raping his six-year-old niece and raping and murdering her grandmother based solely on his niece's identification of him, notwithstanding DNA testing excluding him as a contributor of male hairs found on the grandmother's body. The trial court denied his motion for new trial even after later DNA testing also excluded him as the source of the single profile found in the grandmother's vagina and fingernails and the niece's underwear. Prosecutors did not drop the case until his DNA profile was found to match to a repeat offender. Maurice Possley, *Clarence Elkins*, NAT'L REGISTRY EXONERATIONS <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3202> (last visited Aug. 21, 2013). In another such case, postconviction testing on semen and a cigarette found near a rape-murder victim excluded Roy Criner. The State argued that the semen was from a prior consensual partner. Criner was eventually pardoned. *See State v. Criner*, 860 S.W.2d 84 (Tex. Crim. App. 1993) (denying Criner's motion to overturn his conviction based on insufficiency of evidence); *Roy Criner*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3132> (last visited Aug. 21, 2013). Kenneth Kagonyera pled guilty to robbing and killing a man in North Carolina even though DNA evidence on a bandana and gloves found near the victim's house excluded him and the codefendants he implicated. Kagonyera was later exonerated after the actual perpetrator confessed. Clarke Morrison, *Commission Investigating Innocence Claims by*

infamous *Norfolk Four Case*,<sup>219</sup> for example, four Navy sailors were convicted of participating in the rape and murder of a woman in Norfolk, Virginia, notwithstanding that – as the jury heard – the DNA at the scene matched only one man, Omar Ballard, who confessed upon being arrested and insisted that he acted alone.<sup>220</sup> Although the State extracted confessions from the four sailors, they were largely inconsistent with the physical evidence. For example, the men alleged that they broke in the victim’s door even though there was no sign of forced entry.<sup>221</sup> In defendant Derek Tice’s trial, “[s]ome of the jurors puzzled over the orderly state of [the victim’s] apartment, the absence of any physical evidence tying Tice to the crime, and his lack of a criminal record,” but ultimately, Tice’s confession was the “supernova” that “just washed everything else away.”<sup>222</sup>

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*Three Ashville Area Men*, ASHEVILLE CITIZEN-TIMES (June 7, 2012), <http://www.citizen-times.com/article/20120608/NEWS/306080047/Commission-investigating-innocence-claims-by-three-Ashville-area-men>.

<sup>219</sup> *Tice v. Johnson* (The Norfolk Four Case), 647 F.3d 87 (4th Cir. 2011).

<sup>220</sup> See *Chronology*, NORFOLK FOUR 1-2, [http://www.norfolkfour.com/images/uploads/pdf\\_files/Chronology.pdf](http://www.norfolkfour.com/images/uploads/pdf_files/Chronology.pdf) (last visited Aug. 21, 2013) (chronicling the factual background and subsequent conviction of the Norfolk Four). See generally TOM WELLS & RICHARD A. LEO, *THE WRONG GUYS: MURDER, FALSE CONFESSIONS, AND THE NORFOLK FOUR* (2008). Ballard matched DNA on blood under the victim’s fingernails, on semen in a vaginal swab, and on semen on a blanket near the body. See *Chronology*, *supra*, at 2. Two weeks before the murder, Ballard had attacked another woman in the same apartment complex on his own and, ten days after the murder, raped a woman approximately one mile away. *Real Killer*, NORFOLK FOUR, <http://www.norfolkfour.com/index.php?/norfolk/realkiller> (last visited Aug. 21, 2013).

<sup>221</sup> See *Confession and Evidence Comparison Chart*, NORFOLK FOUR 1, [http://www.norfolkfour.com/images/uploads/pdf\\_files/Confession\\_Evidence\\_Comparison\\_Chart.PDF](http://www.norfolkfour.com/images/uploads/pdf_files/Confession_Evidence_Comparison_Chart.PDF) (last visited Aug. 21, 2013). The number of conspirators also curiously kept increasing. First, defendant Joseph Dick implicated only himself and defendant Danial Williams, but when their DNA matched none of the semen at the scene, police came back and extracted a second confession from Dick alleging that others were involved. See *Tice*, 647 F.3d at 92. Two of the men pled guilty before trial. See *Williams v. Commonwealth*, No. 1099-99-1, 2000 WL 1014692, at \*1 (Va. Ct. App. July 25, 2000); Brief of Petitioner-Appellant at 18, *Wilson v. Flaherty*, 689 F.3d 332 (4th Cir. 2012) (No. 11-6919). Wilson was convicted by a jury of rape, and Tice of rape and murder. *Tice*, 647 F.3d at 93. At defendant Derek Tice’s trial, the State explained the DNA to the jury through a gang-rape theory involving both Ballard and the sailors. Tice’s federal habeas petition has been granted and his conviction vacated. See *id.* at 108. Danial Williams’s, Joseph Dick’s, and Eric Wilson’s federal habeas petitions are stayed pending exhaustion of state remedies on a new claim arising out of the indictment of a detective involved in their case. See *Williams v. Fahey*, 81 Va. Cir. 204, 206 (2010); *Williams v. Fahey*, No. 3:09CV769, 2011 WL 2443722, at \*1 (E.D. Va. June 14, 2011); *Dick v. Fahey*, No. 3:10CV00505, 2011 WL 2443898, at \*1 (E.D. Va. June 14, 2011). However, the Fourth Circuit recently found that Wilson is no longer “in custody” for the purposes of his habeas petition. See *Wilson v. Flaherty*, 689 F.3d 332, 339 (4th Cir. 2012).

<sup>222</sup> WELLS & LEO, *supra* note 220, at 228.



Finally, in a particularly vexing additional category of cases, DNA test results seem to exclude the defendant and appear inconsistent with guilt, but the state's case nonetheless consists of highly compelling proof of guilt, beyond merely a confession or eyewitness.<sup>223</sup>

Several of the defendants in these cases made sufficiency challenges to the evidence against them, but such challenges were generally dismissed out of hand with little discussion<sup>224</sup> or on grounds that the factfinder was entitled to credit the confession or eyewitness and, by inference, discredit the DNA or believe the state's theory, however unlikely, attempting to reconcile the two.<sup>225</sup> In one case, the court directed an acquittal, but only after a high-ranking police officer admitted that the defendant never actually made the alleged incriminating statements.<sup>226</sup>

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<sup>223</sup> See, e.g., *State v. Hammond*, 604 A.2d 793, 794 (Conn. 1992) (granting defendant a new trial on discretionary "weight of the evidence" grounds where circumstantial evidence of guilt was difficult to reconcile with innocence but DNA and blood typing exclusions were equally compelling and difficult to reconcile with guilt); *Connecticut's Doubtful Claim to Fame: DNA Results Rejected by Jury*, SCI. SLEUTHING REV., Winter 1990, at 6 (stating about the *Hammond* case that "[t]he jury trial is still not . . . a court of science"); Jack Ewing, *Connecticut Jury Disregards DNA Test*, NAT'L L.J., Apr. 23, 1990, at 9 (discussing, among other things, that the attorneys were surprised with *Hammond* case's result); cf. *State v. McSherry*, 14 Cal. Rptr. 2d 630, 636 (Cal. Ct. App. 1992) (holding that fact that defendant was excluded as source of semen on victim's underwear in rape case did not merit new trial where evidence of guilt was "overwhelming[]," including victim's unexplained knowledge of layout of crime scene, defendant's grandmother's house, and that chance of contamination was real, given that underwear was highly soiled and a one year old before being tested).

