
SELF-INCRIMINATION DOCTRINE IS DEAD; LONG
LIVE SELF-INCRIMINATION DOCTRINE:
CONFESSIONS, SCIENTIFIC EVIDENCE, AND THE
ANXIETIES OF THE LIBERAL STATE

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ABSTRACT

Confessions have historically been the most compelling evidence the state could offer at a criminal trial. However, improvements in forensic technologies have led to increased use of scientific evidence, such as DNA typing, videotapes, pattern-recognition software, location tracking devices, and the like, with very impressive rates of reliability. The reliability of these methods has become so impressive, in fact, that it far outstrips confessions. This should lead to a reduced reliance on confessions (and other nonscientific evidence, such as eyewitness identifications) over time. However, this does not mean that the doctrine of self-incrimination, which regulates the acquisition and use of confessions, will no longer be relevant. The same anxieties that animated the need for a doctrine limiting and regulating confessions, should now dictate and define the development of a rich—and complicated—doctrine for limiting and regulating the very evidence that replaces them: scientific evidence. This process (of first, the replacement of confessions with scientific evidence, and second, the development of a doctrine for scientific evidence that aims to protect the same values which self-incrimination doctrine protects), while still in its infancy, has already begun.

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INTRODUCTION

The state has historically relied heavily—often exclusively—on confessions to get criminal convictions. This reliance helps explain the complexity (one might say contortions) of self-incrimination doctrine¹ as it has evolved in the courts: judges have had to navigate a very fine line between respecting the limits the privilege imposes on the state, and recognizing the critical value of the evidence that the privilege protects. But the importance of confessions as a class diminishes with every improvement in forensic evidence technology, because these improvements enable prosecutors to secure convictions without the need for offender cooperation at all. Indeed, when the forensic evidence is strong enough, any confession from the lips of the accused is just a pale redundancy. The better our ability to clear cases by relying on scientific evidence alone, the less delicate is the balance between needing to both limit and enable self-incriminations.

I make two principal arguments in this essay. First, if the trend in improvements to scientific evidence continues to accelerate—and I argue it will—then prosecutions that rely heavily on confessions should become less and less common.² When the system no longer depends so much on confessions as proof of guilt, it also becomes less important to make sense of current self-incrimination doctrine (such as the very tricky problems of how to define and identify compulsion, “testimony,” waiver, and the scope of immunity). This development might be welcomed with some pleasure by lawyers, judges, and scholars, not to mention students, who have struggled with this slippery and vexing doctrine.

My second argument, however, is that any sense of relief would be premature, since the principles (and irresolvable confusion) that currently attach to the doctrine governing confessions will likely be grafted onto the scientific evidence that replaces it. That is, the political anxieties that both spawned, and have persistently animated, self-incrimination doctrine should live on.

¹ In this paper, I focus on the privilege not as it applies to witnesses at grand juries or before legislative committees, nor to third-party witnesses in criminal trials. Instead, I take on the most visible (and politically unpopular) forms of the privilege: an arrestee’s right to remain silent in the face of questioning by police investigators and the companion right to refuse to take the stand should the arrestee be brought to trial. Of course, the privilege against self-incrimination and the right not to be forced to confess were historically—and remain conceptually—two different things. But for my purposes, they both encompass the right of a person not to have to say, either to the police or in open court, whether or not she committed the crime of which she is accused.

² I have elsewhere predicted the demise of what I call “the confession era” in criminal procedure. Kenworthy Bilz, *The Fall of the Confession Era*, 96 J. CRIM. L. & CRIMINOLOGY 367 (2005). This article defends that prediction in more detail and considers its implications.

What are these anxieties? The doctrine of self-incrimination reflects uneasiness with the balance of power between individuals and the state. To make out a criminal case, the state must be able to acquire and present relevant evidence—and, historically, one of the most efficient sources of such evidence has been the accused himself. Individuals, though, are entitled to a healthy measure of autonomy and privacy, even where the exercise of these rights interferes with the state's ability to control crime and maintain order. There is no obvious place to strike the balance between the competing interests in order and liberty—a problem that rears its head not just with confessions, but throughout the American criminal justice system. At the same time that we need to allow coercive force by the state, we have a desire to respect the rights of individual citizens to go about their business in relative privacy, unburdened by obligations to the collective. This tension is as old as theories of the social contract.

Anxieties about the proper liberty-order balance undergird questions of whether and when to admit confessions at a criminal trial. Yet, the doctrine of self-incrimination, rife with complexity and confusion, has proven unable to dispel them. Still, while the doctrine has functioned poorly as a guide to judges in determining whether and how much of a confession to admit in any given case, it has been highly effective in forcing legal actors to carefully consider the competing interests at stake. In this sense, it functions as a speed bump, by forcing judges, juries, police and law makers to take the liberty-order problem seriously. The very act of acknowledging (and hand-wringing over) the trade-off inherent in using or rejecting confessions serves a valuable, expressive function in and of itself. Indeed, the doctrine has been able to perform this expressive function not despite, but because of, its complexity and confusion. Since, in a liberal democracy, the liberty-order balance problem is intractable, so too will be any doctrine whose business it is to grapple with it.

The ongoing, never-ending, expressive importance of trying to strike that balance in the criminal justice system means that we will always need a venue for our efforts. As one current, important habitat for those expressions—confessions—shrinks, our expressions will simply migrate to the very territory that is displacing it—scientific evidence. Moreover, given that self-incrimination doctrine performs its expressive function not despite, but because of its complexity and confusion, we should expect increasing complexity and confusion in the doctrines surrounding scientific evidence. Call it, perhaps, the law of conservation of liberal political anxieties.

I will make my case in two parts. In Part I, I argue that the use of confessions (and related “traditional” evidence) has been—and should be—inversely correlated with the use of scientific evidence over time.

This is because sophisticated forensic technologies are rapidly becoming cheaper and more reliable, while the reverse is true for traditional evidence (especially by comparison). In Part II, I argue that the demise of confessions themselves will not eliminate the anxieties that have animated the doctrine of confessions. Instead, these anxieties will simply shift onto the doctrines for the admissibility of scientific evidence. Fortunately—or perhaps simply unsurprisingly—the norms and conventions that have guided self-incrimination doctrine are not alien to those that guide the admissibility of scientific evidence. The fit is not perfect, however, so I conclude by speculating about how well scientific evidence doctrines will be able to bear the weight of our concerns about self-incrimination.

Let me be clear at the outset that I predict no decrease in the use of guilty pleas. If anything, improved forensics should *increase* guilty pleas by increasing the overall accuracy of criminal evidence. As the Priest-Klein model famously argues, since uncertainty makes it harder for parties to know how much they should seek in a settlement negotiation, more certainty in criminal cases should result in more plea bargains—and fewer wrongheaded prosecutions.³

I. THE DECLINE OF CONFESSIONS AND THE RISE OF SCIENTIFIC EVIDENCE

In this paper, I have separated the accused's right not to speak (or more forthrightly, not to confess) in her own criminal case, from the right of third party witnesses to do the same in any sort of hearing. I will speak only about the former. But I join confessions for purposes of this discussion to one other form of evidence: eyewitness identifications. I lump them together for two reasons. First, both confessions and eyewitness identifications, historically⁴ and currently,⁵ have been extremely important to the successful prosecution of cases. Simply put, there often has been no other inculpatory evidence in a criminal case. Moreover, since such evidence is typically sufficient—both in the lay and legal understandings of the term—to secure a conviction, there usually hasn't been a pressing need for investigators to seek anything else. Indeed, to do so would often be a pointless waste of

³ George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984).

⁴ See, e.g., Eben Moglen, *Taking the Fifth: Reconsidering the Origins of the Constitutional Privilege Against Self-Incrimination*, 92 MICH. L. REV. 1086 (1994).

⁵ This is in no small part because, historically, jurors have been highly persuaded by both forms of evidence—an issue I take up in detail later. Kevin Jon Heller, *The Cognitive Psychology of Circumstantial Evidence*, 105 MICH. L. REV. 241, 248-51 (2006).

scarce investigatory resources, as historically this kind of evidence has been much cheaper to acquire than more elaborate, and less convincing, circumstantial evidence. The second unifying quality of both confessions and eyewitness identifications is the level of skepticism from social scientists, and increasingly, the popular press, about their reliability. That is, confessions are gaining a reputation (fully deserved or not) of often being coerced, and therefore not necessarily true.⁶ Eyewitness accounts are earning even more notoriety for inaccuracy than are confessions.⁷

In short, because these two kinds of evidence—which for want of a better term I am calling “traditional” evidence—have historically been convincing to juries, and because gathering them has been relatively cheap and easy compared to other forms of evidence, police and prosecutors have relied on them heavily. However, if any of these underpinning features were to degrade, it would make sense for police and prosecutors to stop relying on them as much. In this section, I argue that these underpinnings are indeed crumbling, and that the result has been reduced dependence on traditional evidence in favor of increasingly reliable, cheap and available scientific evidence.

I do believe actual practices in policing and prosecution are changing, and I provide evidence for this. But I also *endorse* these changes. To the extent they are not happening, or not happening fast enough, one of my tangential aims in this piece is to urge it along. At best, however, the transition is in its infancy. No doubt, police and prosecutors still rely very heavily on confessions and eyewitness evidence, even though the problems with them are becoming ever more apparent, and even when scientific evidence substitutes would be just as cheap and effective (or even more so). Continued heavy use of traditional evidence will remain until actors in the system (police, prosecutors, judges, and juries) get used to the most novel forensic evidence. Until then, we face a period of redundant proofs; that is, where both traditional and scientific evidence are both offered to demonstrate the same fact.

Jennifer Mnookin described exactly this pattern for another innovation in evidence that occurred in the late 19th century:

⁶ Steve Mills & Maurice Possley, *Will Taping Interrogations Fix the System?: Law Requires Police to Also Record Questioning, and Some Hope It Prevents False Confessions*, CHI. TRIB., June 21, 2005, at 1 (quoting Steven Drizin of the Center on Wrongful Convictions at Northwestern University, who stated that coercive techniques are “often used in interrogations”).

⁷ Press Release, Dean Cage, Innocent Project, Wrongfully Convicted Based on Eyewitness ID Practices that Are Still in Place Today, Is Exonerated in Chicago with DNA (May 28, 2003), available at <http://www.innocenceproject.org/Content/1377.php> (“Eyewitness misidentification, which was a factor in more than 75% of all wrongful convictions overturned by DNA testing nationwide, is among the most critical issues for the commission to address”)

photographs.⁸ Skepticism towards their reliability resulted in photographs only being admitted in conjunction with a witness's live verbal descriptions. Thus, for a brief time, courts experienced the bizarre (or at least inefficient) phenomenon of photographs and witnesses both being admitted to describe the same scene.⁹ Photographs did the job more accurately and cheaply, of course, and so, soon enough, the courts dispensed with duplicative human testimony, and allowed photographs to be admitted as substantive evidence on their own.¹⁰

A modern analogue to photographs in their infancy, which so far is following a similar path, is computer-generated crime simulations. In these, software is used to reconstruct an event to show how it might have happened, shedding light on whether a shot was fired in self defense, a body was moved, and the like.¹¹ Especially in the earliest days of the technology, courts often excluded such evidence, worrying that juries would accept it uncritically.¹² Soon enough, just as it happened with photographs, the courts began distinguishing between admitting simulations as “demonstrative” (a mere descriptive supplement to a witness's testimony) versus “substantive” (which can be considered by itself, much like a photograph can be today) evidence. Today, simulations are often admitted as the former—requiring a limiting instruction and a witness to formally describe to the jury what they are seeing on the screen in front of them—but far less often as the latter.¹³ The distinction is usually justified in terms of the “demonstrative” flavor of computer reconstructions being a mere “animation” or recreation, where the “substantive” kind makes calculations, predictions, or otherwise adds to the knowledge of what might have actually happened.¹⁴ This is a false dichotomy. In both types of evidence, someone must input some fixed or known values (such as the position of a body, how many shots were fired, or where

⁸ Jennifer L. Mnookin, *The Image of Truth: Photographic Evidence and the Power of Analogy*, 10 *YALE J.L. & HUMAN.* 1, 43-45 (1998).

⁹ *Id.* at 50.

¹⁰ *Id.* at 47-48.

¹¹ For an overview, see *Commonwealth v. Serge*, 58 Pa. D. & C.4th 52 (Pa. Com. Pl. 2001).

¹² See, e.g., *Clark v. Cantrell*, 339 S.C. 369, 384 (S.C. 2000) (arguing that the technology has the “potential to create lasting impressions that unduly override other testimony or evidence”); *Kane v. Triborough Bridge and Tunnel Authority*, 8 A.D.3d 239, 242 (N.Y. App. Div. 2004) (excluding on the grounds that, inter alia, juries might “confuse art with reality”); *Racz v. R.T. Merryman*, No. Civ. A. 92-3404, 1994 WL 124857, at *3 (E.D. Pa. Apr. 4, 1994) (“Relying upon the old adage, ‘seeing is believing,’ we conclude that the jury may give undue weight to an animated reconstruction of the accident.”).

¹³ See David M. Louie, Carlos Rincon, Victor R. Anderson III, & Paul Kayfetz, *Use and Admissibility of High Definition Video Visibility Studies, Computer Animations and Computer Simulations*, FDCC Q., Fall 2007, at 5-7, available at http://findarticles.com/p/articles/mi_qa4023/is_200710/ai_n21278794/pg_1?tag=artBody:col1.

¹⁴ For a detailed discussion of the difference, see *Serge*, 58 Pa. D. & C.4th at 62-73.

the blood was splattered), and the computer software will then fill in any gaps to generate a plausible simulation. Any difference is one of degree; that is, how many features are known, versus how many predicted, and the complexity of the imputations. Thus, just as with photographs, as courts gain confidence in the reliability of the simulations—and in jurors’ ability to give these simulations their appropriate weight—I expect the distinction to disappear, and computer simulations to be admittedly overwhelmingly as substantive evidence.

Similarly, today, it is not unusual to have both DNA evidence and a defendant’s signed confession admitted in the same trial—but as with Mnookin’s story with photographs, it’s hard to imagine such redundancy persisting forever, for reasons I describe in detail below.

A. *Sophisticated Forensic Evidence Is Increasingly Reliable, Cheap and Available*

Given that DNA has won such a revered place in criminal investigations and popular imaginations, it is easy to forget how new it is. Identifiably “scientific” evidence and testimony more generally are, in the grand scheme of things, also remarkably recent. In the United States, they emerged possibly as late as the famous “Harvard Murder Trial” of 1850, which introduced, among other innovations, expert dental-identification testimony.¹⁵ A trickle of other forensic techniques followed in the decades after that case. Photography was first

¹⁵ This was the first noted use of scientific evidence in this country. If this trial had not actually happened, a novelist would have had to make it up. Dr. Parkman was seen in Professor Webster’s laboratory, demanding repayment of a considerable amount of money that the doctor had lent to the spendthrift professor. After the confrontation, Dr. Parkman immediately went missing. A body was soon found in Professor Webster’s laboratory furnace. Whose body was it? The State said it was Dr. Parkman. Professor Webster claimed it was the remains of a medical school cadaver. To prove its case, the prosecutor called various scientific experts, including Oliver Wendell Holmes, Sr., to identify the body and what appeared to be blood and acid stains found around the sink in Webster’s lab. The most damning witness was the victim’s dentist, who identified the corpse’s teeth as the victim’s, partly by comparing them to an impression he had previously made of the victim’s mouth when fitting him for dentures. The case also marked the first example of the Battle of the Experts, as the defense called its own dentist to testify that he could discern nothing unusual or identifiable about the recovered teeth.

The conclusion of the trial—presided over by a panel of Justices from the Massachusetts Supreme Judicial Court, at the head of which sat Justice Lemuel Shaw—was a guilty verdict and a death sentence. Members of Boston’s Brahmin society, of which both victim and murderer were members, sent tastefully engraved invitations to Professor Webster’s execution. The murderer was hanged in Leverett Square on August 30, 1850. Details from newspaper accounts of the case are available at Cornell Law School’s “Making of America” archive, <http://cdl.library.cornell.edu/cgi-bin/moa/pageviewer?root=%2Fmoa%2Fgala%2Fgala0016%2F&tif=00239.TIF&cite=&coll=moa&frames=1&view=50>. Simon Schama also wrote an engaging book on the case, *DEAD CERTAINTIES: UNWARRANTED SPECULATIONS* (1991).

introduced at a trial in the late 1850's.¹⁶ Forensic fingerprint analysis was first recognized in the scientific community in 1901,¹⁷ and it began to be accepted in U.S. criminal trials quickly thereafter.¹⁸ Also around the turn of the century, scientists learned to differentiate human from animal blood¹⁹ and to distinguish the four basic types of human blood (A, B, AB and O).²⁰ The first dedicated forensic laboratory in the United States opened in Los Angeles in 1923, followed by the first FBI lab in 1932.²¹

Still, this trickle did not become a stream until perhaps fifty years ago, with the advent of increasingly powerful computers.²² It was not until the early 1990s that, as David Faigman has put it, scientific forensic evidence “hit the tipping point,” and the stream became a flood.²³ Indeed, the Supreme Court did not even see the need to address the problem of scientific evidence until 1993, in the watershed *Daubert v. Merrell Dow Pharmaceuticals* case.²⁴

As little as a decade ago, one would have been hard pressed to defend the position that scientific evidence (such as fingerprint identification, analyses of handwriting, ballistics, blood spatter, hair, fiber, bootmarks, etc.) was unambiguously more reliable than traditional evidence. In no small part, this was because practitioners of these forensic sciences typically did not—and would not—offer an estimate

¹⁶ Mnookin, *supra* note 8, at 9.

¹⁷ Brian Caddy & Peter Cobb, *Forensic Science*, in P.C. WHITE, CRIME SCENE TO COURT: THE ESSENTIALS OF FORENSIC SCIENCE 1, 3 (2d ed. 2004).

¹⁸ Jennifer L. Mnookin, *Fingerprint Evidence in an Age of DNA Profiling*, 67 BROOK. L. REV. 13, 15 n.12 (2001) (citing SIMON A. COLE, SUSPECT IDENTITIES: A HISTORY OF FINGERPRINTING AND CRIMINAL IDENTIFICATION (2001)).

¹⁹ P.C. Gane, *The Serum or Precipitin Test for Blood: Its Forensic Aspect*, 24 S. AFRICAN L. J. 4, 4-5 (1907).

²⁰ NAT'L INST. OF JUSTICE, U.S. DEP'T OF JUSTICE, NCJ-183697, THE FUTURE OF FORENSIC DNA TESTING: PREDICTIONS OF THE RESEARCH AND DEVELOPMENT WORKING GROUP 13 (2000).

²¹ Caddy & Cobb, *supra* note 17, at 4.

²² *Id.* at 3-4.

²³ David L. Faigman, *The Tipping Point in the Law's Use of Science: The Epidemic of Scientific Sophistication that Began with DNA Profiling and Toxic Torts*, 67 BROOK. L. REV. 111, 112 (2001). Faigman did a “quick and dirty” analysis of the increasing trend of the use of what I earlier described as the “gold standard” of forensic evidence: DNA analysis. His proxy was the mere presence of the term “DNA” in all federal and state cases over time. He showed that in 1985-86, the term appeared ten times; the year after, 41 times; then 132 times. The pattern continued until the last year of his analysis (1999-2000), when it was mentioned 1320 times. *Id.* at 118 n.29. Faigman does not pretend that this analysis is precise, or even that it suggests the actual number of times DNA has been offered into evidence in U.S. courtrooms. It does, however, evocatively describe both the recency and dramatic acceleration of the use of DNA in the legal system.

²⁴ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993). Before this case—and in some states, still today—courts relied on a standard (such as it was) fashioned in a D.C. Circuit Court case, *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The standard simply told judges to admit scientific evidence if it had achieved “general acceptance” in the scientific community.

of possible error in their techniques.²⁵ No great surprise, then, that in an examination of a set of 86 wrongful convictions compiled by the Innocence Project at Cardozo Law School, flawed scientific testing played a part in 63%.²⁶ Contrast that number with 71% eyewitness errors, 44% police misconduct, and 17% false confessions.²⁷

But much has changed in the little time since that study, and there is a sharp divide between the scientific evidence of the past and the scientific evidence of the future.²⁸ The above error rates, after all, come courtesy of DNA profiling, which has become so reliable that it has become the gold standard against which we judge all other scientific evidence.²⁹ Naturally, this doesn't mean that DNA profiling itself is error free—and the vanishingly small values a jury often hears, which can be offered at the level of quadrillions-to-one against, are deeply misleading.³⁰ True enough, the errors of the technique—if perfectly executed using samples which are flawlessly gathered and handled—are usually, for all practical purposes, nonexistent (since a one-in-several-quadrillion chance of a false match effectively equals “zero”). But since

²⁵ Michael J. Saks & Jonathan J. Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 *SCIENCE* 892, 894 (2005). This problem persists, but it is slowly beginning to dissipate under pressure from critics. See Jonathan J. Koehler, *Fingerprint Error Rates and Proficiency Tests: What They Are and Why They Matter*, 59 *HASTINGS L.J.* 1077 (2008).

²⁶ Saks & Koehler, *supra* note 25, at 892 fig. 1.

²⁷ *Id.*; see also Maurice Possley, Steve Mills & Flynn McRoberts, *Scandal Touches Even Elite Labs*, *CHI. TRIB.*, Oct. 21, 2004, at 1.

²⁸ For others who see a sharp divide between these two types of forensic evidence, see Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 *CAL. L. REV.* 721 (2007); Saks & Koehler, *supra* note 25. Of course, some of the “old” evidence will likely withstand stronger scrutiny (such as fingerprint identification), while others will almost certainly not (e.g., handwriting and bite mark identifications).

²⁹ Saks & Koehler, *supra* note 25, at 893; see also Steven A. Drizin & Richard A. Leo, *The Problem of False Confessions in the Post-DNA World*, 82 *N.C. L. REV.* 891, 905-06 (2004).

³⁰ Jonathan J. Koehler, *On Conveying the Probative Value of DNA Evidence: Frequencies, Likelihood Ratios and Error Rates*, 67 *U. COLO. L. REV.* 859, 861-62 (1996). Studies that estimate how likely juries are to believe in DNA evidence given the various ways of presenting the odds of a random match are therefore off-point. See, e.g., Jonathan J. Koehler, *When Are People Persuaded by DNA Match Statistics?*, 25 *L. & HUM. BEHAV.* 493 (2001). A good defense attorney will not go after a hard target (namely, what are the odds of a random match?), but will instead go after the much softer target of drawing the jury's attention to the possibility of laboratory error or police mishandling or misconduct. The O.J. Simpson defense strategy is an excellent example of this approach. The determination of whether or not parties are entitled to present lab error rates in addition to or even instead of “random match probabilities” is currently one of the hotter controversies in forensic DNA scholarship. See, e.g., Jonathan J. Koehler, *Misconceptions About Statistics and Statistical Evidence*, in *HANDBOOK OF TRIAL CONSULTING: A PSYCHOLOGICAL PERSPECTIVE* (R.L. Wiener & B.H. Bornstein, eds., *forthcoming*) (see especially “Misconception #8: Error Rates: Nice to Have but not Essential”); Dale A. Nance & Scott B. Morris, *Juror Understanding of DNA Evidence: An Empirical Assessment of Presentation Formats for Trace Evidence with a Relatively Small Random-Match Probability*, 34 *J. LEG. STUD.* 395 (2005); Jason Schklar & Shari Seidman Diamond, *Juror Reactions to DNA Evidence: Errors and Expectancies*, 23 *L. & HUM. BEHAV.* 159 (1999).

we can't guarantee perfect execution and handling, the error rate is governed instead by laboratory and other human error.³¹ Rogue labs aside,³² proficiency tests suggest a true false-positives error rate of closer to 1-2%.³³

In the two short decades since DNA profiling was first introduced in an American criminal trial,³⁴ its low (and, importantly, readily and openly quantified) error rate has made its use commonplace in murder and rape cases, where investigators can routinely recover crime-scene tissue samples.³⁵ But there have been barriers to more extensive use of DNA in the courtroom. Namely, using conventional techniques, DNA analysis has been fairly expensive and time consuming, and successful analysis has required a perpetrator to have left an uncontaminated, nontrivial amount of tissue at the crime scene. Those barriers, however, are falling fast.

First, consider the average cost of a DNA profile. The cost to extract and analyze a sample found at a crime scene depends on how easy it is to find the tissue, how much there is, what it is (for instance, fluid, bone or hair), and whether it has decayed. One large commercial laboratory (Orchid Cellmark) currently charges \$1095 to screen evidence (such as a piece of cloth) found at a scene and immediately analyze it using a DNA technique of average complexity.³⁶ Outsourcing on a piecemeal basis costs more than volume processing at an in-house laboratory; one state estimated its own fully-in-house

³¹ Jonathan J. Koehler, Audrey Chia & Samuel Lindsay, *The Random Match Probability (RMP) in DNA Evidence: Irrelevant and Prejudicial?*, 35 JURIMETRICS J. 201 (1995). As the article explains, laboratory and handling errors include mislabeling, contamination, interpretive mistakes, and the like. It *does not* include deliberate fraud by any party. The error rate for the technique itself is described by the "random match probability" or "RMP." RMPs are the odds that a tissue sample found at a crime scene would just happen to match the accused's own profile, even though the sample found did not, in fact, come from the accused's body. The RMP is the value that is, for DNA evidence, often stated as millions-, billions-, and even quadrillions-to-one—which for all intents and purposes, is zero.

³² See, for example, the problems revealed in Houston's state forensics laboratory, where technicians would sometimes report "inconclusive" results for whether a DNA sample matched a specific offender, when in fact the sample was exonerating. Roma Khanna & Steve McVicker, *Police Lab Tailored Tests to Theories, Report Says*, HOUSTON CHRON., May 12, 2006, available at <http://www.chron.com/dispatch/story.mpl/front/3858054.html>.

³³ Laurie Meyers, *The Problem with DNA*, MONITOR ON PSYCHOL., June 2007, at 52 (presenting estimates from Jonathan Koehler). This is much smaller than for old-school forensic techniques, whose error rates are a combination of both the inherent limitations of the technique and laboratory errors. Estimates for these techniques range from, at best, an average of 4-5% for latent fingerprint examinations to, at worst, around 65% for bite marks and spectrographic voice identification, and even up to 100% for handwriting analysis. Saks & Koehler, *supra* note 25, at 895.

³⁴ See *Andrews v. State*, 533 So. 2d 841 (Fla. Dist. Ct. App. 1988).

³⁵ Edwin Zedlewski & Mary B. Murphy, *DNA Analysis for "Minor" Crimes: A Major Benefit for Law Enforcement*, NIJ J., Jan. 2006, at 2.

³⁶ Orchid Cellmark forensic evidence price sheet as of October 2008; price for STR analysis of crime scene evidence (on file with author).

analyses cost an average of \$425 per criminal case in 2005.³⁷ However, the simplest analysis is startlingly cheap; testing a known suspect, whose DNA is collected deliberately for that purpose, such as via a cheek swab, costs as little as \$28 to collect, process, analyze and upload into the computer for comparison with the FBI's database of DNA profiles.³⁸

Second, these prices continue to fall. The in-house lab and cheek swab numbers above are from over 3 years ago—a very long time given the rapidity of advances in the science. In the UK, forensic DNA costs dropped by half between 2003/2004 and 2005/2006.³⁹ Why have prices fallen, and why will they continue to do so? Currently, labor comprises one of the largest components of cost, as humans must extract the DNA samples and interpret the results. However, robotics and improved computerization of pattern-analysis are displacing much of that labor. Robotic machines can now replace humans for the physical extraction and preparation of samples, and improved biometric software technology replaces the need for subjective human interpretation of the completed results in determining whether there is a match.⁴⁰

There is also multi-way competition among scientists and corporations to develop portable DNA analysis technology. Already in the UK, where DNA profiling was invented⁴¹ and which (as described in more detail below) far outstrips the US in the sophistication of its forensic technology, police departments use mobile laboratories in vans (“forensic response vehicles” or FRVs) to both collect and analyze much of the data at the crime scene itself. This allows police to process in 8 hours a DNA sample that would have otherwise taken two days.⁴² The push to portability is going even further; so far, researchers from

³⁷ OFFICE OF STATE BUDGET & MGMT., N.C. DEP'T OF JUSTICE, COST STUDY OF DNA TESTING AND ANALYSIS 1, 8 Chart 7 (2006). When the state does a partial in-house and partial out-sourced analysis, the prices go up (in North Carolina's case, to \$569). *Id.* These costs reflect labor, materials, and comparison to the CODIS database, but apparently do not reflect building-facility overhead. *Id.* at 7.

³⁸ *Id.* at 7-8, Tables 6, 8; David Austin, *Gifts Help Authorities Sift DNA*, OREGONIAN, May 12, 2005, at D1.

³⁹ UK HOME OFFICE, FORENSIC SCI. & PATHOLOGY UNIT, DNA EXPANSION PROGRAMME 2000-2005: REPORTING ACHIEVEMENT 24 (2006), available at <http://www.homeoffice.gov.uk/documents/DNAExpansion.pdf>.

⁴⁰ See Shaila K. Dewan, *As Police Extend Use of DNA, A Smudge Could Trap a Thief*, N.Y. TIMES, May 26, 2004 (describing New York's plans to introduce robotic technology that will be able to process 800 DNA samples a day); Raymond J. Prime & Jonathan Newman, *The Impact of DNA on Policing: Past, Present, and Future*, 74 POLICE CHIEF 30, 34 (November 2007); UK HOME OFFICE, *supra* note 39, at 24.

⁴¹ A.J. Jeffreys et al., *Individual-Specific "Fingerprints" of Human DNA*, 316 NATURE 76 (1985) (describing a method to create DNA fingerprints, which can be used for human identification).

⁴² Julie Mennell & Ian Shaw, *The Future of Forensic and Crime Scene Science Part I: A UK Forensic Science User and Provider Perspective*, 157 FORENSIC SCI. INT'L S7, S10 (Supp. 2006).

Stanford,⁴³ MIT,⁴⁴ NEC Corporation,⁴⁵ the University of Hull,⁴⁶ and others have made strides toward producing tiny, cheap “labs-on-a-chip” that could process results virtually instantaneously for just a few dollars per sample.⁴⁷

Logically, in addition to lowering costs, the ability to collect and analyze samples immediately, automatically, and without subjective interpretation should push errors even lower than the currently estimated 1-2% false positive rate for DNA, since that rate is virtually all a function of human error. Lower prices and greater ease also make double-testing more feasible, which also should reduce error. None of this would eliminate deliberate police or prosecutorial fraud, of course, but it should raise the costs of committing such fraud and make it easier to detect.

Better still, decreased costs and improved technology should facilitate the use of DNA for a wider array of crimes, beyond just the obvious candidates of murder and rape. Already, American police departments are slowly beginning to gather DNA for some property crimes⁴⁸—something investigators in the UK began doing extensively over fifteen years ago.⁴⁹ Improvements in technology are helping to ease this expansion. DNA analysis requires smaller and smaller amounts of tissue for effective profiling. Even a latent fingerprint (that is, a print left behind on an object such as a piece of paper, a cup, or a doorknob) will yield enough skin tissue for DNA processing.⁵⁰

⁴³ Kate Green, *Portable, Magnetic DNA Detector*, TECH. REV., Dec. 12, 2006, available at <http://www.technologyreview.com/Biotech/17886/> (reporting on Prof. Shan Wang’s work developing a portable DNA analysis chip).

⁴⁴ Press Release, Anne Trafton, MIT News Office, Portable “Lab on a Chip” Could Speed Blood Tests (Oct. 16, 2006) (describing a portable, battery-operated “lab on a chip” being developed by MIT’s Institute for Soldier Nanotechnologies, which would be used, among other things, for on-site DNA testing).

⁴⁵ See Press Release, NEC, NEC Develops World’s First Fully Integrated DNA Analyzer (Oct. 15, 2007), available at <http://www.nec.co.jp/press/en/0710/1501.html> (last visited Oct. 18, 2008).

⁴⁶ Eng’g & Physical Sci. Research Council, *Portable DNA Analyser Could Cut the Cost of Fighting Crime*, ERSRC WEBSITE, <http://www.epsrc.ac.uk/ResearchHighlights/FutureOfForensics/PortableDNAAnalyser.htm> (last modified on Aug. 21, 2007) (“The hand-held system is designed to eliminate the delays and expense involved in transporting DNA samples to a central analysis facility. It could reduce the time it takes to produce results from one or two days to less than an hour.”).

⁴⁷ See UK HOME OFFICE, *supra* note 39, at 23. These improvements are not limited to DNA. The UK has already improved fingerprint analysis to the point where they can instantly analyze fingerprints collected at the scene of a crime, giving them potential to immediately identify suspects. *Id.* at 20.

⁴⁸ Dewan, *supra* note 40; Prime & Newman, *supra* note 40, at 34.

⁴⁹ UK HOME OFFICE, *supra* note 39, at 3.

⁵⁰ M. Kinga Balogh, Joachim Burger, Klaus Bender, Peter M. Schneider, & Kurt W. Alt, *STR Genotyping and mtDNA Sequencing of Latent Fingerprint on Paper*, 137 FORENSIC SCI. INT’L 188, 193 (2003); see also Dewan, *supra* note 40 (“With the high-sensitivity lab, as it is called, forensic scientists will be able to get a profile from a mere 6 cells’ worth of genetic material,

Analysis can be performed on a wider array of tissue types, too. Hair and bone are now amenable to analysis, where they initially were not.⁵¹

The UK serves as a good case study for seeing where the US will be soon (and arguably, already should be) with forensic DNA technology. Due to its aggressive approach to DNA profiling, the UK has the world's most comprehensive DNA database, encompassing 5.2% of their entire population (contrasted with .5% in the US).⁵² Each year since 1999, the UK has been increasing the number of crime scenes at which it searches for samples, the number of samples they manage to find at them, and the number of found samples they actually analyze and compare to their ever-growing database.⁵³ This has enabled police to make impressive numbers of "cold hits"—that is, to identify a suspect from simply comparing the recovered tissue to the DNA database. Each month, these cold hits link suspects to 15 murders, 45 rapes, and 2500 "volume crimes" such as burglary and vehicle theft—crimes that otherwise are extremely difficult to solve.⁵⁴

Many "volume crime" scenes, of course, will not yield a DNA sample despite efforts to find one,⁵⁵ but even an occasional yield is worth the search. DNA samples can not only clear the case at hand, but can be matched to "cold cases" that have remained unsolved. Moreover, since criminal offenders tend to commit multiple crimes, a high clearance rate means more offenders will be incapacitated before committing more crimes, thus not only saving money, but averting victim anguish. As an example, one researcher estimated that each dollar spent on DNA analysis in sexual assault cases yielded \$35.30 savings in future crime averted.⁵⁶

Finally, because of the reliability of DNA evidence, a successful match can convince guilty suspects, who might otherwise decide to roll the dice on a full trial, to instead accept a plea bargain. This, too, reduces costs to the criminal justice system.

Of course, some will protest that even with these advances, not

instead of the approximately 150 cells needed for conventional DNA testing.").

⁵¹ Robert Aronson & Jacqueline McMurtrie, *The Use and Misuse of High-Tech Evidence by Prosecutors: Ethical and Evidentiary Issues*, 76 *FORDHAM L. REV.* 1453, 1471 & n.116 (2007) (citing information from the National Institute of Justice).

⁵² UK HOME OFFICE, *supra* note 39, at 4-5.

⁵³ *Id.* at 9.

⁵⁴ Mennell & Shaw, *supra* note 42, at S8. When police in the UK collect DNA samples from domestic burglaries, for example, their clearance rate goes from 15% to 45%; when collected from "vehicle takings" clearance rates go from 6% to 61%. *Id.* at S9 tbl.1.