<sup>224</sup> See, e.g., *Jeffrey Deskovic*, NAT'L REGISTRY EXONERATIONS, <http://www.law.umich.edu/special/exoneration/Pages/casedetail.aspx?caseid=3171> (last visited Aug. 21, 2013) ("The victim was found naked and her autopsy revealed genital trauma. Semen was identified on the vaginal swabs from her rape kit but no semen was observed on her clothes. DNA testing was conducted before trial. The results showed that Deskovic was not the source of semen in the rape kit."); *People v. Deskovic*, 607 N.Y.S.2d 957 (N.Y. App. Div. 1994) (rejecting sufficiency argument based on defendant's stationhouse confession, and failing to mention DNA exclusion or evidence to support prosecutor's consensual sex theory to explain presence of semen in vaginal swab); *DNA Proves Jeffrey Deskovic's Innocence 16 Years After He Was Wrongly Convicted as a Teenager*, INNOCENCE PROJECT (Sept. 20, 2006), [http://www.innocenceproject.org/Content/DNA\\_Proves\\_Jeffrey\\_Deskovic's\\_Innocence\\_16\\_Years\\_After\\_He\\_Was\\_Wrongly\\_Convicted\\_as\\_a\\_Teenager.php](http://www.innocenceproject.org/Content/DNA_Proves_Jeffrey_Deskovic's_Innocence_16_Years_After_He_Was_Wrongly_Convicted_as_a_Teenager.php) (indicating that Deskovic's conviction was vacated after database search finally ended in a "hit").

<sup>225</sup> See, e.g., *People v. Hatchett*, No. 211131, 2000 WL 33419396, at \*1-2 (Mich. Ct. App. May 19, 2000) (rejecting sufficiency challenge in rape case, citing victim's identification of defendant about which she had "no doubt," fact that defendant was driving victim's car three days after rape, and defendant's detailed confession, all notwithstanding three alibi witnesses and DNA exclusion from semen in vagina, mentioning the possibility that semen came from spouse, even though spouse was excluded as source).

<sup>226</sup> See *Police Perjury and Jailhouse Snitch Put Rolando Cruz on Death Row*, BLUHM LEGAL CLINIC CENTER ON WRONGFUL CONVICTIONS, <http://www.law.northwestern.edu/legal>

In *Rivera* itself, however, the appellate court did issue a groundbreaking decision reversing Rivera's convictions on sufficiency grounds. Rather than holding that an apparently reliable DNA exclusion is per se reasonable doubt, it held that the confession, uncorroborated by any other reliable evidence of Mr. Rivera's guilt, was not enough to overcome the strong inference of innocence from the DNA.<sup>227</sup> In doing so, it appeared to declare and apply a new corroboration rule requiring evidence, independent of a confession, that the defendant is the perpetrator.<sup>228</sup> Still, it also squarely addressed the irrationality of the jury's credibility findings, holding, for example, that "no reasonable trier of fact could have found the jailhouse informants' testimony credible beyond a reasonable doubt."<sup>229</sup> In assessing the State's theories for explaining the presence of another man's DNA in the eleven year old's vagina, the court used comparative rather than probabilistic language, concluding that "*the most reasonable explanation*, therefore, of who murdered the victim is not defendant but rather someone who, unfortunately, has not yet been identified."<sup>230</sup>

#### IV. SUFFICIENCY LAW FOR THE DNA AGE: THE BLIND DEFERENCE RULE'S DEMISE

The DNA exclusion cases tee up several broader issues related to the function of the jury, the role of technology in adjudication, and the meaning of "reasonable doubt" that, until now, courts have had the ability and motive to sweep under the rug. Courts could perhaps temporarily avoid such issues by doing what the *Chaplin*-era judges did: simply granting new trials on a discretionary basis whenever they view the jury's verdict as irrational or unjust. But the more defendants squarely present the issue, as Mr. Rivera did, the more courts will be forced either to reconsider the doctrine of blind deference toward a jury's credibility findings and weighing of the evidence, or to allow a guilty verdict based on testimonial evidence under circumstances suggesting a high likelihood of innocence.

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clinic/wrongfulconvictions/exonerations/il/rolando-cruz.html (last visited Aug. 21, 2013) ("At his third trial, however, a high-ranking police officer admitted under oath that Cruz had not made the inculpatory statement attributed to him by detectives at the previous trials. The trial judge then directed a verdict of not guilty.").

<sup>227</sup> See *People v. Rivera*, 962 N.E.2d 53, 67 (Ill. App. Ct. 2011) ("The State failed to provide sufficient independent evidence to corroborate defendant's confession, especially in light of the DNA evidence. The State failed to provide corroboration for defendant's use of a dangerous weapon; defendant's sexual penetration of the victim by the use of force; and the victim's death during the attempt or commission of the aggravated criminal sexual assault.").

<sup>228</sup> *Id.* ("Because the State failed to establish the offense *aliunde* the confession, defendant's conviction was unjustified and cannot stand.").

<sup>229</sup> *Id.* at 64.

<sup>230</sup> *Id.* at 63 (emphasis added).

When faced with this choice, courts should abandon the blind deference rule once and for all. The assumptions apparently underlying the rule – that the jury is particularly good at lie detecting and weighing evidence in cases involving testimonial evidence, that the public believes this to be so, and that a regime of “acquittal by machine” would be unreliable or seen by the public as dehumanizing – are invalid, and thus the rule promotes neither accuracy nor acceptability of verdicts. Moreover, the rule runs directly contrary to *Jackson*’s ostensible directive to take innocence seriously by treating “beyond a reasonable doubt” as an objective, judicially enforceable factual proof requirement.

A. *The Trouble with Importing Existing Sufficiency Frameworks to Replace the Blind Deference Rule for Testimonial Evidence*

If courts abandon the blind deference rule, what should take its place? When should courts grant a motion for judgment of acquittal in a case involving testimonial evidence of guilt? How can we give meaning to *Jackson*’s holding in such cases? In this section, I discuss possible replacements for the blind deference rule and their implications. I ultimately argue that the only standard that would provide meaningful protection against wrongful convictions based on testimonial evidence, but would still avoid treating scientific evidence as infallible or usurping the jury’s true function as voice of the community, is an objective, comparative standard of proof coupled with more robust corroboration requirements for certain types of testimonial evidence.