⁵⁵ In the UK, prosecutors can tell juries that sincere efforts to find such samples are routinely made. Crime scenes were examined, for instance, in 85% of domestic burglaries and 40% of vehicle thefts. UK HOME OFFICE, *supra* note 39, at 9. Moreover, as already noted, technology is improving such that ever smaller tissue samples can be analyzed. *See supra* note 50 and accompanying text.

⁵⁶ Ray Wickenheiser, *The Business Case for Using Forensic DNA to Solve and Prevent Crime*, *J. BIOLAW & BUS.*, Summer 2004.

enough crime scenes will yield DNA samples for such evidence to seriously cut into the need for confessions and eyewitnesses. But the argument is not that DNA alone will transform investigation and prosecution: DNA profiling is but one of many new technologies with obvious application to criminal investigation that are grounded in far more rigorous science than their predecessors.⁵⁷ Many of these will allow for the clearance of cases where no DNA can be found. Moreover, continuing improvements in technology virtually guarantee lower prices, greater availability and better reliability over time for these alternative forensic technologies, as well.⁵⁸

One of the most pervasive forensic technologies, for instance, is simple video monitoring. Once, the biggest limit to videotaping was storage capacity for images; bulky, expensive, low-quality VHS tape cassettes were routinely reused rather than stored for longer than a few days or weeks.⁵⁹ Today, high quality images can be stored virtually indefinitely, for pennies, on hard drives that consume a tiny amount of space.⁶⁰ Indeed, because they do not have to be “transcribed” into a digital format (since they start that way), they are also far easier to work with and copy. The plummeting costs of videotaping explain its current ubiquity—in retail stores, at ATMs, in buildings, and even on the streets.⁶¹ (Look up as you exit your workplace today—chances are good you will see a camera pointed at the entrance to the building.)

Videotaping is another area where advances in biometrics, already mentioned above for DNA profile interpretation, is being exploited to improve its reliability and usefulness. Biometric software allows for a fully-computerized comparison of any sample (like an image of a face on a video, or a scanned fingerprint) to another specific sample or

⁵⁷ For a description of what this rigor entails, see generally Saks & Koehler, *supra* note 25.

⁵⁸ See generally RAY KURZWEIL, *THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY* (2005), in particular pp. 72-84.

⁵⁹ FRED H. CATE, *PRIVACY IN THE INFORMATION AGE 16* (1997) (discussing improvements in video storage technology).

⁶⁰ For example, using online retailers, one can purchase a 1-terabyte external hard drive, which can store a full month’s worth of nonstop video footage, for less than \$150. This hard drive is the size of a paperback novel. Moreover, electronic storage capacity increases exponentially over time (at least doubling every two years), with commensurate drops in price. KURZWEIL, *supra* note 58, at 56-77.

For an example of the levels of clarity of both the image and audio in current videotaping technology (as well as a suggestion of its ubiquity), see Mike Nizza, *\$40,000 for Man Tasered on YouTube* (Mar. 4, 2008, 01:21p.m. EST), <http://thelede.blogs.nytimes.com/2008/03/11/40000-for-man-tasered-on-youtube/index.html?hp>.

⁶¹ Christopher Slobogin, *Public Privacy: Camera Surveillance of Public Places and the Right to Anonymity*, 72 *MISS. L.J.* 213, 214 (2002) (reporting estimate that more than 2 million surveillance cameras are in use in the United States—a number that has surely gone up dramatically since). The Supreme Court even recently decided a civil case where the key piece of evidence was police video from a high speed car chase. *Scott v. Harris*, 127 S. Ct. 1769 (2007). To bolster its case, the majority even posted the video on the Court’s website for the world to review at <http://www.supremecourtus.gov/opinions/video/>.

database of known samples.⁶² The technology has become powerful enough to allow on-the-fly comparisons, which are useful in settings such as points-of-sale in retail,⁶³ airports,⁶⁴ and large gatherings such as sporting events.⁶⁵ Given its usefulness, biometric technology has of course entered American courtrooms.⁶⁶

“Location tracking” technologies allow police to recover stolen property quickly (and pin the crimes on those who stole them), but they also are tremendously useful for linking suspects to the scenes of all manner of crimes, and for debunking alibis. These technologies include cell phones; automatic toll paying devices; GPS units; and radio-frequency controlled cards, tags, and fobs which allow for keyless access to cars and buildings, instant payments, and similar conveniences. These technologies, too, are already quite commonplace, and are increasingly saturating our daily lives. As with biometrics, evidence cultivated from these technologies has been admitted into trials.⁶⁷

Improvements in “data mining,” coupled with the fact that communication and banking have become inextricably intertwined with computer networks, has also led to new forensic techniques. Indeed, the ability to track and find patterns in banking activity, telephone calls, and internet use (including computer searches) has led to a sea change in law enforcement for terrorism,⁶⁸ drug trafficking,⁶⁹ and other organized

⁶² Christopher S. Milligan, *Facial Recognition Technology, Video Surveillance, and Privacy*, 9 S. CAL. INTERDISC. L.J. 295, 304 (1999) (describing software programs capable of making instant comparisons of captured images to known databases).

⁶³ Joyce W. Luk, *Identifying Terrorists: Privacy Rights in the United States and United Kingdom*, 25 HASTINGS INT'L & COMP. L. REV. 223, 229 (2002).

⁶⁴ Note that this is already in effect in the preregistered fast-lanes to get past TSA security. *Id.* at 223, 227.

⁶⁵ *Id.* at 223. Currently, the technology is also being developed to keep track of prisoners in prisons, rather than having to rely on constant head counts and roll calls by guards. Christopher A. Miles & Jeffrey P. Cohn, *Tracking Prisoners in Jail with Biometrics: An Experiment in a Navy Brig*, NIJ J., Jan. 2006, at 6, available at <http://www.ojp.usdoj.gov/nij/journal/253/tracking.html>.

⁶⁶ See, e.g., *United States v. Mendoza-Morales*, No. 05-98-01-RE, 2007 WL 4388100 (D. Or. Dec. 12, 2007) (admitting biometric evidence over *Daubert* challenge); *U.S. v. Jalloh*, No. 04-306, 2006 U.S. Dist. LEXIS 89223 (W.D. Pa. Dec. 10, 2006) (admitting evidence of a fingerprint match acquired during a routine biometric scan at an airport).

⁶⁷ Kevin McLaughlin, Note, *The Fourth Amendment and Cell Phone Location Tracking: Where Are We?*, 29 HASTINGS COMM. & ENT. L.J. 421, 422 (2007) (noting that between 2005 and 2007, at least 15 published opinions from federal district courts had involved cell phone tracking data in criminal cases); see also *United States v. Garcia*, No. 06-4288, 2008 U.S. App. LEXIS 10544 (10th Cir. May 14, 2008) (GPS devices); *O'Reilly v. Consol. Edison Co. of N.Y.*, 374 F. Supp. 2d 278 (E.D.N.Y. 2005) (EZ Pass toll records); *Rogers v. State*, 663 S.E.2d 789 (Ga. Ct. App. 2008) (electronic key card).

⁶⁸ James X. Dempsey & Lara M. Flint, *The Future of Internet Surveillance Law: A Symposium to Discuss Internet Surveillance, Privacy & the USA Patriot Act: Surveillance, Records & Computers: Commercial Data and National Security*, 72 GEO. WASH. L. REV. 1459 (2004); Charles Weiss, *The Coming Technology of Knowledge Discovery: A Final Blow to Privacy Protection?*, 2004 U. ILL. J.L. TECH. & POL'Y 253, 255.

⁶⁹ Press Release, DEA, DEA Disables Major Pharmaceutical Internet Scheme: New “Virtual

crimes.⁷⁰ In a world of scarce resources, law enforcement agencies and departments have begun to realize that they can get far more bang for their buck by “following the money” to catch criminal wrongdoing at its inevitably computerized, networked source, rather than by focusing on low-level busts and fortuitous street-level searches.⁷¹ And again, evidence generated by data mining techniques is increasingly being used by law enforcement personnel to detect and investigate crimes,⁷² and is being admitted as evidence in courtrooms.⁷³

Finally,⁷⁴ and perhaps most controversially, brain scanning techniques such as functional magnetic resonance imaging (fMRI) have improved to such a degree that we can no longer ignore their potential forensic applications.⁷⁵ The market, in fact, has *not* ignored it—as with the race to produce a workable DNA “lab on a chip,” researchers are working to devise what are effectively fMRI “lie detectors.” Two companies, No Lie MRI⁷⁶ and Cephos Corporation,⁷⁷ are developing machines and techniques that they explicitly market as lie detectors. Cephos’ machines focus on standard polygraph questions: is this suspect lying? No Lie’s ambition is more maverick; they aim to enable investigators to detect whether someone has seen something in the past (such as a crime scene or a victim), by showing a suspect photographs and exploiting the fact that our brains process familiar scenes differently than unfamiliar ones.⁷⁸ The developer of No Lie calls it “brain fingerprinting,”⁷⁹ for fairly obvious strategic reasons—to the extent judges see these techniques as “lie detectors” they face both precedent and statutes forbidding their admission as evidence.⁸⁰ To the extent

Enforcement Initiative” Announced (Sept. 21, 2005), *available at* <http://www.dea.gov/pubs/pressrel/pr092105.html>.

⁷⁰ Press Release, DEA, DEA Dismantles Large International Drug and Money Laundering Organization (Dec. 8, 2005), *available at* <http://www.dea.gov/pubs/pressrel/pr120805.html>.

⁷¹ *Id.* (quoting DEA Administrator Karen P. Tandy, “[M]oney is the thread that unravels the drugs and devastation otherwise hidden by dealers. DEA knows where money leads, and we will be relentless in going after it.”).

⁷² Indeed, New York Governor Elliot Spitzer’s involvement as a client in a prostitution ring was discovered using this technology. A suspicious transaction in his bank accounts was electronically flagged, leading to a more extensive investigation. Don Van Natta, Jr. & Jo Becker, *Bank Reports, Then Wiretapping, Led to Unraveling of Ring and Its Client* 9, N.Y. TIMES, Mar. 13, 2008, at 20.

⁷³ *See, e.g.*, In re Baycol Prods. Liab. Litig., No. MDL-1431, 2003 U.S. Dist. LEXIS 26846 (D. Minn. Feb. 26, 2003) (admitting data-mined information in a products liability suit); United States v. Polizzi, 549 F. Supp. 2d 308, 326-27 (E.D.N.Y. 2008) (describing elaborate internet payment and website scheme for child pornography distribution).

⁷⁴ I could, of course, go on, and the list grows every day.

⁷⁵ Neal Faigenson, *Brain Imaging and Courtroom Evidence: On the Admissibility and Persuasiveness of fMRI*, 2 INT’L J. LAW IN CONTEXT 233 (2006).

⁷⁶ No Lie MRI Homepage, <http://www.noliemri.com/>.

⁷⁷ Cephos Corp Homepage, <http://www.cephoscorp.com/>.

⁷⁸ *Harrington v. State*, 659 N.W.2d 509, 516 n.6 (Iowa 2003).

⁷⁹ *Id.*

⁸⁰ *See, e.g.*, United States v. Scheffer, 523 U.S. 303 (1998), and cases cited therein. New

judges see them instead as improved versions of an already acceptable forensic science (fingerprinting), their path to admissibility is considerably eased.⁸¹

As an empirical matter, the main advantage of fMRI over older technology for lie detection is that it does not rely on human interpretation of results; this should increase reliability and minimize potential experimenter bias.⁸² Moreover, the many advances in fMRI technology are truly astounding, and although not all are immediately useful for forensic purposes⁸³ and all the usual caveats about a technology genuinely in its infancy apply, there is reason to be optimistic that it will be prove useful for criminal justice in the near future.

Both bad forensic evidence and traditional evidence have contributed painfully to the problems of wrongful convictions.⁸⁴ The difference is that forensic evidence is capable of improving as it begins to follow the paradigm of DNA evidence.⁸⁵ Moreover, the newest forensic technologies I described above started from a more rigorous scientific baseline than the forensic technologies of the past, and they will likely get better still.⁸⁶ Traditional evidence, by contrast, can only be improved so much—a subject to which I turn in the next section.

Mexico is the only jurisdiction that allows polygraph evidence without restriction. *See* N.M. CODE R. § 11-707 (2008). *See also infra* notes 264-76 and accompanying text.

⁸¹ *See Harrington*, 659 N.W. 2d. at 516 (describing without reviewing the District Court ruling that (after a *Daubert*-like hearing) would have allowed the defense to present results of a “brain fingerprinting” test as “newly discovered evidence” of defendant’s innocence). Fingerprinting science has received a “pass” from the courts for a hundred years, while lie detector tests have been resisted by courts since their inception. The irony here is that the science of lie detector tests is far more developed and rigorous than the science of fingerprinting. *Compare* COMM. TO REVIEW THE SCIENTIFIC EVIDENCE ON THE POLYGRAPH, NAT’L ACADEMY OF SCI. POLYGRAPH AND LIE DETECTION (2003), *with* Koehler, *supra* note 25. Of course, this may be no irony after all. Because courts have accepted it uncritically, fingerprinting science has not needed to develop—though this might be changing.

⁸² *See* Leo Kittay, *Admissibility of fMRI Lie Detection: The Cultural Bias Against Mind Reading Devices*, 72 BROOK. L. REV. 1351, 1355, 1368-69 (2007); *see also* William Saletan, *Peering into the Soul*, WASH. POST, Mar. 18, 2007, at B2; Steve Silberman, *Don’t Even Think About Lying: How Brain Scans Are Reinventing the Science of Lie Detection*, WIRED, Jan. 2006, available at <http://www.wired.com/wired/archive/14.01/lying.html>.

⁸³ Silberman, *supra* note 82 (“Today’s fMRI scanners are bulky, cost up to \$3 million each, and in effect require consent because of their sensitivity to head movement. Once Cephos and No Lie MRI make their technology commercially available, however, these limitations will seem like glitches that merely need to be fixed.”).

⁸⁴ *See generally* Saks & Koehler, *supra* note 25.

⁸⁵ *Id.* at 893-94. Of course, as the old forensic sciences are tested in the crucible of scientific rigor for the first time, some will withstand the heat: for instance, fingerprints are a likely candidate, *id.* at 893), and some will be revealed as irredeemable and properly discarded (*see id.* at 895, on the possibly intractable unreliability of “bite mark analysis”); LAWRENCE M. SOLAN & PETER TIERSMA, *SPEAKING OF CRIME: THE LANGUAGE OF CRIMINAL JUSTICE* 140-46 (2005) (raising the same possibility for spectrographic “voiceprint” analysis).

⁸⁶ Murphy, *supra* note 28, at 729; Saks & Koehler, *supra* note 25, at 893.

B. *In Contrast to Sophisticated Forensic Technologies, Traditional Evidence Is Increasingly Being Revealed as Not Very Reliable (and Not Very Improvable)*

In *Arizona v. Fulminante*,⁸⁷ the Supreme Court expressed a high level of optimism about the evidentiary value of confessions. Justice White wrote, “A confession is like no other evidence. Indeed, the defendant’s own confession is probably the most probative and damaging evidence that can be admitted against him. The admissions of a defendant come from the actor himself, the most knowledgeable and unimpeachable source of information about his past conduct.”⁸⁸ Today, when seemingly every week activists reveal yet another instance of a wrongful conviction involving a false confession, this confidence sounds somewhat naive.⁸⁹ Though he wrote over 300 years ago, Blackstone seems to have had a better sense of it than the Supreme Court when he wrote that confessions “are the weakest and most suspicious of all testimony; ever liable to be obtained by artifice, false hopes, promises of favor, or menaces; seldom remembered accurately, or reported with due precision; and incapable in their nature of being disproved by other negative evidence.”⁹⁰

What is the real-world prevalence of false confessing? It is very hard—probably impossible—to say, but many have offered estimates. The Cardozo Innocence Project now reports that “over 25%” of the DNA exonerations they have kept track of involved a false confession.⁹¹ Another set of studies from Iceland found that, among participants who had been interrogated by a police officer (amounting to a quarter of those asked, across studies), 12% of prisoners,⁹² 3.7% of college-aged students,⁹³ and 1.2% of older adult participants reported having given the officer a false confession.⁹⁴ Other researchers have offered other

⁸⁷ 499 U.S. 279 (1991).

⁸⁸ *Id.* at 296 (quoting *Braton v. United States*, 391 U.S. 123, 134-40 (1968) (White, J., dissenting)).

⁸⁹ See Innocence Project, <http://www.innocenceproject.org>, for a running tally of such cases. As of October 3, 2008, there have been 221 post-conviction DNA exonerations in the United States.

⁹⁰ 4 BLACKSTONE, COMMENTARIES *357.

⁹¹ Innocence Project, *supra* note 89, states that, in “over 25%” of wrongful convictions revealed with DNA evidence, “defendants made false confessions, admissions or statements to law enforcement officials.”

⁹² Gisli H. Gudjonsson & Jon Fridrik Sigurdsson, *How Frequently Do False Confessions Occur?: An Empirical Study Among Prison Inmates*, 1 PSYCHOL. CRIME & L. 21, 23 (1994).

⁹³ Gisli H. Gudjonsson, Jon Fridrik Sigurdsson, Olafur O. Bragason, Emil Einarsson & Eva B. Valdimarsdottir, *Confessions and Denials and the Relationship with Personality*, 9 LEGAL & CRIMINOLOGICAL PSYCHOL. 121, 127 (2004).