1. Importing the “Reasonable Hypothesis of Innocence” Test

In the absence of the blind deference rule, courts might choose to assess legal sufficiency in cases involving testimonial evidence by whatever existing standard they use to assess legal sufficiency in cases involving only circumstantial and documentary evidence of guilt. In a few jurisdictions, that standard is a heightened one that asks whether the state’s evidence, even if fully credited, fails to rebut every “reasonable hypothesis of innocence.”<sup>231</sup> Such a test makes sense when assessing evidence that requires the factfinder to draw an inference to reach a conclusion of guilt. Some testimonial evidence will fit this category – such as an eyewitness who claims only to have seen the defendant with a murder victim’s credit cards shortly after the crime. But when the evidence is a direct confession of guilt or dispositive eyewitness testimony, then the evidence – if credited as truthful – leaves no room for innocence. Such a test thus fails to incorporate exculpatory evidence into the calculation of the reasonableness of the jury’s belief in guilt and fails to protect against convictions in cases like *Rivera* and *Chaplin*. On the other hand, if the question under such a test is simply whether a juror would be “reasonable” in

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<sup>231</sup> See, e.g., LA. REV. STAT. ANN. § 15:438 (2012) (“The rule as to circumstantial evidence is: assuming every fact to be proved that the evidence tends to prove, in order to convict, it must exclude every reasonable hypothesis of innocence.”).

hypothesizing that the witness might be lying or mistaken, it is hard to imagine a case turning on testimonial evidence that *would* be legally sufficient. Even a similar test couched in comparative terms would seem to suffer the same flaw. For example, under one test suggested by Michael Pardo – “[a] fact is proven beyond a reasonable doubt when there is a plausible explanation of the evidence and events in dispute that includes this fact and no plausible explanation that does not include this fact”<sup>232</sup> – it is hard to imagine a testimonial case that would pass muster. Given the high error rates of confession and eyewitness evidence, it is nearly always “plausible” to imagine a confession is false, or an eyewitness is lying or mistaken.

## 2. Expanding the “Inherently Incredible” Doctrine

Some jurisdictions allow courts to direct an acquittal where the state’s testimonial evidence is “inherently incredible.”<sup>233</sup> But this doctrine is rarely invoked, and often requires that the evidence be incredible or physically impossible on its face, without regard to other evidence in the case.<sup>234</sup> Few confessions or eyewitness accounts are inherently incredible on their face. Rather, as the recent spate of DNA exonerations has proven, false confessions and mistaken or deceptive eyewitness accounts are typically shown to be unreliable only after the fact, through the discovery of exculpatory evidence.

And even when exculpatory evidence is compelling, it very rarely shows the government’s theory to be *impossible*. Take a case like the *Norfolk Four Case*,<sup>235</sup> for example, where the defendants’ confessions were questionable but probably facially believable and the DNA evidence inculpated only one man, a serial rapist who said he acted alone.<sup>236</sup> The State’s suggestion was that the men all acted together, a theory that was conceivably true but seems unlikely. The confessions might not be inherently incredible, and the State’s theory is much more believable than in *Rivera* or a case like *Hobbs*, where the State argued that the young victim got semen in her anus and vagina from playing in the woods rather than from an alternative suspect.<sup>237</sup> Yet the objective likelihood of innocence seems high, and the intuition of many (myself included) is that the convictions of the Norfolk Four are unjust.<sup>238</sup> In a case

<sup>232</sup> See Michael S. Pardo, *Second-Order Proof Rules*, 61 FLA. L. REV. 1083, 1105 (2009).

<sup>233</sup> See *supra* note 54 and accompanying text.

<sup>234</sup> See *id.*

<sup>235</sup> *Tice v. Johnson* (The Norfolk Four Case), 647 F.3d 87 (4th Cir. 2011).

<sup>236</sup> See discussion *supra* notes 220-22 and accompanying text.

<sup>237</sup> See discussion *supra* notes 212-16 and accompanying text.

<sup>238</sup> See Jeffrey Toobin, *The Wrong Guys*, NEW YORKER, Aug. 24, 2009, at 20, available at [http://www.newyorker.com/talk/2009/08/24/090824ta\\_talk\\_toobin](http://www.newyorker.com/talk/2009/08/24/090824ta_talk_toobin) (“[Richard Leo, a law professor at the University of San Francisco, is an expert on false confessions . . . . Troubled by what he heard . . . Leo wound up devoting much of the next seven years of his life to the case.”); *Frontline: The Confessions* (PBS television broadcast Apr. 21, 2010), available at <http://www.pbs.org/wgbh/pages/frontline/the-confessions/interviews/richard-leo.html>

where the verdict is likely neither accurate nor acceptable to the public, there appears little reason to embrace a sufficiency doctrine that upholds such a verdict.

3. Reverting to *Jackson*'s "Any Rational Juror" Standard Without Further Direction

A majority of jurisdictions eschew the "reasonable hypothesis of innocence" test and simply let judges decide how to interpret the "any rational juror" standard (with the additional caveat that they blindly defer to jurors' credibility findings). In announcing this standard, the *Jackson* Court was surely right that allowing jurors themselves to determine whether they have reached moral certainty and leaving it at that could not possibly work as a standard for determining sufficiency if we take the specter of convicting an innocent man seriously, which we now have reason to do, more than ever. But *Jackson* gave little direction to judges as to how to operationalize this standard without becoming a "thirteenth juror."<sup>239</sup> Judges are presumably happy to let jurors bear the public pressure of deciding guilt or innocence.<sup>240</sup> Absent a workable standard, then, it is no surprise that judges rarely grant judgments of acquittal so long as the state has presented at least some evidence of every essential element of the crime.

More specifically, the "rational juror" standard's focus on the reasonableness of jurors' subjective belief in guilt, rather than simply the objective likelihood of guilt, would surely tempt judges to conclude that any "belief" in the truth of a witness's testimony is reasonable so long as the testimony is not internally contradictory or physically impossible. If James Whitman is right, what would happen if we finally admitted, in our doctrine and not merely our legal scholarship, that we have been trying to shoehorn a standard meant for a premodern world, focused on jurors' subjective beliefs and moral comfort, into a modern world in which the objective likelihood of the defendant's guilt is our primary concern?

In addition, *Jackson*'s probability-threshold approach – asking whether the evidence justifies a certain threshold of subjective certainty in guilt – is also a poor fit for an age involving testimonial evidence pitted against scientific evidence. If the question in a case such as *Rivera* is whether a juror would have

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(interviewing Professor Richard Leo about false confessions and the Norfolk Four). See generally WELLS & LEO, *supra* note 220.

<sup>239</sup> The *Jackson* standard has been critiqued as imprecise. See, e.g., Oldfather, *supra* note 17, at 477 ("Perhaps the primary problem is that the logic of *Jackson* does not provide its own limits. Given the imprecision of both the 'rational fact finder' and 'reasonable doubt' concepts on which *Jackson* rests, the opinion could easily be interpreted as allowing for a virtually unbounded role for appellate courts in reviewing the evidence underlying convictions.").

<sup>240</sup> See, e.g., Fisher, *supra* note 21, at 706 (remarking that shift to jury power over lie detecting aligned with the interests of judges, for whom "the power of decision was a political minefield").

to be irrational as a matter of law to disbelieve the DNA or believe the government's convoluted explanation for the DNA, judges will surely be tempted to take one of two paths, both equally undesirable.

The first undesirable result would be for judges to uphold convictions in cases involving testimonial evidence of guilt so long as the countervailing evidence of innocence is not apparently definitive – effectively rendering guilt nearly impossible. If the exculpatory evidence is compelling but less than definitive, such as in the *Norfolk Four Case*,<sup>241</sup> judges would surely find it too daunting and arbitrary under a probability-threshold test to imagine when such evidence would by implication render the state's proof just shy of proving guilt "beyond a reasonable doubt."

This "arbitrary threshold" problem is made even more complex when the exculpatory evidence is explicitly quantifiable, or has a small but substantial quantified error rate, and the testimonial evidence is facially believable but flawed. For example, what should be the result in a case in which a defendant-physician offers a neuroimaging expert stating that an fMRI test shows, with ninety-three percent certainty, that the defendant is telling the truth when he states that he did not intend to commit Medicare fraud, notwithstanding the accusatory accounts of several witnesses?<sup>242</sup> Or, in *Rivera* itself, what if Mr. Rivera had offered such an fMRI result to counter his confession? Abandoning the "jury as lie detector" myth removes a major impediment to the admission of such evidence. Of course, reliability concerns with respect to fMRI testing and the accuracy of its reportedly low error rates are real. Some have argued, however, that a more lenient standard of admissibility should govern scientific evidence offered by a criminal defendant.<sup>243</sup> At any rate, assuming we advance to the point where the ninety-three percent error rate is viewed as accurate and the evidence admitted, should the court enter judgment of acquittal based on such evidence? <sup>244</sup> Employing a probability-threshold approach would seem to offer no solution to such a battle of statistics, when the ultimate question is simply whether the proof on one side of the equation surpasses a given level of certainty.

The second and equally undesirable path courts might take under a probability-threshold approach would be to treat scientific evidence of

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<sup>241</sup> *Tice v. Johnson* (The Norfolk Four Case), 647 F.3d 87 (4th Cir. 2011).

<sup>242</sup> These are, in essence, the facts of *United States v. Semrau*, No. 07-10074 MI/P, 2010 WL 6845092, at \*14 (W.D. Tenn. June 1, 2010) (excluding such evidence under *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993)).

<sup>243</sup> See, e.g., Richard Friedman, *Squeezing Daubert Out of the Picture*, 33 SETON HALL L. REV. 1047, 1047 (2003) ("[T]he standards for treatment of expert evidence should differ depending on the litigation context. Standards should be very lenient for criminal defendants, and tougher for prosecutors, with the standards for civil litigants somewhere in between.").

<sup>244</sup> See generally Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329 (1971) (discussing the role and danger associated with mathematics in the trial context).

innocence as conclusive, as courts and legislatures began to do in the *Chaplin* era.<sup>245</sup> To be sure, such an approach might have superficial appeal. As the outrage over *Chaplin* showed, the public seems willing to allow technologically advanced evidence to trump a jury's credibility findings, at least where the evidence indicates innocence. Thus, invoking the specter of "trial by machine" to justify upholding a guilty verdict in a case like *Chaplin* seems hollow. *Rivera* does not directly raise this issue, of course, because the prosecutors did not take issue with the reported DNA exclusion; instead, they sought to reconcile it with the confession. But given *Chaplin*, and the cultural cachet of DNA, it seems likely that many might be willing to treat a DNA test as more credible than a confession as a matter of law even in a case where the state offers no theory to reconcile the two, and simply argues that the test must be wrong because the confession is true.

Notwithstanding the public's sanguinity about treating certain machine-like evidence of innocence as conclusive, we should be wary of allowing a scientific test that – if credited – would be dispositive of guilt or innocence to dictate a verdict of "not guilty" simply because it is unimpeached other than by implication from the State's testimonial evidence. All scientific tests, including DNA typing, have an error rate, regardless of whether the State can offer evidence to suggest such errors in a given case. One irony of DNA and other seemingly hyper-reliable "second generation" forensic methods<sup>246</sup> is that their flaws are hard to detect (at least, until large-scale scandals are exposed)<sup>247</sup> and therefore less likely to be acknowledged by the jury. Even the flaws of more primitive forensic methods are not easily detectable through traditional courtroom safeguards; of the DNA exonerations in which the underlying wrongful conviction was based on shoddy forensic work, all involved forensic analysts who testified live under oath and were subject to cross-examination.<sup>248</sup> Testimonial evidence, on the other hand, can be just as, if not more, definitive as scientific evidence. Imagine a case in which the State's evidence itself is nonscientific but apparently definitive – say, 100 disinterested eyewitnesses. In that case, a jury could surely rationally conclude that any DNA exclusion

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<sup>245</sup> *Berry v. Chaplin*, 169 P.2d 442 (Cal. Dist. Ct. App. 1946).

<sup>246</sup> See generally Murphy, *supra* note 170, at 722 ("[P]articular characteristics of the second generation aggravate, rather than relieve, the pathologies that ultimately afflicted the first generation.").

<sup>247</sup> A recent example is the scandal plaguing the New York City Medical Examiner's Office after a DNA technician was found to have mishandled or overlooked DNA evidence in potentially hundreds of cases. See Joseph Goldstein, *New York Sees Errors on DNA in Rape Cases*, N.Y. TIMES, Jan. 11, 2013, at A1, available at <http://www.nytimes.com/2013/01/11/nyregion/new-york-reviewing-over-800-rape-cases-for-possible-mishandling-of-dna-evidence.html>.

<sup>248</sup> See, e.g., David A. Sklansky, *Hearsay's Last Hurrah*, 2009 SUP. CT. REV. 1, 72-73 (indicating that in those DNA-exoneration cases where the underlying wrongful conviction was based on shoddy forensic work, cross-examination of forensic analysts is "inadequate" as a means of testing government forensic evidence).

offered by the defense is likely to be a false exclusion or somehow consistent with guilt, however improbable the State's theory is to reconcile the two.