⁹⁴ Gisli H. Gudjonsson, Jon Fridrik Sigurdsson, & Emil Einarsson, *The Role of Personality in Relation to Confessions and Denials*, 10 PSYCHOL. CRIME & L. 125, 125 (2004).

estimates.⁹⁵

Estimates have also come from the laboratory, where experiments demonstrate how distressingly easy it is to induce false confessions in experimental participants.⁹⁶ One study tested the rates of false confession to an in-lab transgression. The participant was accused of hitting a key during an experiment, despite a warning not to, which caused the experimenter's computer to crash; the transgression, of course, never actually happened.⁹⁷ Whether a participant was willing to sign a false written confession varied dramatically depending on whether the participant was told that a witness had seen her hit the key, and whether the participant might easily have hit it accidentally.⁹⁸ The researchers found that when faced with a witness and a good chance they might have transgressed accidentally, a full 100% of participants signed the confession. With no witness and a set-up that made it implausible that the participant had accidentally hit the key, 35% still signed the confession.⁹⁹ Other versions of the study—including ones that increased the stakes of confessing and decreased the physical plausibility of having committed the transgression at all—have failed to push the false confession rate below about 13%.¹⁰⁰

Still, none of these estimates perfectly describe the actual rate of false confessions that result in a conviction. Some estimates might be overinclusive; in the real world, a false confession might be detected before it leads to a conviction (by either investigators or legal fact finders like juries). Or, in the case of the laboratory experiments, the stakes of falsely confessing to police are higher than falsely confessing to an experimenter; thus the former would be more prevalent than the latter. For the Innocence Project estimates, there is also a baseline problem: the Project's cases were selected for testing because other evidence in the case already suggested a reason to believe the confession was false. This means the number of false confessions found in this subset of cases is likely inflated relative to the true rate of false confessing.

On the other hand, the estimates can be underinclusive. For the laboratory experiments, while the stakes of confessing to police are

⁹⁵ For an overview, see Drizin & Leo, *supra* note 29, at 901-05.

⁹⁶ For an excellent review of why we see confessions in these settings, see Saul M. Kassin & Gisli H. Gudjonsson, *The Psychology of Confessions: A Review of the Literature and Issues*, 5 PSYCHOL. SCI. PUB. INT. 33, 54-56 (2004). The reasons include tried-and-true psychological phenomena such as the power of compliance, *id.* at 49, conformity, *id.* at 46, behavioral reinforcement, *id.* at 43, and cognitive limitations and biases, *id.* at 57.

⁹⁷ *Id.* at 54 (citing S.M. Kassin & K.L. Kiechel, *The Social Psychology of False Confessions: Compliance, Internalization, and Confabulation*, 7 PSYCHOL. SCI. 125 (1996)).

⁹⁸ *Id.* at 54-56.

⁹⁹ *Id.* at 54.

¹⁰⁰ The rate of false confessing increases with levels of stress and decreases with the age of the participant, but, again, not below 13% in this type of study. *Id.* at 54-55.

certainly higher than to an experimenter, police confessions are also extracted by trained interrogators, with well-honed skills, who are unabashedly in the business of eliciting confessions from recalcitrant suspects.¹⁰¹ That is, though the estimates from laboratory experiments have the advantage of control (we know that the subject really “didn’t do it”), they have the disadvantage of not reflecting the actual pressures of investigators on suspects. As for the “real world” estimates, from both the Innocence Project and surveys of actual experiences, they might be underinclusive as well. In surveys, individuals might not admit, remember, or even be quite aware that they actually confessed to police officers. The baseline problem for the Innocence Project can also cut in the opposite direction: not every real case of false confession will necessarily be discovered. Perhaps no one ever took a particular case seriously enough to reexamine it. Perhaps there was no “gold standard” (like a DNA sample) against which the veracity of the confession could be tested. All of these things would deflate the number of false confessions discovered.

As a consequence, we don’t—and may never¹⁰²—have anything close to a precise estimate of the true rate of false confessing to crime. Still, we can at least guess, based on the above, a *plausible* lower bound; that is, the lowest likely rate of false confessing, even though the true number is probably higher. The lowest estimate of false confessing was observed among the self-reports by Icelandic adults in the face of actual interrogation by police officers: 1%.¹⁰³ We have no particular reason to believe, based on other self-reports, post-conviction exonerations, or experiments, that the rates are lower than that—all of the other measures are higher. Moreover, error in this number itself is likely to be higher, since there are no particularly good reasons why

¹⁰¹ Kassin and Gudjonsson describe these techniques, which include discombobulating the suspect by isolating him in unfamiliar and uncomfortable settings, confronting him with the crime (sometimes using phony evidence), relentlessly disputing any protests of innocence, and offering the suspect a face-saving way out consistent with confession (such as “everyone would agree she deserved it” or “what else could you possibly have done?”) *Id.* at 54. Note that these tactics are all ones that courts have explicitly upheld as noncoercive. See, e.g., *Arthur v. Commonwealth*, 480 S.E.2d 749 (Va. Ct. App. 1997) (holding that a confession was not rendered involuntary when the suspect was confronted with falsified fingerprint and DNA laboratory reports linking him to the murder scene after he had denied involvement for months). Other tactics, such as sleep deprivation, explicit promises of leniency, threats for refusal to confess, and physical violence are obviously *not* sanctioned, Kassin & Gudjonsson, *supra* note 96, at 36,—but multiple anecdotes unsurprisingly demonstrate that they occur anyway. See, e.g., Hal Dardick, *In Fox Case, DNA Is the Star Witness*, CHI. TRIB., Dec. 16, 2007, at 1; Diane Jennings, *A Shaken System: In 1988, One Man Confessed to a Murder He Didn’t Commit—and Accused an Innocent Friend*, DALLAS MORNING NEWS, Feb. 24, 2008, at 1A. Given the variety of interrogation techniques, the differing stakes across crimes, the idiosyncratic traits of individual suspects, etc., laboratory experiments can only serve as a rough proxy of the true rates of false confessing in the criminal justice system.

¹⁰² Kassin & Gudjonsson, *supra* note 96, at 44-45.

¹⁰³ See *supra* text accompanying note 99.

unincarcerated adults would *overreport* false confessions, but there are many good ones, which I have already mentioned, for why they might *underreport* them. If the rate of false confessions is really a minimum of 1% (that is, 1% of police confessions are actually false positives), then confessions are, at best, essentially in a dead heat with DNA profiling, whose current error rate, governed by human error, I have already described as being about 1-2%.¹⁰⁴

To truly compare the value of confessions versus scientific evidence, though, we can't just look at the rate of false positives; we must also consider the rate of false negatives. How likely is it that a person who did commit a crime would nevertheless fail to confess, even under interrogation? That is, if the suspect actually did it, how likely is he *not* to admit it to the police? Although again we can't know exact numbers, we can make plausible guesses. Start by asking how many confessions suspects offer overall; then simply adjust that number to account for the actual proportion of guilty to innocent suspects.¹⁰⁵ In the United States, the rate of confessions to police interrogation has been reported as a range from the low forties to 55%.¹⁰⁶ Roughly splitting the difference, this makes about a 50% overall confession rate. How many of those 50% who *fail* to confess, are in fact guilty ("false negatives")?

Imagine a random sample of 100 suspects.¹⁰⁷ After interrogation, on average 50 will confess, 50 will assert innocence. We already estimated (conservatively) that 1% of those who confess are actually innocent—this is the false positive rate estimated above. Since 50 total confess, and 1 of those (1% of the 100 total) is innocent, this means that 49 of those who confess are actually guilty (49% "true positives"). To compute false negatives, though, we have to next estimate how many of the suspects overall—confessing or not—are actually guilty. Here, we have to guess, but conventional wisdom holds that most suspects *are* guilty—and the assumption is not unreasonable. After all, though it

¹⁰⁴ See *supra* note 30 (Koehler's estimate).

¹⁰⁵ Nothing about this assertion conflicts with anything written in the last several paragraphs. Rates of false confessions by innocents and failures to confess by the guilty are logically—though admittedly not pragmatically—*independent*.

¹⁰⁶ Kassir & Gudjonsson, *supra* note 96, at 44.

¹⁰⁷ The math in this paragraph can be easily worked out using a simple grid, filling in the numbers we know (bold) and using them to compute the numbers that we do not know. The number in boldface is the estimated number of false positives. The computed false negative rate is in italics.

	# actually guilty	# actually innocent	Totals
# who confess	49	1	50
# who don't confess	26	24	50
Totals	75	25	100

would be ridiculous to assume that all suspects are guilty,¹⁰⁸ it would be equally ridiculous to assume that the typical police department does not make reasonably good guesses based on pre-interrogation evidence about who is likely to have committed a crime. After all, suspects are not, in the main, selected at random from off the street.¹⁰⁹ Assume, then, that at least 75% of suspects are actually guilty.¹¹⁰ By doing simple math, we get a false negative rate of 26% (that is, 75 actually guilty suspects, minus 49 of those who confess, which leaves 26 actually guilty suspects who *don't* confess). This number, high as an absolute matter, is probably conservatively low as an estimate of the true rate of false negatives. If the rate of actual guilt of interrogated suspects is in fact, say, 90%, and even if a particular skilled police department could get as many as 55% of suspects to confess, using the same math, this would represent a 36% false negative rate.

To summarize, even if the rate of false positives is roughly the same for confessions as for the sophisticated forensic sciences (both about 1-2%),¹¹¹ forensic evidence still likely outstrips confessions in preventing false negatives, and by a very wide margin. This is so even when we use numbers that are quite generous to confessions. False negatives for DNA identifications,¹¹² for instance, are still governed by laboratory error, meaning they generate about 1-2% false negatives. Interrogations, by contrast, generate—at best—about 26% false negatives, and constitute a substantial cost to the system.

Of course, these numbers only represent the current “state of the art” in interrogations. I have argued that even if DNA or other sophisticated forensic sciences currently have suboptimal levels of reliability, technological advances mean their reliability continues to improve. Could the same be true in the low-tech world of

¹⁰⁸ This proposition is disputed by former Attorney General Edwin Meese III, who famously stated, “[Y]ou don’t have many suspects who are innocent of a crime. That’s contradictory. If a person is innocent of a crime, then he is not a suspect.” *Reagan Seeks Judges with “Traditional Approach”*: Interview with Edwin Meese, Attorney General of the United States, U.S. NEWS & WORLD REP., Oct. 14, 1985, at 67.

¹⁰⁹ That this occasionally *does* happen (see, for example, the infamous arrest of William Bennet for the murder of Carol Stuart, a crime for which her husband, Charles Stuart, was in fact guilty, Tatasha Robertson, *For Bennett, Stuart Case Still Hurts*, BOSTON GLOBE, Apr. 6, 2000, at A1), does not mean it *usually*, or even frequently, happens.

¹¹⁰ For an analysis of a similar problem, i.e., estimating the number of actually guilty convicts who are seeking post-conviction DNA testing, see Tonja Jacobi & Gwendolyn Carroll, *Acknowledging Guilt: Forcing Self-Identification in Post-Conviction DNA Testing*, 102 NW. U. L. REV. 263, 270 (2008).

¹¹¹ *Id.* at 305.

¹¹² That is, where DNA material has been recovered. This is the appropriate comparison, however—“finding” a suspect to “test” for a confession is the equivalent of “finding” DNA to “test” for a match. True enough, one may not find DNA at all—but then again, one might also not find a suspect. Estimating the odds of finding a suspect versus finding DNA is incredibly difficult. One thing, though, is very clear—increased investment in finding DNA at crime scenes should increase the odds of finding a suspect (with the reverse, of course, not being true).

interrogations? That is, can interrogations get more accurate? Yes, but not by much. Whatever the real world error rates for confessions actually are, there does not appear to be a lot that policy makers can do to improve them. Courts already ban the most egregious forms of coercion during interrogations in an effort to reduce false positives.¹¹³ Other plausible reforms that activists of diverse political commitments routinely—and rightly—urge would likely have a fairly limited effect on false positive error rates, and might even exacerbate the problem of false negatives.

Consider, for instance, proposals to mandate the videotaping of all confessions.¹¹⁴ For one thing, if police officers decide when to start the tape rolling, all the most “effective” interrogation techniques could happen before the camera gets turned on—a scenario which, sadly, anecdotal evidence suggests does happen.¹¹⁵ Just as importantly, the pressure perceived by the suspect during an interrogation is not readily visible to third parties evaluating it, especially when the third party (like a judge or jury, *ex post*) is removed in time and place from the confession. Even small procedural differences in how a confession is taped can affect its perceived reliability. For instance, one robust experimental finding is that when the camera is pointed at just the suspect, a confession is perceived as more voluntary than when the camera is pointed at both the suspect and the interrogator.¹¹⁶ This is because onlookers tend to underestimate the power of the situation on the behavior of other people. Because they can’t see the interrogator, observers underestimate the pressures experienced by the suspect.¹¹⁷

¹¹³ Kassir & Gudjonsson, *supra* note 96, at 36. Of course, there are plenty of normative reasons the law forbids coercive interrogations as well, beyond just reduction of false positives.

¹¹⁴ *Id.* at 60-61; Drizin & Leo, *supra* note 29, at 893; Steven A. Drizin & Beth A. Colgan, *Let the Cameras Roll: Mandatory Videotaping of Interrogations Is the Solution to Illinois’ Problem of False Confessions*, 32 LOY. U. CHI. L.J. 337, 339 (2001); Paul G. Cassell, *Miranda’s Social Costs: An Empirical Reassessment*, 90 NW. U. L. REV. 387, 486-87 (1996) (arguing videotaping would be more effective than *Miranda* warnings at reducing coercion). Indeed, given the extremely low cost of such taping, police are routinely taping confessions. Often, they are even taping routine citizen-police encounters, such as traffic stops. See, e.g., David Kocieniewski, *After Effort to Open Up New Jersey, a Plan to Keep Some State Police Records Closed*, N.Y. TIMES, Feb. 21, 2002, at B5.

¹¹⁵ Mills & Possley, *supra* note 6 (reporting allegations that during a coercive interrogation using illegal tactics, the videotape camera was turned on only for the final twenty minutes).

¹¹⁶ G. Daniel Lassiter, R. David Slaw, Michael A. Briggs & Carla R. Scanlan, *The Potential for Bias in Videotaped Confessions*, 22 J. APPLIED SOC. PSYCHOL. 1838 (1992); G. Daniel Lassiter, Shari Seidman Diamond, Heather C. Schmidt & Jennifer K. Elek, *Evaluating Videotaped Confessions: Expertise Provides No Defense against the Camera-Perspective Effect*, 18 PSYCHOL. SCI. 224 (2007); Shelley E. Taylor & Susan T. Fiske, *Saliency, Attention, and Attribution: Top of the Head Phenomena*, in 11 ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 249 (L. Berkowitz ed., 1978).

¹¹⁷ See generally Richard E. Nisbett, Craig Caputo, Patricia Legant & Jeanne Maracek, *Behavior as Seen by the Actor and as Seen by the Observer*, 27 J. PERSONALITY & SOC. PSYCHOL. 154 (1973) (presenting empirical research on the “actor-observer effect”).

The perverse result of these phenomena is that a typical taped confession (where some of the interrogation took place before the cameras start rolling, and where the camera is pointed only at the suspect), could make the problem of wrongful convictions based on false confessions *worse*, since a taped false confession will likely be far more persuasive than the same false confession simply described by an officer or offered via a signed transcript. Again, laboratory evidence supports this possibility.¹¹⁸

Making interrogators more aware of the problem of false confessions in general is also not likely to help much. Interrogators may not know when, or even that, their techniques have become overly coercive. As Professors Kassin and Gudjonsson, two of the most prolific and well-respected researchers in the field of confessions, explain, modern police interrogation is a “guilt-presumptive process, . . . led by an authority figure who holds a strong *a priori* belief about the target and who measures success by the ability to extract an admission from that target.”¹¹⁹ *A priori* belief in the guilt of the suspect can be a self-fulfilling prophecy: the suspect behaves uncomfortably and cagily in response to the interrogator’s leading questions, inducing the interrogator to exert that much more pressure on what now appears to be a guilty suspect.¹²⁰ Experimental evidence demonstrates just this effect.¹²¹ To appreciably reduce false confessions, we would need to ban even the more routine techniques used to induce confessions. But since the very nature of interrogation involves the application of pressure to induce a suspect to reveal information she would rather keep

¹¹⁸ G. DANIEL LASSITER & ANDREW L. GEERS, *Bias and Accuracy in the Evaluation of Confession Evidence*, in INTERROGATIONS, CONFESSIONS AND ENTRAPMENT 197, 208-09 (2006); see also Saul M. Kassin & Holly Sukel, *Coerced Confessions and the Jury: An Experimental Test of The “Harmless Error” Rule*, 21 LAW & HUM. BEHAV. 27 (1997) (showing that people do not fully discount even confessions they know are not fully voluntary). Since I argue that taping confessions has limited potential for reducing false positives and might even slightly exacerbate the problem of wrongful convictions, why do I say that activists are right to urge them? Simply because taping confessions provides, at very low cost, a welcome transparency to an otherwise opaque process, and a disincentive—even if an imperfect one—to police abuse.

¹¹⁹ Kassin & Gudjonsson, *supra* note 96, at 41.

¹²⁰ *Id.* at 37. Perhaps this is why police officers are ironically *less* capable of detecting a false confession than control subjects (college students)—and indeed get worse at it the more experience and training in investigations they acquire. See Saul M. Kassin, Christian A. Meissner & Rebecca J. Norwick, “I’d Know a False Confession if I Saw One”: A Comparative Study of College Students and Police Investigators, 29 LAW & HUM. BEHAV. 211 (2005); see also Christian A. Meissner & Saul M. Kassin, “He’s Guilty!”: Investigator Bias in Judgments of Truth and Deception, 26 LAW & HUM. BEHAV. 469 (2002).

¹²¹ Lucy Akehurst & Aldert Vrij, *Creating Suspects in Police Interviews*, 29 J. APP. SOC. PSYCHOL. 192 (1999); Saul M. Kassin, Christine C. Goldstein & Kenneth Savitsky, *Behavioral Confirmation in the Interrogation Room: On the Dangers of Presuming Guilt*, 27 LAW & HUM. BEHAV. 187, 195 (2003).

to herself,¹²² banning the routine techniques of interrogation would not, realistically, be much different than banning interrogations altogether. Banning routine interrogation techniques is not only politically inconceivable, but, practically speaking, it would also be foolish, since it would certainly exacerbate the problem of false negatives.

But that is confessions. How does that other important form of traditional evidence, eyewitness identification, compare? Thanks largely to the work of Elizabeth Loftus¹²³ and Gary Wells,¹²⁴ we know that the answer is, “Even worse.” Eyewitnesses as a class face many challenges. Crimes typically happen quickly. Furthermore, when they are violent or entail the threat of violence (such as when the perpetrator is armed), the witness’s attention is diverted from the face of the perpetrator to the source of the threat (such as the weapon). Under these circumstances, the encoding of details into memory is exceedingly poor.¹²⁵ Stress, which can enhance the encoding of memories at low levels, interferes with it at higher levels.¹²⁶ Cross-racial identifications are particularly problematic,¹²⁷ as are cross-generational¹²⁸ ones.

At the “retrieval” stage of memory, eyewitnesses face still more problems. As time passes, memories fade. Live and photographic lineups (not to mention the appalling “show up” identification procedure¹²⁹), if done badly, can lead eyewitnesses astray by

¹²² William J. Stuntz, *Lawyers, Deception, and Evidence Gathering*, 79 VA. L. REV. 1903, 1905 (1993).

¹²³ See especially her groundbreaking and agenda-setting book, *EYEWITNESS TESTIMONY* (1979).

¹²⁴ See, e.g., Gary L. Wells et al., *Eyewitness Identification Procedures: Recommendations for Lineups and Photospreads*, 22 LAW & HUM. BEHAV. 603, 605 (1998) (“In addition to the experimental literature, cases of proven wrongful convictions of innocent people have consistently shown that mistaken eyewitness identification is responsible for more of these wrongful convictions than all other causes combined.”).

¹²⁵ Brian R. Clifford & Clive R. Hollin, *Effects of the Type of Incident and the Number of Perpetrators on Eyewitness Memory*, 66 J. APP. PSYCHOL. 364, 367 (1981).

¹²⁶ Kenneth A. Deffenbacher, Brian H. Bornstein, Steven D. Penrod & E. Kiernan McGorty, *A Meta-Analytic Review of the Effects of High Stress on Eyewitness Memory*, 28 LAW & HUM. BEHAV. 687, 689 (2004) (“[A]t relatively high levels of cognitive anxiety, continuous gradual increases in somatic anxiety (physiological activation) will at first result in continuous, gradual increases in performance, followed at some point by a catastrophic, discontinuous drop in performance.”).

¹²⁷ John P. Rutledge, *They All Look Alike: The Inaccuracy of Cross-Racial Identifications*, 28 AM. J. CRIM. L. 207, 211-15 (2001).

¹²⁸ Daniel B. Wright & Joanne N. Stroud, *Age Differences in Lineup Identification Accuracy: People Are Better with Their Own Age*, 26 LAW & HUM. BEHAV. 641, 642-43 (2002).

¹²⁹ In a “show up,” the witness is brought to the scene where the suspect has just been arrested. Typically, the witness is sitting in the back of a police cruiser, with the headlights on. The suspect, usually in handcuffs at this point, is made to stand before the headlights, and the witness is asked whether or not the suspect is the perpetrator. See R.C.L. Lindsay, Joanna D. Pozzulo, Wendy Craig, Kang Lee & Samantha Corber, *Simultaneous Lineups, Sequential Lineups, and Showups: Eyewitness Identification Decisions of Adults and Children* 21 LAW & HUM. BEHAV. 391, 393 (1997). The situational cues to the witness in a procedure like this are, obviously, overwhelming.

entrenching a faulty identification. If the eyewitness sees the suspect for the first time in a line-up, and is induced—intentionally or not—to make a positive identification, any subsequent identification also will be tainted. She is more likely to confuse her familiarity from the line-up with familiarity from the crime, falsely increasing her confidence in the match.¹³⁰

As with confessions, researchers have tried to estimate the rate of eyewitness misidentifications, and, as with confessions, the rate fluctuates a lot depending on case-specific features, such as the ones mentioned in the last two paragraphs. I have already noted the statistic from an early stage in the Innocence Project that faulty eyewitness identifications played a role in over 70% of wrongful convictions.¹³¹ This number, of course, doesn't represent the general rate of false positives in eyewitness identifications any more than it did for confessions, and for the same reasons: in exoneration cases, we already had a reason to believe the identification was faulty, or the case wouldn't have undergone post-conviction scrutiny at all. The number is even more exaggerated for eyewitness identifications than it is for confessions, though, because of the ubiquity of eyewitness identification evidence in criminal trials. That a huge percentage of wrongful convictions involve faulty eyewitness identification doesn't tell us much, when a huge percentage of cases overall involve eyewitnesses.

There is, however, one very useful measure of false positives in eyewitness identifications, which isn't available for confessions: any time the police ask an eyewitness to select a perpetrator from a line-up (photographic or live), and the witness instead selects a known-to-be-innocent "filler," we have an unambiguous false positive event. How often do these false positives occur, in real cases? Reviews of witnesses in actual criminal cases show that eyewitnesses finger a "filler" in about 20-25% of 6-8 person line-ups.¹³² Thus, at a bare minimum, real eyewitnesses in real line-ups suffer from a 20-25% false positive rate.

False negatives are, of course, harder to measure using real world data. One cannot, for instance, say that the rate at which eyewitnesses

¹³⁰ Tiffany Hinz & Kathy Pezdek, *The Effect of Exposure to Multiple Lineups on Face Identification Accuracy*, 25 LAW & HUM. BEHAV. 185, 187 (2001).

¹³¹ As more exonerations have piled up, the Innocence Project's website now reports the number has grown to over 75%. <http://www.innocenceproject.org>.

¹³² See, e.g., Bruce W. Behrman & Sherrie L. Davey, *Eyewitness Identification in Actual Criminal Cases: An Archival Analysis*, 25 LAW & HUM. BEHAV. 475, 482 (2001) (24% false positives); Daniel B. Wright & Elin M. Skagerberg, *Postidentification Feedback Affects Real Witnesses*, 18 PSYCHOL. SCI. 172, 175 (2007) (21% false positives). If anything, the 20-25% estimate marks a lower boundary; sometimes, eyewitnesses who finger the suspect will be fingering an innocent person. This might happen often or rarely—we don't know the size of the effect, but we do know its direction: it would systematically increase the occurrence of false positives.

fail to make any identification at all during a line-up (also around 20-25%)¹³³ is the rate of false negatives. That number surely contains both false negatives and true negatives, and we have no good way of knowing the proportion. Laboratory studies do offer their own estimate: one meta-analysis revealed that test subjects failed to identify present perpetrators 26% of the time on average—which is, interestingly, not very different from the rates suggested by studies of real eyewitnesses in real line-ups.¹³⁴

Can the reliability of eyewitness evidence be improved? As with confessions, yes—but only so much, both as a practical and a political matter. For one thing, police obviously have no control over events that interfere with the encoding of memory, such as how long an eyewitness is exposed to a perpetrator, or whether the eyewitness and the perpetrator share demographic characteristics such as age or race. But dramatic changes in line-up procedures, which affect the recollection of the event, *can* have a large effect. For instance, switching from “simultaneous” to “sequential” line-ups reduces false positives in experimental studies by 5% (where the perpetrator is present) to 23% (where the perpetrator is absent).¹³⁵ Unfortunately, the switch *increases* perpetrator-present false negatives by 20%.¹³⁶ More minor changes can also have effects, but, again, they are not uniformly positive. For example, simply reminding the witness that the perpetrator might not be present in the line-up at all (that is, that the suspect arrested by police might in fact be innocent) does reduce false positives, but, at a cost of increasing false negatives.¹³⁷ Moreover, as a political matter, even though police have made changes in their procedures to reduce eyewitness misidentifications (especially of false positives),¹³⁸ they resist as too costly¹³⁹ or even too insulting¹⁴⁰ most of the ones that

¹³³ Behrman & Davey, *supra* note 132, at 482 (26%); Wright & Skagerberg, *supra* note 132, at 175 (21%).

¹³⁴ Nancy Steblay, Jennifer Dysart, Solomon Fulero & R.C.L. Lindsay, *Eyewitness Accuracy Rates in Sequential and Simultaneous Lineup Presentations: A Meta-Analytic Comparison*, 25 *LAW & HUM. BEHAV.* 459, 463 (2001).

¹³⁵ *Id.* The change to sequential line-ups also substantially improves (from 49% to 72%) the rate of “correct negatives”—that is, appropriate failures to identify *anyone* in the line-up as the perpetrator when the perpetrator is, in fact, absent. *Id.*

¹³⁶ *Id.* Obviously, there can be no increase in “false negatives” where the perpetrator is absent from the line up.

¹³⁷ Steven E. Clark, *A Re-Examination of the Effects of Biased Lineup Instructions in Eyewitness Identification*, 29 *LAW & HUM. BEHAV.* 395, 418 (2005).

¹³⁸ Darryl Fears, *Exonerations Change How Justice System Builds a Prosecution*, *WASH. POST*, May 3, 2007, at A3.

¹³⁹ Gary L. Wells, Roy S. Malpass, R.C.L. Lindsay, Ronald P. Fisher, John W. Turtle, & Solomon M. Fulero, *From the Lab to the Police Station: A Successful Application of Eyewitness Research*, 55 *AM. PSYCHOLOGIST* 581, 594 (2000).

¹⁴⁰ *Id.* (“The police were quite concerned that their peers would be insulted by a requirement for double-blind testing, because it would be construed as a statement that police are not to be trusted to conduct their own investigations.”).

would be the most helpful, such as the sequential line-ups already mentioned, or making the officer conducting the line-up blind to which participant is the actual suspect.

In sum, traditional evidence imposes, at best, modest risks (maybe as little as 1% for confessions), and at worst, truly troubling risks (maybe as much as 25% for eyewitness line-ups) for falsely implicating innocent suspects. It fares even worse when considering the waste-of-time-and-resources issue of false negatives; that is, both confessions and eyewitness identifications suffer from a high risk of failing to provide inculpatory evidence on a guilty suspect. Perhaps a quarter of all eyewitnesses fail to identify a guilty suspect, and as many as a quarter to a third of interrogations of guilty suspects fail to generate a confession. There is some play around the joints of these reliability rates, but no policy interventions or technological improvements are likely to dramatically improve them.

C. *In Practice, Police and Prosecutors Will Increasingly Substitute Sophisticated Forensic Evidence for Traditional Evidence*

Even when things work as they are supposed to—the confession is genuine, the eyewitness is accurate—traditional forms of evidence are not all that cheap in direct dollar terms. A confession requires an investment of both time and personnel at the interrogation phase. If the suspect is prosecuted and brought to trial, personnel will also have to spend time serving as and preparing to be witnesses in court. They same is true for eyewitnesses. Not only must they be found, they must also undergo sometimes time-consuming and labor-intensive line-up procedures, and the case goes to trial, they must be prepped for court appearances.¹⁴¹

It's hard to estimate direct dollars costs for these things, especially since costs vary tremendously from case to case. Historically, neither the cost nor the reliability of traditional evidence mattered much, anyway, as confessions and eyewitnesses were often, even usually, all that a prosecutor had. But increasingly, traditional evidence has to prove it can “pay its own way” relative to other, alternative evidence that investigators could collect instead. So, are the available alternatives more or less expensive than traditional evidence?

If it's hard to pin down the dollar costs of confessions and eyewitness identifications, it's not much easier to pin them down for the newest forensic evidence I've described. Not only are the costs

¹⁴¹ Sometimes, getting them to court involves considerable effort to keep track of them, and of course, to protect them. Todd Richmond, *As Funds Are Cut, Witnesses Bleed*, CHIC. TRIB., May 4, 2008, at 10.

changing (though generally only in one direction—downward) over time, they are also highly case specific. Costs depend on whether the police department handling a case already has the capacity for the technology (for instance, runs its own in-house DNA laboratory) or must instead farm the work out to other labs,¹⁴² whether the technology is being used to assess a known suspect or instead find a “cold hit,”¹⁴³ whether the judge is familiar enough with the technology that she can streamline or even forego altogether a lengthy Daubert (or its state equivalent) admissibility hearing,¹⁴⁴ and so on.

Because the costs of both traditional and sophisticated forensic evidence are so hard to calculate with precision, it is impossible to demonstrate on a balance sheet that the latter is “cheaper” than the former. Still, using the information discussed above, we can roughly estimate that the cost of a run-of-the-mill in-house forensic DNA analysis, including time spent by personnel, costs in the neighborhood of a thousand dollars.¹⁴⁵ Do confessions and eyewitness identifications cost, on average, more or less than a thousand dollars? After all, they frequently, perhaps even typically, involve more than one interrogator working for hours to secure the confession or identification. Consider, too, the cost of eyewitnesses’ time, and expenses involved in securing their cooperation and, occasionally, their safety—amounts that are themselves far from trivial. I don’t know if these costs amount to more or less than \$1,000 per case. But whatever the total is, confessions and eyewitnesses aren’t getting any cheaper, while forensic technologies are. So, even if traditional evidence is currently less expensive than sophisticated forensic evidence, the gap is surely dwindling, and should eventually flip, if it hasn’t done so already.

Direct dollar expenditures for acquiring and presenting evidence,

¹⁴² A good overview of the complexity of the issue, plus price estimates from one state, can be found in OFFICE OF STATE BUDGET & MGMT., *supra* note 37.

¹⁴³ The FBI has an ever-growing database of pre-existing DNA profiles, known as the “Combined DNA Index System,” or CODIS. The profiles come from convicts, arrestees, and “unknown” perpetrators from other crime scenes. Zedlewski & Murphy, *supra* note 35. Use of the database has allowed police departments to find an extraordinary number of cold hits, and the number grows at a phenomenal rate. For instance, as of October 2007, the number of cold hits generated by the CODIS database was approaching 59,000. FBI, CODIS MEASURING SUCCESS (2007), available at <http://www.fbi.gov/hq/lab/codis/success.htm>. For a general overview of the expansion of the DNA database, and some legal issues surrounding “cold hits,” see Eric May, *Who’s Next? The Continued Expansion of DNA Databases in United States v. Kincade*, 43 CRIM. L. BULL. 76 (2007).

¹⁴⁴ Murphy, *supra* note 28, at 769-70.

¹⁴⁵ I arrive at this number by adding North Carolina’s in-house estimate of \$425, *see infra* note 33, and (arbitrarily) guessing that finding and collecting the DNA from the crime scene itself, plus time for the in-house expert to testify, costs somewhere around \$500 in labor. Usually, collecting DNA evidence will not take much time (a swab from the victim, a spatter of blood, a fingerprint that, as already described, will yield skin cells), so, for the typical case, this estimate is probably high.

moreover, are not the only costs to consider. There are differences in indirect costs, too, which stem from the differences in reliability rates. If traditional evidence leads to wrongful convictions, this can lead to tort liability, should exonerated convicts successfully sue the state.¹⁴⁶ Putting the wrong person behind bars also causes losses from the additional crimes the real guilty party is left free to commit (especially because the police are no longer searching for him). Perhaps one of the largest costs to factor in is that less accurate evidence is more likely to lead to expensive trials rather than plea-bargained settlements.¹⁴⁷ Finally, unreliable evidence costs the system as a whole, in the form of lost legitimacy.

Though the exact numbers may not be available, the bottom line is reasonably clear and growing sharper every day: when considering bang (empirical reliability) for the buck (both in terms of dollars and legitimacy), sophisticated forensic evidence beats out traditional evidence. Given the rapidly dropping costs and increasing empirical reliability of sophisticated forensic evidence, coupled with the increasing skepticism toward traditional evidence, it would be shocking if police and prosecutors did *not* begin to substitute the former for the latter. Simply put, criminal justice resources are limited, and given the choice between cheap, highly reliable evidence, versus labor-intensive evidence of more questionable value, police and prosecutors will choose the cheaper and more reliable form.¹⁴⁸

The evidence that this economically inevitable exchange has already begun is, for now, only anecdotal. For instance, at the investigation stage, officials in the UK have expressed the belief that their country's extensive use of forensic DNA for a broad array of crimes has reduced costs overall because it has freed police from doing more labor-intensive street-level investigations.¹⁴⁹ This opinion has been expressed more recently by officials in some American police departments, who argue that it is not only cheaper to find hits using DNA than to track down leads manually, but that because scientific evidence makes a more convincing and efficient case for the prosecution, using it also shortens trials and sometimes even eliminates them altogether, by convincing guilty suspects not to roll the dice on a trial at all.¹⁵⁰

Other anecdotal support for the switch to forensic evidence comes

¹⁴⁶ Adele Bernhard, *When Justice Fails: Indemnification for Unjust Conviction*, 6 U. CHI. L. SCH. ROUNDTABLE 73, 106 (1999) (citing report on the costs of such suits, from the Chief Clerk of the New York Court of Claims, dated Apr. 27, 1998).

¹⁴⁷ See Priest & Klein, *supra* note 3.

¹⁴⁸ Bilz, *supra* note 2, at 379; Murphy, *supra* note 28, at 736.

¹⁴⁹ Victor Walter Weedn & John W. Hicks, U.S. DEP'T OF JUSTICE, THE UNREALIZED POTENTIAL OF DNA TESTING 6 (1998), available at <http://www.ncjs.org/pdffiles/170596.pdf>.

¹⁵⁰ Zedlewski & Murphy, *supra* note 35, at 4; Dewan, *supra* note 40.

from American prosecutors, some of whom report that, increasingly, they will not risk taking a case to court if all they have is a confession or eyewitness testimony.¹⁵¹ There are multiple reasons for this reluctance, but a nontrivial one is that many prosecutors believe that jurors now simply expect to see sophisticated forensic evidence.¹⁵² Plenty of prosecutors have described this as the “CSI Effect”¹⁵³—a somewhat contemptuous term implying that jurors’ expectations for such evidence is unreasonable and borne of too many episodes of primetime police procedurals. As a recent study of the attorneys in one Arizona prosecutor’s office reported:

Seventy-four percent of Maricopa County prosecutors maintain that they have prosecuted a case in which the jury “expected to be presented with scientific evidence.” When both scientific and non-scientific evidence existed, 45 percent of prosecutors felt “the jury focused so much on presented scientific evidence that they paid too little attention to unscientific evidence” like witnesses and police testimony.