Thus, we should avoid following the example of the *Chaplin* era in declaring certain types of scientific evidence conclusive by legislative fiat. Even in the paternity blood test cases, one could imagine apparently definitive testimonial evidence of paternity that a rational juror could credit over an unimpeached blood test result. And we should avoid crafting a sufficiency rule that would take a case away from the jury simply because of the presence of apparently reliable scientific evidence of innocence, without looking to the nature of the state's proof as well. For example, consider Larry Laudan's suggested instruction: "If there is credible, inculpatory evidence or testimony that would be very hard to explain if the defendant were innocent, and no credible, exculpatory evidence or testimony that would be very difficult to explain if the defendant were guilty, then convict. Otherwise, acquit."<sup>249</sup> The standard, a welcome step up from the "reasonable doubt" language in many ways, still appears to invite judges on sufficiency review to view scientific evidence of innocence in a vacuum rather than in relation to the state's proof.

While treating an unimpeached reported DNA exclusion as legally conclusive without looking to the State's proof is unjustified, one might imagine a regime in which the judge cabins the jury's ability to disregard generalizable scientific premises that have been litigated by the parties or considered by a "neutral" body of experts and resolved in favor of one party or another. John Monahan and Laurens Walker have suggested treating generalizable science as "'authority' – that is, as precedent is treated in a common law system – when an efficient process will be enabled to produce a just result."<sup>250</sup> While such a regime might work in the civil justice system,<sup>251</sup> its fair application to criminal trials seems questionable, given the grossly disproportionate resources of the state in terms of access to experts and other aspects of litigating *Frye*<sup>252</sup> and *Daubert* hearings.

To the extent we are willing to label scientific evidence of innocence as legally conclusive, or jurors who discredit such evidence as "irrational" as a matter of law, the question might fairly be asked whether judges should take measures to discourage acquittals in the face of apparently definitive – or in

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<sup>249</sup> See LARRY LAUDAN, TRUTH, ERROR, AND CRIMINAL LAW: AN ESSAY IN LEGAL EPISTEMOLOGY 82 (2006).

<sup>250</sup> See Laurens Walker & John Monahan, *Scientific Authority: The Breast Implant Litigation and Beyond*, 86 VA. L. REV. 801, 821 (2000).

<sup>251</sup> Even so, questions would arise about the fairness of the process leading to the precedent, such as whether experts can be truly "neutral." See generally Jennifer Mnookin, *Expert Evidence, Partisanship, and Epistemic Competence*, 73 BROOK. L. REV. 1009, 1010 (2008) (describing the longstanding view that "[e]xpert witnesses in court are often not deserving of our confidence").

<sup>252</sup> See *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) (holding that a scientific principle "from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs").



Justice Alito's words, "virtual[ly] certain[]"<sup>253</sup> – evidence of guilt? It is true that a DNA exclusion is different from a DNA "inclusion" or "match" in that the former purports to be a definitive<sup>254</sup> rather than probabilistic assertion. At best, a "match" is just a statement that the defendant's profile is consistent with the evidence profile, with a corresponding "random match probability" (RMP) giving the chance that a random person would match the profile by coincidence.<sup>255</sup> But if the profile is rare enough, for example, if the RMP is one in a sextillion, the state has a strong argument that the "match" is an assertion of certainty for all intents and purposes.<sup>256</sup>

In any event, current constitutional doctrine forbids a directed verdict of guilt, however apparently definitive the evidence of guilt, on the theory that it would violate a defendant's Sixth Amendment right to trial by a jury.<sup>257</sup> The

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<sup>253</sup> Dist. Attorney's Office for the Third Judicial Dist. v. Osborne, 557 U.S. 52, 80 (2009) (Alito, J., concurring).

<sup>254</sup> By "definitive" I do not mean error free; rather, I mean that it purports to be a statement that the defendant is definitively excluded as a potential source of the evidence, even if that statement itself has a nonzero error rate associated with it. If the defendant's profile and the evidence sample do not match at even one of the twenty-six alleles (two at each loci), then the defendant is absolutely excluded as a contributor to the sample. See Erin Murphy, *The Art in the Science of DNA: A Layperson's Guide to the Subjectivity Inherent in Forensic DNA Typing*, 58 EMORY L.J. 489, 507 (2008) (explaining that if a suspect has even one allele missing from the evidence sample, the result is an exclusion).

<sup>255</sup> A DNA profile consists not of a person's entire genome, but of genetic markers at only thirteen locations along the genome. See *id.* An analyst declares a DNA profile "match" so long as the alleles at each of the thirteen loci are consistent with each other. See *id.* at 496. The analyst then estimates the rarity of that profile based on the frequency of each allele in sample subpopulations. See, e.g., Andrea Roth, *Safety in Numbers? Deciding When DNA Alone Is Enough to Convict*, 85 N.Y.U. L. REV. 1130, 1136 (2010). The result is a reported "random match probability" (RMP), or the probability that a random person from the population will match the given profile. See *id.* When DNA is offered as evidence of guilt, the State typically introduces the match and the RMP, and makes the argument that the match is compelling evidence of guilt because of the profile's rarity in the population. See *id.* at 1138. The State cannot declare definitively that, based on the test, the match profiles must have come from the same source.

<sup>256</sup> The RMP is different from the "source probability," the chance that the defendant is the source of the evidence profile. See Roth, *supra* note 255, at 1151. But when the RMP is several orders of magnitude larger than the population of the Earth, the numbers at some point become, in essence, a statement of certainty. See *id.* at 1158.

<sup>257</sup> See, e.g., United States v. Martin Linen Supply Co., 430 U.S. 564, 572-73 (1977). This has not always been the case: a federal judge directed a verdict of guilt in Susan B. Anthony's trial for unauthorized voting in New York, before women were granted the right to vote. See United States v. Anthony, 24 F. Cas. 829, 833 (C.C.N.D.N.Y. 1873) (No. 14,459) ("Every fact in the case was undisputed. There was no inference to be drawn or point made on the facts, that could, by possibility, alter the result. It was, therefore, not only the right, but it seems to me, upon the authorities, the plain duty of the judge to direct a verdict of guilty."). A directed verdict would also interfere with the jury's nullification

*Chaplin*-era proposals for amending the constitution to allow directed verdicts of guilt surely have little chance of being taken seriously in public discourse. Imagine, though, a statutory rape case in which a DNA test establishes with 99.9% accuracy that the defendant is the father of the complainant's child, and consent is not a defense. While a directed verdict is off limits, should it be permissible to instruct the jury that the law creates a conclusive presumption that the defendant is the father of the child, so long as experts agree that the test is at least 99.9% accurate?<sup>258</sup> This is precisely what many jurisdictions do in the civil context.<sup>259</sup> The jury must still go on to decide factual guilt in such a case,<sup>260</sup> and certainly has the power to acquit regardless of the evidence, but the fact conclusively established is likely dispositive of factual guilt in the minds of the jurors.

But such a result is neither a logical extension from removing cases like *Rivera* from the jury's consideration, nor a desirable rule of law. Our system allocates the risk of error in criminal cases disproportionately on the prosecution rather than defense, and (at least in theory) jealously guards the ability of the jury to render a verdict unhindered by judicial attempts to peer into its decisionmaking process. Thus, "special interrogatories," or questions to jurors about their findings on particular factual issues in the case, are disfavored as intrusions on the right to have the jury render a "general verdict" on guilt.<sup>261</sup> The concern is that such measures "may propel a jury toward a logical conclusion of guilt, whereas a more generalized assessment might have

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power, to which the defendant is not legally entitled, but which has been recognized as part of the jury's historic and legitimate role as a check on state power.

<sup>258</sup> A rich "trial-by-mathematics" literature exists critiquing prosecutions based solely on statistical evidence. I have argued in the DNA context that astronomically high source probabilities, as are common in "pure cold hit" DNA cases, are not necessarily viewed by the jury as probabilistic and could therefore inspire moral certainty. *See* Roth, *supra* note 255, at 1159.

<sup>259</sup> *See, e.g.*, ALA. CODE § 26-17-505(a)(1) (2009) (creating rebuttable presumption with test result indicating 99% probability of paternity); IND. CODE § 31-14-7-1(3) (2004) (setting presumption of paternity at 99% probability); LA. REV. STAT. ANN. § 40:34(E)(5) (2012) (setting conclusive presumption at 99.9% probability for purposes of child support); MICH. COMP. LAWS § 712.11(3) (2007) (setting presumption of paternity at 99% probability); 23 PA. CONS. STAT. ANN. § 4343(c)(2) (2010) (setting rebuttable presumption at 99% probability); TENN. CODE ANN. § 24-7-112(b)(2)(C) (2000) (setting rebuttable presumption at 99% probability); UTAH CODE ANN. §§ 78B-15-505(1)(a), (2) (2012) (creating presumption with test results indicating 99% probability of paternity, rebuttable only by contradictory genetic test); WYO. STAT. ANN. § 14-2-705(a)(i) (2011) (setting rebuttable presumption at 99% probability).

<sup>260</sup> Theoretical defenses, such as that the complainant stole the defendant's sperm and impregnated herself without his knowledge, would be possible but are unlikely to be persuasive.

<sup>261</sup> *See, e.g.*, *United States v. Ruggiero*, 726 F.2d 913, 927 (2d Cir. 1984) (Newman, J., concurring in part and dissenting in part) (indicating that in the criminal context special interrogatories for jurors are generally disfavored and used only in limited circumstances).

yielded an acquittal.”<sup>262</sup> An instruction declaring scientific evidence conclusive of a dispositive fact, in a way that essentially signals to the jury that the law has conclusively declared the defendant factually guilty, would presumably have the same effect.

Such an approach might also raise systemic-legitimacy problems. While the public may be fine with acquittal-by-machine, there is reason to believe that it still bristles at the thought of being adjudged *guilty* by machines, however accurate they may be. Indeed, it is precisely the hyper-accuracy of machines that might trigger fear. One need look no further than the public outcry over red-light cameras for anecdotal evidence. Moreover, instructing the jury in such a heavy-handed way would make publicly clear that if the case results in acquittal, the jury has surely engaged in nullification rather than finding that the State did not meet its burden of proving factual guilt. With the risk of such public exposure, a jury might be less likely to nullify.<sup>263</sup> While juries have no right to be told of their de facto nullification power, courts have acknowledged nullification’s historical pedigree and critical role as a check on abuse of state power.<sup>264</sup>

#### B. *A Way Forward*

While there may be numerous workable formulations for giving meaning to *Jackson* after abandoning the blind deference rule, I describe in this Section the attributes of any workable standard. I further argue that the best means of protecting against wrongful convictions based on questionable testimonial evidence, while avoiding judicial usurpation of the jury’s role as community voice, is to adopt more robust corroboration requirements through the legislative or common-law process while deferring more to jurors on issues of evaluative fact.

##### 1. Operationalize *Jackson* Using an Objective Comparative, Rather than a Subjective Probability-Threshold, Standard

For the reasons discussed above, a subjective, probability-threshold standard is a poor fit for determining legal sufficiency in an age of scientific proof of

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<sup>262</sup> *Id.*

<sup>263</sup> See, e.g., Julie A. Seaman, *Black Boxes*, 58 EMORY L.J. 427, 433-34 (2008) (suggesting that admission of inculpatory fMRI results, if highly reliable, would render acts of jury nullification more obvious and therefore probably less frequent). Then again, if the evidence of factual guilt is so obviously definitive and dispositive, the jury may well feel exposed with or without an instruction.

<sup>264</sup> See, e.g., *Sparf v. United States*, 156 U.S. 51, 174, 176-77 (1895) (“The jury ha[s] the undoubted and uncontrollable power to determine for themselves the law as well as the fact by a general verdict of acquittal . . . . [W]e are of opinion that the learned judge erred in instructing the jury that they were bound to accept the law as stated in his instructions . . . .”); see also Seaman, *supra* note 263, at 440-41 & nn.41-42 (indicating that jury has the power to nullify, though not necessarily right to be instructed of such power).

innocence. Scholars have offered possibilities for moving past the focus on subjective state of mind. Michael Pardo and Ronald Allen have suggested the “inference to the best explanation” (IBE), which they argue would reflect jurors’ natural decisionmaking process.<sup>265</sup> The idea is to compare the relative plausibility of the state’s and defense’s competing hypotheses, rather than to focus on whether the state has proven some threshold probability of guilt.<sup>266</sup> And Edward Cheng has suggested using probability ratios, telling jurors to convict only if the probability of seeing the evidence given the hypothesis of guilt, divided by the probability of seeing the evidence given the alternative hypothesis of innocence, is greater than some agreed-upon value.<sup>267</sup>

Under such a comparative standard, *Rivera* would surely be an easily categorized case for judgment of acquittal (and perhaps would have resulted in a jury acquittal). Indeed, on appeal, the *Rivera* court used language similar to IBE to explain its reasoning. These formulations might also resolve the “acquittal-by-mathematics” and “Norfolk Four” problems discussed above. While a longer meta-analysis of these formulations is beyond the scope of this Article, I mention them to assure the reader that there are effective ways to turn the reasonable doubt standard into a working factual-proof requirement on sufficiency review, once we choose to abandon the deference doctrine.