One Deputy Maricopa County Attorney stated, “The jury ... placed more emphasis on police investigation than on the victim’s testimony.” Another observed, “Jurors always want fingerprints or some sort of scientific evidence to convict even with a full confession.”¹⁵⁴

I strongly suspect that what prosecutors call the CSI effect could just as aptly be labeled the “Innocence Project” effect, or maybe even the Mark Fuhrman¹⁵⁵ effect: the advent of high-tech police procedurals (traceable to the Discovery Channel’s popular “real crime” drama *The New Detectives* in 1996), came close on the heels of the O.J. Simpson trial (verdict delivered in 1995), and not long after the Innocence Project came into being (in 1992). The genius of the Innocence Project has been to reveal, via conferences, tours, press releases, and their website, the names of exonerated men who had usually been convicted

¹⁵¹ See, e.g., James Ahearn, *Coping with the Epidemic of Street Killings*, RECORD (Bergen County, NJ), Apr. 11, 2007, at L13 (“Essex County . . . has an unwritten policy discouraging filing of charges in cases that rely on a single witness, and those in which witness testimony is not backed by forensic evidence.”); Jim Haner, Kimberly A.C. Wilson & John B. O’Donnell, *Cases Crumble, Killers Go Free: Police Blunders in Homicides Leave City’s “Lifestyle of Death” Unchecked*, BALT. SUN, Sept. 29, 2002, at 1A (reporting that prosecutors in Baltimore frequently refuse to take a murder case to trial when police have collected only weak eyewitness testimony and have failed to collect physical evidence from a crime scene).

¹⁵² MARICOPA COUNTY ATTORNEY’S OFFICE, *THE CSI EFFECT AND ITS REAL-LIFE IMPACT ON JUSTICE* 6 (2005), available at <http://www.maricopacountyattorney.org/Press/PDF/CSIReport.pdf>.

¹⁵³ Jamie Stockwell, *Defense, Prosecution Play to New “CSI” Savvy; Juries Expecting TV-Style Forensics*, WASH. POST, May 22, 2005, at A1.

¹⁵⁴ MARICOPA COUNTY, *supra* note 152.

¹⁵⁵ Fuhrman was the police officer that O.J. Simpson’s defense team portrayed as having planted evidence at the scene of the murder of Nicole Brown Simpson and Ron Goldman.

with bad eyewitness identifications and often had falsely confessed to the crime. In the sensational O.J. Simpson murder trial, the public was exposed to the very real possibility that eager investigators, including and perhaps especially Mark Fuhrman, might have planted evidence against Simpson because they were convinced of his guilt.¹⁵⁶ In other words, it is just as plausible that jurors' increasing demands for highly-reliable forensic evidence stems not (or at least not only) from the CSI effect, but from an increasing skepticism towards naked traditional evidence caused by news reports generated by the Innocence Project and the Simpson trial.¹⁵⁷

Indeed, in most studies, the only evidence that the change in jurors' demands and expectations is a product of gullibility and watching too much television has come from polling prosecutors themselves, whose own views on the subject come (at best) from having interviewed juries post-verdict. This hardly seems like a good way to test the hypothesis. For one thing, most jurors don't have access to sophisticated language to articulate their skepticism about the state's evidence, even when that skepticism is well-warranted. For another, when asked, jurors might have felt awkward telling prosecutors that they thought the state had not done a good (or maybe even an honest) job of investigating, or that they believed eyewitnesses might have been mistaken or lying. If so, reference to the state's failure to produce the kind of reliable evidence they see on television shows would provide a heuristic, and face-saving, account for their not-guilty verdicts. Moreover, one can easily imagine how a prosecutor, licking his wounds after a loss, might fasten on the least well-articulated and most unreasonable-sounding explanation offered during a jury interview. After all, it is easier to accept the idea that the jury is foolish than to believe that you failed to adequately make your case.

Other studies that have looked at potential jurors themselves, have shown at least some hints that there might be some differences in levels of skepticism toward forensic evidence between police-procedural television fans and others, though these effects have been either insignificant¹⁵⁸ or at best, weak.¹⁵⁹ But really, neither the

¹⁵⁶ Cathleen Decker, *Trial & Error: Focus Shifts to a Justice System and Its Flaws*, L.A. TIMES, Oct. 8, 1995, at S2 (reporting on a poll of 760 adults living in Los Angeles, where 62% thought it was doubtful that justice was served by the verdict of not guilty, but 40% thought that police planted evidence).

¹⁵⁷ For a healthy dose of skepticism on the subject of the CSI effect, see Tom R. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 YALE L.J. 1050 (2006) (pointing out that no study to date has been able to link jurors' television viewing habits to any particular effects on verdicts).

¹⁵⁸ In fact, the findings go in the opposite direction of the prosecutors' complaints; the CSI watchers are marginally more, not less, skeptical of forensic evidence than non-watchers. N. J. Schweitzer & Michael J. Saks, *The CSI Effect: Popular Fiction About Forensic Science Affects Public Expectations about Real Forensic Science*, 47 JURIMETRICS 357 (2007) (experiment using

reasonableness, the source, nor even the actual existence of jurors' demands for forensic evidence is overly important for my purposes. What matters are the beliefs and behaviors of investigators and prosecutors; and anecdotally, they have reported increasing their use of forensic evidence to satisfy a perceived demand for it on the part of juries.¹⁶⁰ According to the survey from Arizona, for instance, since the turn of the millennium, "The vast majority of Maricopa County prosecutors have changed the way they prepare arguments and evidence to counteract the CSI Effect. . . . 'I have been asking to have evidence submitted for fingerprints and DNA on a regular basis, sometimes even with admissions [of guilt,] just to show the jury we are all doing our jobs,' said one prosecutor."¹⁶¹

Does the increase in use of forensic evidence correlate perfectly with a decrease in use of traditional evidence? Some of the anecdotes I have described suggest instead that prosecutors are simply offering *both* traditional and forensic evidence—at least for now. If so, given scarce resources, it's hard to imagine such redundancy persisting for long.¹⁶² The great promise of sophisticated forensic evidence is not that it will supplement older, less reliable evidence; it is that it will obviate the need for it at all. Consider this quote from a trial judge, from the earliest days of DNA evidence:

[I]f DNA Fingerprinting proves acceptable in criminal courts, [it] will revolutionize the administration of criminal justice. Where applicable, it would reduce to insignificance the standard alibi defense. In the area of eyewitness testimony, which has been claimed to be responsible for more miscarriages of justice than any other type of evidence, again, where applicable, DNA Fingerprinting would tend to reduce the importance of eyewitness testimony. And in the area of clogged calendars and the conservation of judicial resources, DNA Fingerprinting, if accepted, will revolutionize the disposition of criminal cases. In short, if DNA Fingerprinting works

mock jurors).

¹⁵⁹ Donald E. Shelton, Young S. Kim & Gregg Barak, *A Study of Juror Expectations and Demands Concerning Scientific Evidence: Does the "CSI Effect" Exist?*, 9 VAND. J. ENT. & TECH. L. 330 (2006) (survey of potential jurors).

¹⁶⁰ "[B]ecause of these forensic crime shows there now exists a much higher bar for police and prosecutors to reach in proving the guilt of defendants. Expensive tests are run on evidence such as fingerprints, DNA, etc.—even when the defendant was 'caught in the act' of committing the crime for which he/she is being tried by police and eye-witnesses." Joshua K. Marquis & Velva M. Walter, *CSI Effect—Does It Really Exist?*, NATIONAL DISTRICT ATTORNEY'S ASSOCIATION, <http://communities.justicetalking.org/blogs/day17/archive/2007/10/16/csi-effect-does-it-really-exist.aspx> (last visited on Oct. 27, 2008).

¹⁶¹ MARICOPA COUNTY, *supra* note 152, at 9.

¹⁶² Mnookin, *supra* note 8, at 44 (discussion of the brief period of time during which courts required both the photograph and a live witness describing what the photograph depicted); *see also supra* notes 10-14 and accompanying text (describing the same phenomenon with computer simulations).

and receives evidentiary acceptance, it can constitute the single greatest advance in the “search for truth,” and the goal of convicting the guilty and acquitting the innocent, since the advent of cross examination.¹⁶³

II. THE LESSONS OF SELF-INCRIMINATION DOCTRINE FOR SCIENTIFIC EVIDENCE

On almost any reading, self-incrimination doctrine is a mess—a view shared by observers old and new.¹⁶⁴ Questions of how to cabin and apply it have plagued the doctrine from the beginning. Among the problems is, as with most Constitutional rules, it is not at all clear exactly what the rule protects against. (Any prosecution from compelled statements? Just the admission of compelled statements? Or also the “fruits” of compelled statements—and exactly how do we define the fruits?) Also perplexing is exactly what “incriminating” means. (Does it only cover statements that would tend to prove criminal liability? Or also anything that would tend to humiliate or harm the confessor more generally?) There has also been debate about *when* the rule applies. (Only to testimony in a witness chair? Or to all statements made in custody? And what counts as custody?) The courts, obviously, have answered these questions in various ways over time, but their answers have always been controversial because they have never felt particularly principled, nor have they been very stable or clear in practice.

As a consequence, the doctrine itself seems to do very little work in helping a judge to decide actual cases. Instead, it is “an unsolved riddle of vast proportions”¹⁶⁵ that seems to leave full discretion to judges who, except in the very clearest cases, are likely to decide that a confession does not violate the doctrine if it is very important to the

¹⁶³ *People v. Wesley*, 533 N.Y.S.2d 643, 644 (Albany County Ct. 1988). The judge went on to say, “Further, the compilation of a DNA Fingerprint data base, such as that in existence for ordinary fingerprints, will enormously enhance the ability of law enforcement to reduce the number of unsolved crimes that currently occur daily.” *Id.*

¹⁶⁴ Ronald J. Allen & M. Kristin Mace, *The Self-Incrimination Clause Explained and Its Future Predicted*, 94 J. CRIM. L. & CRIMINOLOGY 243, 243-44 (2004); Albert W. Alschuler, *A Peculiar Privilege in Historical Perspective: The Right to Remain Silent*, 94 MICH. L. REV. 2625 (1996); Akhil Reed Amar & Renee B. Lettow, *Fifth Amendment First Principles: The Self-Incrimination Clause*, 93 MICH. L. REV. 857 (1995); Henry Friendly, *The Fifth Amendment Tomorrow: The Case for Constitutional Change*, 37 U. CIN. L. REV. 671, 679-95 (1968); RICHARD H. HELMHOLZ, *Introduction*, in *THE PRIVILEGE AGAINST SELF-INCRIMINATION 2* (1997); John T. McNaughton, *The Privilege Against Self-Incrimination: Its Constitutional Affection, Raison d’Etre and Miscellaneous Implications*, 51 J. CRIM. L., CRIMINOLOGY, & POLICE SCI. 138, 138 (1960).

¹⁶⁵ Amar & Lettow, *supra* note 164, at 857.

case and does if it is not.¹⁶⁶ The messiness of the doctrine is likely a function of the lack of a coherent justification for the privilege itself,¹⁶⁷ which critics have variously described as “a relic of controversies and dangers which have disappeared,”¹⁶⁸ and a right that “might be lost, and justice still be done.”¹⁶⁹ Others, more sympathetic to the privilege, have spilled considerable ink trying to “rescue” it by articulating a principled and predictive theory for it, but with little success.¹⁷⁰ Still others have suggested quixotic interpretations, or even constitutional amendments, in the hope of resolving the complexities and ambiguities of the doctrine.¹⁷¹

If a few hundred years of scholarship and interpretation haven’t settled the confusion, it’s hard to imagine anything that will. But if what I wrote in the first half of this paper is correct, the hopeless lack of clarity won’t matter for much longer, anyway. As police and prosecutors seek out and rely on confessions less and less, the troubles that attend interrogations also recede; so too does the need for making sense of the rules surrounding them.¹⁷² And perhaps good riddance. After all, the doctrine has been mocked for as long as it has existed.¹⁷³ At the very time the modern privilege was beginning to emerge, Jeremy

¹⁶⁶ Allen & Mace, *supra* note 164, at 260; Amar & Lettow, *supra* note 164, at 870-72. This is not to imply that judges are “finding” facts in a way that self-consciously promotes a desired end, but, instead, that how they understand the facts, and which ones they find relevant, are a product of how valuable they find the evidence (which is itself a function of prior normative commitments to things like individualism or egalitarianism). Cf. Dan M. Kahan & Donald Braman, *The Self-Defensive Cognition of Self-Defense*, 45 AM. CRIM. L. REV. 1 (2008), and other papers produced by the Cultural Cognition Project at Yale Law School, <http://research.yale.edu/culturalcognition> (showing that in general, people shape their view of facts according to whether they fit their values or theories of appropriate behavior).

¹⁶⁷ Allen & Mace, *supra* note 164, at 244. If so, this would mirror similar arguments that have been made about other rules of evidence for which no one can give a very convincing theoretical account, such as the widely evaded (both formally, using the plethora of explicit exceptions, and informally, by interpreting the definitions in a stingy fashion) bans on character-propensity and hearsay evidence. David J. Karp, *Evidence of Propensity and Probability in Sex Offense Cases and Other Cases*, 70 CHI.-KENT L. REV. 15, 26-30 (1994) (categorical exclusion on character-propensity evidence); Lawrence Tribe, *Triangulating Hearsay*, 87 HARV. L. REV. 957, 957-58 (1974) (hearsay rules); see also Robert P. Burns, *Notes on the Future of Evidence Law*, 74 TEMP. L. REV. 69 (2001) (on this feature of the rules of evidence generally).

¹⁶⁸ John H. Wigmore, *Nemo Tenetur Seipsum Prodere*, 5 HARV. L. REV. 71, 86 (1891).

¹⁶⁹ *Palko v. Connecticut*, 302 U.S. 319, 325 (1937).

¹⁷⁰ See Ronald J. Allen, *Theorizing About Self-Incrimination*, 30 CARDOZO L. REV. 729 (2008).

¹⁷¹ See, e.g., Amar & Lettow, *supra* note 164, at 858-59 (proposing that the clause be read to allow pretrial questioning of a suspect in a controlled setting with a judge and lawyers present while giving a criminal defendant an absolute veto over the use at trial of any answers she gives there and against her having to take the witness stand, but allowing the prosecutors to proffer any and all “fruits” of the pretrial questioning); Friendly, *supra* note 164, at 721-22 (proposing a six-paragraph amendment to the 15 words of the Fifth Amendment’s self-incrimination clause).

¹⁷² Likewise, evaluating which eyewitness identification procedures are too suggestive becomes unnecessary, if (and when) police and prosecutors stop relying on them.

¹⁷³ HELMHOLZ, *supra* note 164.

Bentham was already writing contemptuously of it, dismissing as an “old woman’s reason” the idea that “‘tis hard upon a man to be obliged to criminate himself. . . . [A]ll this sentimentality resolves itself into neither more nor less than a predilection—a confirmed and most extensive predilection, for bad evidence.”¹⁷⁴

A. *Self-Incrimination Doctrine Reflects the Intractable, Essential Tension Between Liberty and Order*

The critics are almost certainly right that the doctrine of self-incrimination has failed to generate a set of concrete, workable principles that a court can use reliably to decide particular cases. Nevertheless, the doctrine contains a robust, recognizable, and useful core, despite all the confusion and indeterminacy that attends its application. Namely, the doctrine describes persistent concerns about the relationship between the individual and the state, particularly in the criminal law, and it embodies our ambivalence about the legitimacy of using coercive force against individuals to maintain civil society. The doctrine can be worthwhile even if it does nothing more than enshrine particular values and force the criminal justice system to take them visibly into account when investigating and prosecuting defendants. In this subsection, I will describe more precisely what values the doctrine advances, and how, before then defending the idea that the doctrine does a good job of expressing commitment to those values.

As the Supreme Court has phrased it:

[The privilege points] to one overriding thought: the constitutional foundation underlying the privilege is the respect a government—state or federal—must accord to the dignity and integrity of its citizens. To maintain a ‘fair state-individual balance,’ to require the government ‘to shoulder the entire load,’ . . . to respect the inviolability of the human personality, our accusatory system of criminal justice demands that the government seeking to punish an individual produce the evidence against him by its own independent labors, rather than by the cruel, simple expedient of compelling it from his own mouth.¹⁷⁵

The specific components that must be balanced are framed in different ways (such as devotion to the adversarial system,¹⁷⁶ or to notions of

¹⁷⁴ JEREMY BENTHAM, *Rationale of Judicial Evidence*, in *THE WORKS OF JEREMY BENTHAM* 230 (1827).

¹⁷⁵ *Schmerber v. California*, 384 U.S. 757, 762 (1966) (quoting *Miranda v. Arizona*, 384 U.S. 436, 460 (1966)).

¹⁷⁶ Abe Fortas, *The Fifth Amendment: Nemo Tenetur Prodere Seipsum*, 25 CLEV. B. ASS’N J. 91, 98-99 (1954); John H. Langbein, *The Historical Origins of the Privilege Against Self-Incrimination at Common Law*, 92 MICH. L. REV. 1047, 1047, 1083-85 (1994).

privacy¹⁷⁷), but as I describe in more detail below, they all reflect similar anxieties about the liberty-order balance. I am not, however, arguing that the doctrine includes a “balancing test” in any formal sense; the privilege is absolute when it applies.¹⁷⁸ But even more than most other privileges, there are highly fact-specific, built-in ambiguities in the conditions that will trigger the protection of the privilege and whether they have been waived.¹⁷⁹ Moreover, there are limits to the reach of the privilege; for instance, while the “fruits” of a coerced confession are excludable,¹⁸⁰ there is often considerable wiggle room in identifying those fruits. This allows judges to retain a great deal of discretion in deciding when the privilege applies and how much it protects. Whether or not the privilege is formally subject to balancing is really beside the point when, as applied, judges can implicitly weigh the value to the state of a confession against the liberty interests of the defendant.¹⁸¹

Perhaps a jaundiced eye could recast all “absolute” privileges as qualified ones in practice. But we needn’t worry too much about that slippery slope argument here—the privilege against self-incrimination has more moving parts, and thus more opportunity for ambiguity, than the other testimonial privileges. For support, we need look no further than Wigmore’s classic evidence treatise, which devotes over twice as many pages to the privilege against self-incrimination (about 250 in the 1961 revision of Wigmore’s volume on privileges, which is the most recent hard-bound edition) as to its nearest competitor, the attorney-client privilege (about 100 pages). Others trail even farther behind, such as the combined spousal testimonial and communications privileges (about 80 pages total), the state secrets privilege (around 75), and the physician-patient privilege (about 50). The greater complexity of the privilege against self-incrimination leads to greater opportunity for judicial discretion.