In moving to an objective standard not focused on jurors’ “actual belief” in guilt, we might ask whether we have lost something by removing “actual belief” as a *necessary* – even if no longer sufficient – condition for conviction. The trial-by-mathematics literature, for example, suggests that many people have a strong intuition against prosecutions based on purely statistical evidence, even though such evidence might well offer a high objective likelihood of guilt, in part because a conviction based on statistical evidence leaves a quantified risk of error.<sup>268</sup> When a juror personally believes in guilt, he “acquires an emotional stake” in the verdict, concludes that the event “‘really,’ not just probably, happened, and . . . forgets about the residual uncertainty” rather than “remaining acutely conscious of the possibility of verdict error.”<sup>269</sup> By requiring that the jury be “fully convinced” of guilt, rather than allowing

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<sup>265</sup> Michael S. Pardo & Ronald J. Allen, *Juridical Proof and the Best Explanation*, 27 L. & PHIL. 223, 225 (2008).

<sup>266</sup> *Id.* at 223-24 (positing that although legal proof inherently involves inferential practices, the law of evidence – that is, standards of proof – uses probability).

<sup>267</sup> Edward Cheng, *Reconceptualizing the Burden of Proof*, 122 YALE L.J. 1254, 1259 (2013) (“[T]he preponderance standard is better characterized as a probability ratio, in which the probability of the plaintiff’s story of the case is compared with the defendant’s story of the case.”).

<sup>268</sup> See Roth, *supra* note 255, at 1162-64 (discussing the unease among some courts and scholars of removing the “actual belief” even in light of reliable mathematical evidence of culpability).

<sup>269</sup> Daniel Shavero, Commentary, *Statistical-Probability Evidence and the Appearance of Justice*, 103 HARV. L. REV. 530, 540 (1989).

the jury to “bet” on conviction given a high objective probability of guilt,<sup>270</sup> the system affirms its “commitment to the dignity of the individual as an end in himself.”<sup>271</sup>

Others have argued in response that a focus on the appearance of justice, rather than on verdict accuracy, is itself morally problematic.<sup>272</sup> If we are serious about refocusing the reasonable doubt standard on the objective likelihood of guilt, then perhaps we should rethink our commitment to jurors’ “ethical role” as interfering with the effectiveness of its factfinding role. The answer will depend on the balance we desire between the accuracy and acceptability of verdicts, and the extent of the public’s shift toward comfort with machine-like evidence. Either way, in James Whitman’s words, the lesson to be drawn from the history of the reasonable doubt standard is to remember that the jury’s decision is “‘a *moral* one,’ about the fate of a fellow human being.”<sup>273</sup>

## 2. Link the Level of Deference to the Jury’s True Expertise – Bringing Folk Wisdom and Community Values to Factfinding

To say that the jury has no special claim to *lie detecting* is not to say they have no unique role to play in *factfinding*. There is a reason that the judge on sufficiency review, regardless of the type of evidence involved, is not supposed to sit as the “13th juror.”<sup>274</sup> The jurors may not be particularly reliable at determining credibility from demeanor, but they still bring tools to the table that judges do not have – tools that the public values. “[T]he reputation of juries as fact-finders and exemplars of common sense has declined” yet “there remains strong support for the jury as a repository of folk wisdom and community spirit.”<sup>275</sup>

Instead of pretending that juries are good at assessing credibility, judges should reaffirm the jury’s unique advantages that *do* justify deference, regardless of whether the evidence is credibility based or circumstantial.

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<sup>270</sup> See Nesson, *supra* note 67, at 1371 (“In the circumstantial evidence case, even if the jury believed all of the evidence, it still could not generate a verdict that the public could understand as other than a bet.”).

<sup>271</sup> Laurence H. Tribe, *An Ounce of Detention: Preventive Justice in the World of John Mitchell*, 56 VA. L. REV. 371, 386 (1970).

<sup>272</sup> See, e.g., Jonathan J. Koehler & Daniel N. Shavero, *Veridical Verdicts: Increasing Verdict Accuracy Through the Use of Overtly Probabilistic Evidence and Methods*, 75 CORNELL L. REV. 247, 250 (1990) (suggesting that a factfinder motivated solely by verdict accuracy would embrace overtly probabilistic methodology).

<sup>273</sup> WHITMAN, *supra* note 20, at 212.

<sup>274</sup> See, e.g., *Hudson v. Louisiana*, 450 U.S. 40, 44 & n.5 (1981) (exemplifying the distinction between discretionary grant of new trial and grant of judgment of acquittal, as an acquittal is based on insufficiency as a matter of law but the former allows judge to sit as “13th juror”).

<sup>275</sup> Samuel Krislov & Paul Kramer, *20/20 Vision: The Future of the California Civil Courts*, 66 S. CAL. L. REV. 1915, 1949 (1993).

Justice Stevens noted in his dissent in *Scott v. Harris*, for example, that the lower court judges who saw the videotape as presenting a jury question on whether the plaintiff was driving recklessly were “surely more familiar with the hazards of driving on Georgia roads than we are.”<sup>276</sup> Studies by Dan Kahan in which mock jurors were exposed to the *Scott* videotape found that jurors’ conclusions varied as a function of race, among other factors.<sup>277</sup> Kahan found that jurors engaged in “motivated cognition” – that their ideologies affected what appeared to them to be simply objective factfinding about a car on a road.<sup>278</sup> Judges should recognize on sufficiency review that jurors might have a different view of apparently “definitive” evidence or the plausibility of a theory, especially where the “fact” to be determined is an *evaluative* one (such as whether a person is driving recklessly, or whether an alleged rape victim consented) rather than a *historical* one (such as whether the light was red or green, or the extent of an alleged rape victim’s physical injuries). Others have similarly proposed that judges based their level of deference on sufficiency review, with respect to circumstantial or documentary evidence, on whether the question involves “logic” or “intuition.”<sup>279</sup> Of course, the flip side is that one man’s “intuition” is another man’s irrational prejudice; a court need not deny a motion for judgment of acquittal where an inference of guilt on an evaluative fact would require acceptance of, say, clearly debunked racial or gender stereotypes.

While we revivify the jury’s role as community voice, even in cases that are purely circumstantial, we also might consider the effect of the timing of a sufficiency ruling on the jury’s ability to project this voice. Akhil Amar, Laura Appleman, and others have argued that the constitutional provision prescribing that criminal trials be decided by juries was intended not as a procedural right of the defendant, but as a community right to decide cases.<sup>280</sup> If this is true, or

<sup>276</sup> *Scott v. Harris*, 550 U.S. 372, 389 (2007) (Stevens, J., dissenting).

<sup>277</sup> See Dan M. Kahan et al., *Whose Eyes Are You Going to Believe? Scott v. Harris and the Perils of Cognitive Illiberalism*, 122 HARV. L. REV. 837, 879-80 (2009) (finding that mock jurors came to different conclusions based on individual cultural styles, including ideology, race, socioeconomic status, and education, among other factors).

<sup>278</sup> *Id.* at 842-43.

<sup>279</sup> See Findley, *supra* note 51, at 621, 633 (arguing that witness demeanor can be misleading, that appellate judges should not defer to jurors on circumstantial or documentary evidence that turns on logic rather than “intuition,” and that they should incorporate into their sufficiency reviews data from DNA exonerations on unreliability of certain types of evidence).

<sup>280</sup> See, e.g., AKHIL REED AMAR, *THE BILL OF RIGHTS: CREATION AND RECONSTRUCTION* 103-05 (1998); Laura I. Appleman, *The Lost Meaning of the Jury Trial Right*, 84 IND. L.J. 397, 398 (2009) (describing the right to a jury trial as “strictly a collective right”); see also U.S. CONST. art. III, § 2 (“The trial of all Crimes, except in Cases of Impeachment, shall be by Jury . . . [.]”); cf. *Singer v. United States*, 380 U.S. 24, 36-37 (1965) (holding Federal Rule of Criminal Procedure 23(a), requiring government and court approval before a defendant can waive a jury trial in favor of trial by judge, is constitutional).

even if it is simply true that the Framers were concerned with the community's ability to project behavioral norms through verdicts, there may be reason to decide sufficiency at the postverdict, rather than preverdict, stage. Of course, removing a case from a jury on sufficiency grounds avoids the potential public contradiction between judge and jury in the form of a JNOV, and the defendant the indignity of the remainder of a criminal trial upon flimsy charges. But in most cases where the evidence is legally insufficient the jury will presumably acquit, and removing a case before verdict surely negates the signaling power of a jury acquittal.

3. Impose Corroboration Requirements for Categories of Evidence  
Exposed by Science as Unreliable in the General Run of Cases

At least one scholar has argued that judges should adapt sufficiency law to the DNA age by incorporating into their sufficiency reviews data from DNA exonerations on unreliability of certain types of evidence.<sup>281</sup> This proposal, a welcome step up from the status quo, might end in the battle of statistics described in Part IV.A, *supra*, especially under a probability-threshold approach. Even under a comparative approach, the fear might be that the same type of questionable evidence – for example, uncorroborated confessions – will be sufficient in one courtroom but not another, depending on each judge's determination of the applicable error rate and view of how much risk of “error” is acceptable.

A more democratic, accountable, and even-handed approach would be to impose more stringent corroboration or admission requirements for evidence deemed particularly problematic in light of DNA exonerations.<sup>282</sup> Under current law, nearly all states' confession-corroboration rules require no more than independent proof that a crime occurred, and not independent proof that the defendant is the perpetrator of that crime.<sup>283</sup> As explained in Part I, *supra*, the rule stems from the infamous “homicide victim turns up alive” cases, and requiring proof of a homicide victim avoids such embarrassing failures of justice. But arguably DNA exonerations are the modern analog to the “turns up

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<sup>281</sup> See Findley, *supra* note 51, at 636-37 (“[C]ourts should not be prohibited from reweighing the evidence underlying a guilty verdict, at least when the evidence is in substantial part made up of the kinds of facts over which juries do not enjoy an institutional advantage.”).

<sup>282</sup> At least one scholar has suggested some type of heightened sufficiency review for cases involving the types of inculpatory evidence – including, notably, confessions – that the jury wrongly credited in the DNA exoneration cases. See *id.* at 633 (calling for heightened sufficiency review in cases involving confessions and eyewitnesses).

<sup>283</sup> But see IOWA R. COURT 2.21(4) (“The confession of the defendant, unless made in open court, will not warrant a conviction, unless accompanied with other proof that the defendant committed the offense.”); *People v. Rivera*, 962 N.E.2d 53, 67 (Ill. App. Ct. 2011) (“Because defendant’s confession was the only remaining evidence connecting him to the victim’s sexual assault and murder, the State was required to present evidence *aliunde* the confession to prove offense.”).

alive” phenomenon: years later, there is definitive evidence from the physical realm that the defendant was not the one who committed the crime. Of course, the fact that over forty DNA exonerations involved false confessions<sup>284</sup> does not mean that a confession in a given case, even if uncorroborated, is likely to be false. Regardless, it is difficult to see the value in keeping the *corpus delicti* rule for purely historical reasons and applying it arbitrarily to require independent proof only of criminal agency rather than identity.<sup>285</sup> The harder question might be whether to extend it to numerous other types of evidence, such as eyewitness identifications, not historically targeted as problematic.<sup>286</sup>

#### CONCLUSION

The American criminal jury is in decline. The ever-increasing complexity of proof, the statutory redefinition of crimes away from their common law roots, and draconian sentencing regimes that strongly encourage guilty pleas have all converged to render jury trials “rare events” in today’s courtrooms.<sup>287</sup> Against this backdrop, upholding a guilty verdict in a case like *Chaplin* or *Rivera* in the name of jury empowerment provides a sort of false consciousness at best. The answer to the jury’s woes cannot be for courts to blind themselves to the “scientization of proof” or to cling to fictions about the jury’s unique ability to assess credibility. Rather, the answer must be to accept the power and limits of DNA and other technologies, to restore jury power by returning to looser common law definitions of crimes and less coercive sentencing laws,<sup>288</sup> and to defer to the jury in what it *does* do best: bringing a community voice to factfinding and serving as a check on state power.

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<sup>284</sup> See Garrett, *supra* note 75, at 90 (“Nine out of 141 rape cases involved false confessions (6%), whereas in eighteen out of forty-four rape-murder cases (41%) there was a false confession. Three of twelve murder cases included false confessions (25%).”).

<sup>285</sup> See, e.g., LEO, *supra* note 180, at 284-86 (discussing irrationality of current limits on *corpus delicti* rule and advocating a “trustworthiness standard” requiring evidence independent of confession showing its reliability).

<sup>286</sup> Compare Sandra Guerra Thompson, *Beyond a Reasonable Doubt? Reconsidering Uncorroborated Eyewitness Identification Testimony*, 41 U.C. DAVIS L. REV. 1487, 1487 (2008) (“[This article] proposes the implementation of a rule requiring corroborating evidence in cases involving eyewitness identification.”), with David Crump, *Eyewitness Corroboration Requirements as Protections Against Wrongful Convictions: The Hidden Questions*, 7 OHIO ST. J. CRIM. L. 361, 361-63 (2009) (examining costs to Guerra Thompson’s proposed eyewitness corroboration rule).

<sup>287</sup> STUNTZ, *supra* note 78, at 7. See generally WHITMAN, *supra* note 20 (indicating that these trends have contributed to decline of jury trials).

<sup>288</sup> See STUNTZ, *supra* note 78, at 295, 303 (discussing reforms to decrease the severity of criminal sentences and calling for a return to more vaguely defined common law crimes).