¹⁷⁷ Peter Arenella, *Schmerber and the Privilege Against Self-Incrimination: A Reappraisal*, 20 AM. CRIM. L. REV. 31 (1982); Robert S. Gerstein, *Privacy and Self-Incrimination*, 80 ETHICS 87 (1970).

¹⁷⁸ *Fisher v. United States*, 425 U.S. 391, 400 (1976) (“[T]he Fifth Amendment’s strictures, unlike the Fourth’s, are not removed by showing reasonableness.”).

¹⁷⁹ For instance, was a confession voluntary? *See Bram v. United States*, 168 U.S. 532, 542 (1897) (“In criminal trials, in the courts of the United States, wherever a question arises whether a confession is incompetent because not voluntary, the issue is controlled by that portion of the fifth amendment . . . commanding that no person ‘shall be compelled in any criminal case to be a witness against himself.’”). Even if involuntary, was admitting the confession harmless error? *See Arizona v. Fulminante*, 499 U.S. 279, 295 (1991) (holding that involuntary confessions are subject to harmless error analysis). And so on.

¹⁸⁰ *Harrison v. United States*, 392 U.S. 219, 222 (1968) (“[T]he same principle that prohibits the use of [illegally-procured] confessions . . . also prohibits the use of any testimony impelled thereby—the fruit of the poisonous tree, to invoke a time-worn metaphor.”).

¹⁸¹ 8 JOHN HENRY WIGMORE, *EVIDENCE IN TRIALS AT COMMON LAW* (John T. McNaughten ed., 1961).

Moreover, despite the fact that the privilege is formally absolute, commenters do speak about the privilege in terms that resonate within a balancing framework. So, too, does the Supreme Court, which has written that the privilege reflects an entire “complex of values.”¹⁸² What is that complex? In *Murphy v. Waterfront Commission of New York Harbor*, the Court explained:

[The privilege embodies our] unwillingness to subject those suspected of crime to the cruel trilemma of self-accusation, perjury or contempt; our preference for an accusatorial rather than an inquisitorial system of criminal justice; our fear that self-incriminating statements will be elicited by inhumane treatment and abuses; our sense of fair play which dictates ‘a fair state-individual balance by requiring the government to leave the individual alone until good cause is shown for disturbing him and by requiring the government in its contest with the individual to shoulder the entire load;’ our respect for the inviolability of the human personality and of the right of each individual ‘to a private enclave where he may lead a private life;’ our distrust of self-deprecatory statements; and our realization that the privilege, while sometimes ‘a shelter to the guilty,’ is often ‘a protection to the innocent.’¹⁸³

It is obviously possible—and necessary—to narrow and organize this list by dividing the underlying values at play into two broad sets of competing interests that the Court itself suggests: liberty and order.¹⁸⁴ On the “order” side is the fairly straightforward interest of the state: reaching accurate, efficient verdicts. The state wants to convict the guilty, exonerate the innocent, and accomplish this at the lowest cost possible. Historically, confessions produced by interrogations were both accurate (relative to other forms of evidence) and cheap, so the interests of the state generally pushed towards using them.¹⁸⁵

The “liberty” side of the equation is less concrete and more prone to the sort of flowery descriptions that annoy critics of the doctrine so much. We can further hone the liberty interest into two component (though admittedly still broad) categories, again suggested by the Court itself: dignity and adversarialism. These categories are not independent of one another, nor, again, are they absolute. They are simply interests

¹⁸² *Schmerber v. California*, 384 U.S. 757, 762 (1966).

¹⁸³ 378 U.S. 52, 55 (1964) (internal citations omitted).

¹⁸⁴ *Brown v. Walker*, 161 U.S. 591, 637 (1896) (Field, J., dissenting) (“The reprobation of compulsory self-incrimination is an established doctrine of our civilized society. As stated by appellant’s counsel, it is the ‘result of the long struggle between the opposing forces of the spirit of individual liberty, on the one hand, and the collective power of the State, on the other.’”).

¹⁸⁵ Even if the state’s interest in order was the only interest in play, self-incrimination would not always be preferred to other forms of evidence. If other forms of evidence were more reliable—in the sense of avoiding both false positives and false negatives—or were cheaper, the state would prefer it. In that case, there would be no need for a doctrine restricting the state’s use of self-incriminating evidence, because the state would have little incentive to use it in the first place. This, of course, is the central prediction of this paper.

that in practice are balanced against the needs of the state for order. Each of these liberty interests generally pushes against using, or even seeking, a confession produced by an interrogation. I discuss each of them in turn below—but again, these interests are not hermetically sealed from one another, as there are dignity components to our desire for adversarialism.

Dignity. This interest offers perhaps the most intuitive justification for the privilege, but also the loosest. To start with, it just “seems wrong” to force someone to incriminate himself—but what, specifically, is wrong with it? One argument is that since getting incriminating information straight from the accused is so efficient, police and prosecutors will be tempted to overreach, possibly using abusive tactics to acquire what they want.¹⁸⁶ Another argument focuses on the so-called “cruel trilemma” of the guilty defendant: without the privilege, he must choose to refuse to speak and be held in contempt of court, to tell the truth and be convicted, or to lie under oath and face the religious consequences of doing so.¹⁸⁷ It is easy to dismiss or even ridicule these justifications. After all, you can ban the torture bathwater while keeping the compelled-self-incrimination baby, and the idea that we should feel sorry for a by-hypothesis-guilty defendant for having to suffer just punishment for his crime is not particularly compelling.

Still, the fact that these justifications come so quickly to mind and have resonated so consistently across the centuries suggests that there is something to them. This “something” is a dignity sensibility, which registers distaste for blatantly treating even a criminal defendant as a means to an end. Of course, even in a liberal democracy, we treat defendants as means to an end all the time; though a suspect cannot be tortured to obtain her confession, she can be coerced in myriad other often painful and humiliating ways, such as being required to submit to physical examinations or medical tests.¹⁸⁸ Still, if the point of the doctrine is to express respect for the value of treating even guilty criminal defendants as ends not means, then the fact that the doctrine fails to eliminate *all* of the indignities of prosecution does not damn it. The doctrine still reminds the system that dignity is one of the weights on the scale, and so must be taken seriously. The fact that the dignity

¹⁸⁶ See *Murphy*, 378 U.S. at 55 (“[The self incrimination doctrine] reflects many of our fundamental values and most noble aspirations . . . [such as] our fear that self-incriminating statements will be elicited by inhumane treatment and abuses . . .”).

¹⁸⁷ *Id.*; see also Bernard Meltzer, *Required Records, the McCarran Act, and the Privilege Against Self-Incrimination*, 18 U. CHI. L. REV. 687, 692-93 (1951).

¹⁸⁸ *Schmerber v. California*, 384 U.S. 757 (1966) (holding that a defendant can be compelled to submit to a blood test); *South Dakota v. Neville*, 459 U.S. 553 (1983) (same); *State v. Middleton*, 222 S.E.2d 763 (S.C. 1976), *vacated*, 429 U.S. 807 (1976), *reaff'd on remand*, 232 S.E.2d 342 (S.C. 1977) (holding that testimony about defendant’s refusal to submit to a combing of his pubic hair for evidence did not violate the privilege).

right can be trumped, after due reflection, does not decimate its value.

Privacy also fits in the “dignity” category. The obvious problems with the “cruel trilemma” and “anti-torture” justifications have led several modern scholars to endorse privacy as a reason for the privilege instead.¹⁸⁹ The Supreme Court itself has described the privilege as guaranteeing “a private inner sanctum of individual feeling and thought”¹⁹⁰ which protects the “inviolability of the human personality.”¹⁹¹ While there is little, if any, evidence that the privilege originally sprang from an explicit desire to protect privacy,¹⁹² the notion is not completely foreign to its history. The privilege has been widely understood (correctly or not)¹⁹³ as having been born at least in part of a revulsion towards the “fishing expeditions” practiced by the English Courts of High Commission and the Star Chamber, where an accused could be grilled, on no suspicion, about anything at all.¹⁹⁴ And again, whether privacy was an original source for the privilege or not, the notion has resonated with many to justify it today. But this defense of the privilege is not without its problems, too.

One sense of privacy that is advanced by the privilege is the right to secrecy. In an obvious sense, an accused has the right to keep a secret about himself (especially, whether or not he committed a crime). However, the privilege against *self*-incrimination obviously gives him no right to block others from revealing his secrets.¹⁹⁵ Another sense of privacy is instead about control: the right to decide *how* and *when* to reveal information about oneself.¹⁹⁶ But again, the privilege does not give an accused the power to control how and when *others* will reveal information about him. Indeed, such revelations are the entire point of putting him on trial.

Still, as with the limits on “means-end” dignity above, just because the privacy interest protected by the privilege can be trumped doesn’t mean it is nonexistent, nor does it mean that there is no value in forcing

¹⁸⁹ See, e.g., Robert Gerstein, *supra* note 177; Robert B. McKay, *Self-Incrimination and the New Privacy*, 1967 SUP. CT. REV. 193, 214 (1967); see also *Griswold v. Connecticut*, 381 U.S. 479, 484 (1965) (“The Self-Incrimination Clause enables the citizen to create a zone of privacy which government may not force him to surrender.”); *United States v. Grunewald*, 233 F.2d 556, 581-82 (2d Cir. 1956), *rev’d*, 353 U.S. 391 (1957) (Frank, J., dissenting) (claiming that the privilege creates “a right to a private enclave where he may lead a private life”).

¹⁹⁰ *Couch v. United States*, 409 U.S. 322, 327 (1973).

¹⁹¹ *Murphy*, 378 U.S. at 55.

¹⁹² See HELMHOLZ, *supra* note 164, at 4.

¹⁹³ John H. Langbein, *The Privilege and Common Law Criminal Procedure: The Sixteenth to the Eighteenth Centuries*, in *THE PRIVILEGE AGAINST SELF-INCRIMINATION: ITS ORIGINS AND DEVELOPMENT* 82 (R.H. Helmholtz et al. eds., 1997).

¹⁹⁴ See Charles T. McCormick, *Law of the Future: Evidence*, 51 NW. U. L. REV. 218, 221-22 (1956); see also *Quinn v. United States*, 349 U.S. 155, 161-62, 164 (1955).

¹⁹⁵ Of course, other privileges, such as the common law spousal privilege and the attorney-client privilege, do (sometimes) give him this power.

¹⁹⁶ See Charles Fried, *Privacy*, 77 YALE L.J. 475, 482 (1968).

legal actors who seek a confession to pause to acknowledge the privacy interests of the accused. The privilege forces judges to give weight to the idea that the criminal defendant is entitled to at least some control over whether and how he will publicly reveal personal information.

Adversarialism. John Langbein wrote a compelling and influential revisionist history of the modern privilege, arguing that its true origins were in the increasing adversarialism of criminal trials from the mid-eighteenth through the mid-nineteenth centuries.¹⁹⁷ In Langbein's telling, procedure came before substance. First, the defense bar emerged, and only after that were various substantive rights associated with an adversarial system of justice able to develop, such as the beyond-a-reasonable-doubt standard, the burden of production being placed on the prosecution, and a meaningful privilege against self-incrimination.¹⁹⁸ Before defendants became entitled to have, and were able as a practical matter to acquire, counsel who could speak for them at trial, any right to stay silent in the face of a criminal accusation was suicidal—sometimes literally so.¹⁹⁹

Though Langbein's argument is merely descriptive—his ambition was to explain the origins of the privilege rather than to justify its existence—the political liberties enabled by adversarialism have also been advanced as a normative defense. As Abe Fortas wrote:

The principle that a man is not obliged to furnish the state with ammunition to use against him is basic to [the compact theory of government]. Equals, meeting in battle, owe no such duty to one another, regardless of the obligations that they may be under prior to battle. A sovereign state . . . has no right to compel the sovereign individual to surrender or impair his right of self-defense.²⁰⁰

What is gained by preventing this kind of state compulsion? For one thing, it places a thumb on the defendant's side of the scale, reducing the relative disadvantage individual defendants typically face relative to the state's own vast trial resources. By forcing the state to speak, but not the (usually weaker) defendant, we get closer to Fortas's adversarial ideal of two equals meeting in battle.

Why, though, do we want the adversaries to be, more or less, equals? Arguably, because it decreases the mistakes we care most about: convicting the innocent.²⁰¹ But there is also independent value simply in forcing the state to make its case independent of the accused, and to mitigate or even eschew the disproportionate power advantages it would otherwise naturally have. Adversarialism responds to a fear that

¹⁹⁷ Langbein, *supra* note 193, at 83-84.

¹⁹⁸ See *id.* at 96-99; Langbein, *supra* note 176, at 1069-72; see also Moglen, *supra* note 4, at 1090.

¹⁹⁹ Langbein, *supra* note 193, at 95; Langbein, *supra* note 176, at 1065-66.

²⁰⁰ Fortas, *supra* note 176, at 98-99.

²⁰¹ Friendly, *supra* note 164, at 693-94; see also Langbein, *supra* note 176, at 1069.

when the state takes advantage of this power differential, it is offensive to our notions of individualism and autonomy. In the criminal setting, adversarialism transforms the trial from a bureaucratic, monolithic machine that processes information (and defendants) in order to mechanically generate a result, into a formal *ritual* of democracy where the state must, at least in theory, meet the accused on equal terms.

Indeed, it is this spectacle of the monolithic, bureaucratic state that causes many observers to instinctively dislike—even if, for practical reasons, they might ultimately endorse—the ubiquity of plea bargaining.²⁰² As Robert Burns has phrased it, “[T]he privilege against self-incrimination [recognizes] that the criminal trial’s interest in truth was not theoretical, but intensely practical, indeed political, and the control of state power was an independent goal that the trial served.”²⁰³ The privilege against self-incrimination is one of several techniques the adversarial system uses to help tame the state’s 500-pound gorilla: the refusal to allow the state to forcibly extract information from the mouth of its opponent is a part of the ritual of respect for individual autonomy that is embodied by a fully adversarial trial.²⁰⁴

Naturally, this notion of adversarialism is not absolute, either—the state may forcibly extract, through subpoena, a great deal of information from the accused, including from his body.²⁰⁵ Moreover, while there are many doctrines designed to bring criminal defendants closer to the level of resources enjoyed by the state, there is certainly no standard demanding anything like absolute parity. Again, the important idea is not that the doctrine of self-incrimination enforces any *particular* level of resources for the defendant; it is that the doctrine forces courts to account for the value of genuine adversarialism when deciding whether to admit a confession.

The detractors of the doctrine themselves recognize that the core of the doctrine is to allocate the liberty-order balance, even while they describe it as “empty rhetoric,”²⁰⁶ a “cacophony of clichés,”²⁰⁷ “slogans

²⁰² Stephen J. Schulhofer, *Is Plea Bargaining Inevitable?*, 97 HARV. L. REV. 1037, 1039 (1984).

²⁰³ Burns, *supra* note 167, at 72.

²⁰⁴ Cf. Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329, 1376 (1971) (“It would be a terrible mistake to forget that a typical lawsuit, whether civil or criminal, is only in part an objective search for historical truth. It is also, and no less importantly, a ritual—a complex pattern of gestures comprising what Henry Hart and John McNaughton once called ‘society’s last line of defense in the indispensable effort to secure the peaceful settlement of social conflicts.’” (quoting Henry Hart & John McNaughton, *Evidence and Inference in the Law*, in EVIDENCE AND INFERENCE 48, 52 (D. Lerner ed., 1958))).

²⁰⁵ See *Schmerber v. California*, 384 U.S. 757, 764 (1966) (“[B]oth federal and state courts have usually held that it offers no protection against compulsion to submit to fingerprinting, photographing, or measurements, to write or speak for identification, to appear in court, to stand, to assume a stance, to walk, or to make a particular gesture”); see also *infra* note 190.

²⁰⁶ Allen, *supra* note 170.

²⁰⁷ Friendly, *supra* note 164, at 672.

that simply restate the rule”²⁰⁸ and worse. Their main complaint is that this “complex of values” does nothing to actually instruct courts on how to decide concrete cases. As Judge Friendly wrote:

Even if we knew just where we want the balance set, I would find it hard to reason from this to any particular application of the privilege; indeed, one of the charms of the ‘fair state-individual balance’ argument for proponents of the privilege is that it can be summoned to justify almost any extension.²⁰⁹

Indeed, if its ability to predictably constrain judges were the principal value of the doctrine, the critics would be right: its failure at that task would make the privilege absolutely worthy of contempt.

But the doctrine is *not* just empty rhetoric if it accomplishes some other goal. Given the broad consensus about the (failed or not) spirit of the doctrine, perhaps it provides something useful after all: a home for the expression of our anxieties about the criminal law more generally.²¹⁰ The doctrine, in all its intricacies, requires judges and juries to consider whether the balance has been appropriately struck in a given case or procedure, even though it does not give them a mechanical formula for striking it. By acknowledging the necessity of striking *some* balance between the needs of the state and the autonomy of individual citizens—and acknowledging how difficult and fact-specific that balance usually is—the doctrine expresses commitment to a thoughtful, restrained, even-handed criminal justice system, even if it can’t guarantee one.

On this reading, the very complexity and indeterminacy of the doctrine is an advantage. If it were mechanical, it would not be capable of expressing the richness, diversity and difficulty of situations criminal suspects and investigators face, or of reflecting the age-old and intractable tension between liberty and order in the enforcement of criminal laws. The very act of grappling with the liberty-order balance is a show of respect for the occasionally incompatible rights of victims, suspects, and the community at large. It is, as Professor Burns, implies, a part of the ritual of democracy. The doctrine is useful despite the fact that it does not, and cannot, *resolve* our anxieties about the potential for criminal procedures to trample either the rights of the individual or the needs of the state. Instead, it serves as the political equivalent of psychotherapy: by giving those anxieties a forum for expression, it helps maintain balance and reminds legal actors of the legitimacy of

²⁰⁸ Amar & Lettow, *supra* note 164, at 893.

²⁰⁹ Friendly, *supra* note 164, at 694.

²¹⁰ Cf. Elizabeth S. Anderson & Richard H. Pildes, *Expressive Theories of Law: A General Restatement*, 148 U. PA. L. REV. 1503, 1529 (2000); Dan M. Kahan, *The Secret Ambition of Deterrence*, 113 HARV. L. REV. 413, 419-25 (1999); Dan M. Kahan, *What Do Alternative Sanctions Mean?*, 63 U. CHI. L. REV. 591 (1996).

their concerns.²¹¹

In sum, the parameters of the privilege embody, and pay respect to, a “complex of values” embodying the state’s need for order versus individual, liberal interests in dignity and adversarialism. One of the most important functions—perhaps, in practice, the only function—of the privilege is to *express* a baseline commitment to these principles, by providing a mandatory forum for weighing and discussing them. That is, it does not really matter so much whether or not a particular confession is admitted in a given case. It also doesn’t matter that the doctrine cannot reliably tell a court whether to admit a confession, or tell a police investigator exactly when and how he can seek one. But as long as the doctrine forces these legal actors to take the underlying values seriously and demonstrate a respect for them, the doctrine is performing its job.

Is this theory of the function of the privilege unfalsifiable, and therefore unscientific and unhelpful?²¹² No. This expressive theory of the privilege could be disproved by showing that the doctrine fails to provide a platform for taking our anxieties seriously; that is, that people *do not* either see the doctrine as grappling with the liberty-order dilemma, or as forcing legal actors to take this dilemma into consideration when deciding how to act.²¹³ This might be the case either because legal actors were not in fact taking these values into consideration, or because they did so in such an opaque or confusing way that they did not *appear* to do so. The expressive theory could also be falsified (or at least rendered irrelevant) by showing that we *have* no such anxieties to express. Finally, though this would be a normative rather than a scientific “falsification,” the expressive theory of the privilege could be challenged by showing that we do have these anxieties, but ought not.²¹⁴ These are (except for the last) empirical questions—and I would not be at all surprised, for instance, to see data showing that, in fact, attentive citizens failed to see how the doctrine

²¹¹ Kenworthy Bilz, *The Puzzle of Delegated Revenge*, 87 B.U. L. REV. 1059 (2007); Charles Nesson, *The Evidence or the Event? On Judicial Proof and Acceptability of Verdicts*, 98 HARV. L. REV. 1357, 1391 (1985) (“Many procedural and structural mechanisms of the legal system serve to enhance the acceptability of judicial verdicts. . . . [T]he goal of generating acceptable verdicts is not met simply by choosing the verdict that is most probably accurate. Acceptable verdicts and probable verdicts might appear to coincide, given that one obvious way to gain public acceptance is to search for truth. But the correlation between probability and acceptability is not exact: a probable verdict may not be acceptable, and an acceptable verdict may not be probable.”); Tribe, *supra* note 204, at 1372-75.

²¹² See generally Ronald J. Allen, *Two Aspects of Law and Theory*, 37 SAN DIEGO L. REV. 743 (2000) (discussing the merits of having “theories” of privilege).

²¹³ If so, such a failure could be normatively criticized. ELIZABETH ANDERSON, VALUE IN ETHICS AND ECONOMICS 18 (1995) (“A social order can be criticized for failing to provide adequate normative vehicles for the expression of attitudes that have come to make sense to its members.”).

²¹⁴ *Id.* at 37-38.

against self-incrimination adequately expressed cherished notions of privacy and dignity. Nevertheless, this subsection has, I hope, served to show that to the extent the doctrine *does* successfully serve its expressive function of demonstrating a commitment to the “complex of values” described by the Court, then it is no wonder it has persisted, even in the face of regular complaints about its opacity.

To be clear, I am not claiming that the doctrine of self-incrimination is the *only* place anxieties about the liberty-order balance are expressed. The Fourth Amendment is another important forum for them, and there are others as well. But given how important confessions are to the successful prosecution of criminal cases, both historically and still today, the doctrine of self-incrimination is among the most visible and important. The more important a given class of evidence is to the prosecution of a criminal trial, the more pressure on it there will be to fully express the tension between liberty and order. And, necessarily, the more pressure to express the liberty-order tension, the more complex, indeterminate and fraught the relevant doctrine must become. Since today, confessions usually bear most of the weight of criminal prosecutions, the doctrine of self-incrimination bears most of the weight of our anxieties about the liberty-order balance. The day will come, though, that confessions no longer bear the bulk of this burden. What happens then is the subject of the next section.

B. *Even as Confessions Subside, the Values Embodied in the Self-Incrimination Doctrine Survive*

When the need for self-incrimination doctrine fades, as a consequence of police and prosecutors seeking confessions less frequently, what happens? There are essentially three possibilities: one, our anxieties disappear along with the confessions; two, self-incrimination doctrine expands to cover the new forms of evidence that replace confessions; or three, our anxieties shift onto the new forms of evidence, requiring the doctrines that cover their admissibility to suddenly accommodate them in ways and to the degree they had not before.

The first possibility, that the anxieties that attach to confessions simply disappear along with the confessions themselves, is the least likely. We are anxious about confessions because we are anxious whenever the state intrudes into the private (and personal) sphere, even, or perhaps especially, when the intrusion is to preserve civil order. If confessions go away, I have argued that it will be because the state has found other ways to get the same incriminating information using alternative means: namely, using forensic technologies. But most of

these forensic technologies also involve the specter of the state extracting information from some previously private (or personal) source, and of the heavily-resourced state being able to “out-gun” lone defendants, converting trials from a ritualistic meeting of equals into stacked farces with foregone conclusions.

In an important sense, self-incrimination doctrine is not about confessions *per se*. Rather, it is about our nervousness with the process of obtaining and displaying important incriminating proofs in the criminal law more generally. Confessions just happen to be, historically, among the most important such proofs. Anxiety about the precariousness of the liberty-order balance in the context of the criminal law writ large has been with us since the founding of the American political order²¹⁵—indeed, it virtually defines it, and explains much of its structure. Since this anxiety attaches to more than just confessions, it will almost certainly outlast them. Thus, the idea that our anxieties about the criminal law generally will simply fade into relative insignificance along with confessions is hard to imagine.

A somewhat more probable scenario is the second one, that self-incrimination doctrine itself will “step up to the plate” to cover the forensic evidence that displaces confessions. Indeed, in the earliest years of the self-incrimination doctrine, there *was* debate about whether the privilege covered self-incriminating physical (as opposed to strictly testimonial) evidence, “scientific” or not. Before the Supreme Court definitively stepped in to answer the question in the negative,²¹⁶ courts occasionally did hold that the privilege against self-incrimination forbade prosecutors from compelling defendants to cooperate in a variety of physical evidence-gathering activities: for instance, submitting to fingerprinting,²¹⁷ being photographed,²¹⁸ providing tissue samples (such as saliva or blood),²¹⁹ and the like.

The solution by judicial fiat to the problem of whether commanding the production of incriminating physical evidence from an accused violates the privilege has always been a product less of logic than of pragmatics.²²⁰ As such, it is certainly possible that the

²¹⁵ See LAWRENCE M. FRIEDMAN, *A HISTORY OF AMERICAN LAW* 280 (2d ed. 1985).

²¹⁶ *Schmerber v. California*, 384 U.S. 757 (1966) (holding that a suspect can be compelled to have blood drawn to test for the presence of alcohol).

²¹⁷ See, e.g., *State v. Cerciello*, 90 A. 1112 (N.J. 1914) (fingerprints can only be admitted where suspect consented to their making); *People v. Hevern*, 215 N.Y.S. 412 (City Magis. Ct. 1926).

²¹⁸ *Bates v. State*, 117 So. 2d 258 (Ala. Ct. App. 1960); *Spencer v. State*, 404 P.2d 46 (Okla. Crim. App. 1965).

²¹⁹ *Apodaca v. State*, 146 S.W.2d 381 (Tex. Crim. App. 1956); see also *State v. Severson*, 75 N.W.2d 316 (N.D. 1956) (holding that a state is not allowed to comment on defendant’s refusal to submit to blood test); *Alexander v. State*, 305 P.2d 572 (Okla. Crim. App. 1956) (holding the same).

²²⁰ 8 WIGMORE, *supra* note 181, § 2265.

increasing reliance on scientific physical evidence in place of traditional evidence would cause enough concern that the Supreme Court would take the dramatic step of overruling *Schmerber*. Such a move would certainly be welcomed by those who have pointed out the illogic of the distinction in the first place.²²¹ Among the types of scientific evidence I have described in this article, fMRI lie detectors would be the likeliest candidate to cause the Court to rethink the “testimonial” versus “physical” distinction, since it is quite tenuous there, anyway.²²² Still, elimination of the distinction would effect such a fundamental reversal in the nature of modern criminal law enforcement that the odds it will happen are quite remote.

Moreover, extending the protections of testimonial self-incrimination to physical evidence would fail to comprehensively address concerns about scientific evidence, since most such evidence is not “self” incriminating in any natural understanding of the term. Public videotaping, records of proximity detectors, data-mined information, and the like are often either public information or are collected and held by third parties. Obviously, tissue and other physical samples found from crime scenes would not be supplied by suspects, so they, too, would not be covered. Their own comparison samples, of course, would—but, increasingly, comparison samples come from the FBI’s databases of fingerprints, photographs and DNA, collected from individuals after they have already been tried and convicted of another crime.²²³ Possibly, the comparison information could be acquired via

²²¹ See, e.g., *United States v. Mara*, 410 U.S. 19, 32-38 (1973) (Marshall, J., dissenting) (“The root of my difficulty with *Wade* and *Gilbert* is the testimonial evidence limitation that has been imposed upon the *Fifth Amendment* privilege in the decisions of this Court. That limitation is at odds with what I have always understood to be the function of the privilege. I would, of course, include testimonial evidence within the privilege, but I have grave difficulty drawing a line there. For I cannot accept the notion that the Government can compel a man to cooperate affirmatively in securing incriminating evidence when that evidence could not be obtained without the cooperation of the suspect. Indeed, until *Wade* and *Gilbert*, the Court had never carried the testimonial limitation so far as to allow law enforcement officials to enlist an individual’s overt assistance—that is, to enlist his will—in incriminating himself. And I remain unable to discern any substantial constitutional footing on which to rest that limitation on the reach of the privilege.”); SUSAN EASTON, *THE CASE FOR THE RIGHT TO SILENCE* 217-20 (1998); Mike Redmayne, *Rethinking the Privilege Against Self-Incrimination*, 27 OXFORD J. LEG. STUD. 29 (2007).

²²² See Allen & Mace, *supra* note 164, 249-50 (2004); Michael S. Pardo, *Self-Incrimination and the Epistemology of Testimony*, 30 CARDOZO L. REV. 1023 (2008) (discussing issues related to lie detectors).

²²³ High recidivism rates predict that “cold hits” will become more and more common. A Bureau of Justice Statistics study found that over two-thirds (67.5%) of released inmates were arrested for a new crime within three years. Almost half (46.9%) were subsequently convicted, and half (51.8%) served time again, either for the new offense or for parole violations. PATRICK A. LANGAN & DAVID J. LEVIN, U.S. DEP’T OF JUSTICE, *RECIDIVISM OF PRISONERS RELEASED IN 1994* (2002). Concerns about an overbearing state could, I suppose, cause prisons to stop collecting and storing this information—but if such an unlikely thing were to happen, certainly nothing in the Fifth Amendment would demand it.

warranted search-and-seizures of a suspect's home (perhaps to retrieve "discarded" tissue samples, such as hair from brushes or saliva samples from glasses), bypassing the problem of self-incrimination altogether.²²⁴

Of course, to the extent search-and-seizure methods for gathering evidence replace confessions, the doctrines surrounding search-and-seizure could expand to protect the "complex of values" enshrined by the privilege. Thus, self-incrimination doctrine would not *have* to cover all scientific evidence in order for our liberty-order anxieties to be taken seriously; the Fourth Amendment could cover some of it. In fact, it certainly already does. This, then, is the third and final possibility for what happens when confessions and the self-incrimination doctrine wane in importance—other doctrines step into the breach. That the Fourth Amendment already does this is surely true. Moreover, the importance to criminal prosecutions of evidence obtained by search and seizure also explains the complexity of search and seizure doctrine, for the same reasons it explains the complexity of self-incrimination doctrine.

But the Fourth Amendment will not have to pick up all of the slack on its own, nor would it be able to, since much of the forensic evidence I have described would not require searches, either. In a bank robbery, for instance, a bank would gladly hand over security tapes to detectives when asked; indeed, they would probably offer without being asked in the first place. In an embezzlement or fraud investigation, the bank might be the first to suggest that investigators examine their employees' transaction records. What other doctrine could step in when neither the self-incrimination doctrine nor search-and-seizure doctrine cover critically important evidence? If it is scientific evidence that is prominently replacing the older forms of evidence, then the doctrines surrounding scientific evidence will have to bear the weight of that "complex of values" implicated in criminal prosecutions, in a way and to a degree they had not before.

To date, we have not heard the Supreme Court speak in inspiring and broad-reaching terms about scientific evidence as it has for both the doctrine of self-incrimination and the Fourth Amendment. I argue that this is because, up to this point, scientific evidence hasn't been important enough. But this is changing. The legitimacy of the criminal justice regime depends on a full venting of our liberty-order anxieties, and so when one venue for their expression shrinks (confessions), they

²²⁴ Indeed, when the Supreme Court recently increased the level of protection afforded by the self-incrimination doctrine to those who must turn over subpoenaed documents in the corporate setting, *United States v. Hubbell*, 530 U.S. 27 (2000), prosecutors seem to have responded by simply relying less on subpoenas requiring defendants themselves to produce documents, and more on search-and-seizures of the corporate offices where they work. Conversation with Kate Stith, at the Cardozo Future of Self-Incrimination Conference.

will simply move to a new one (scientific evidence). This is the Law for the Conservation of Liberal Anxieties that I mentioned in the introduction.

In the next section, I argue that this transformation of scientific evidence doctrine has already begun—though it is still only in its larval stage—and should accelerate from here, keeping pace with the acceleration in the use of and reliance on forensic technologies. I also examine how well scientific evidence doctrine can bear the new pressures being placed on it.

C. *New Scientific Evidence and the Old Complex of Values*

The Supreme Court did not address the admissibility of scientific evidence at all until *Daubert v. Merrell Dow Pharmaceuticals*²²⁵ in 1993, right around the time sophisticated scientific evidence (particularly DNA profiling) started to become important in criminal trials. This is no mere coincidence; it was the advent and increasing use of these sophisticated technologies that made the Court realize it needed to give lower courts guidance on whether and when to admit them.²²⁶ Before scientific evidence began displacing traditional evidence, its admissibility was not a particularly fraught issue, because rarely was scientific evidence the real centerpiece of a criminal trial. Moreover, when it appeared at all, juries had tended to discount it, relying instead on the confessions and eyewitness evidence that typically accompanied it.²²⁷ But as I have argued, because of improvements in technology and declines in costs, coupled with the CSI Effect, the Innocence Project Effect, or the Mark Fuhrman Effect (take your pick), police, prosecutors' and jurors' preferences seem to have undergone a sea change, such that scientific evidence is increasingly the most prominent and persuasive element in a criminal trial. And so, scientific evidence is beginning to have to carry the weight of our anxieties about criminal adjudication more generally.

Traditionally, scientific evidence debates have been straightforward affairs. Broadly speaking, there are two rules that govern its admissibility, Rules 403 and 702.²²⁸ Rule 403 is the general

²²⁵ 509 U.S. 579 (1993).

²²⁶ See Faigman, *supra* note 23.

²²⁷ Michael J. Saks & Robert F. Kidd, *Human Information Processing and Adjudication: Trial by Heuristics*, 45 *LAW & SOC'Y REV.* 123, 149 (1980) ("Intuitive, heuristic, human decision makers must dispense with certain information, and that tends strongly to be the quantitative information. While commentators' arguments have been that the data are inordinately persuasive, the evidence says that the reverse is true.").

²²⁸ My discussion focuses on the Federal Rules of Evidence, but Rule 403 is duplicated in every meaningful sense respect in the individual states, and Rule 702 is the dominant model for

rule against relevant-but-prejudicial evidence. It demands the exclusion of evidence whose probative value is “outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.”²²⁹ As a practical matter, though, scientific evidence typically gets presented in a trial via an expert, who can help factfinders understand what they are seeing, how the evidence was acquired or generated, and the like. Thus, many objections to scientific evidence are in effect made as objections to the expert witnesses who present it. These objections usually fall under Rule 702. This rule, written to encode the *Daubert* line of cases²³⁰, tells judges that “scientific, technical, or other specialized” expert evidence will be admissible where it will “assist the trier of fact.”²³¹

The question under either of these rules has, until recently, virtually always been one of simple empirical reliability: is the evidence scientifically sound, such that by considering it, we would get a more accurate verdict? If not, the evidence would be excluded as “prejudicial” for its potential to mislead a jury under Rule 403, or more commonly, because it would not assist them as required under Rule 702. While evaluating reliability might be difficult in a given case, until recently the goal at least was clear and uncontroversial—how reliable is it? However, examinations of empirical reliability no longer seem able to contain all of our concerns about scientific evidence. Our nervousness about DNA profiling, ubiquitous cameras, pattern recognition software, data mining, fMRI lie detection, and the like are simply not fully captured by concerns we might have about their scientific soundness. Even if we were 100% confident of their accuracy—sometimes, perhaps, *especially* if—we might still be reluctant to uncritically admit them as evidence in a criminal trial. Consistent with this nervousness and reluctance, courts and commenters have begun to talk about scientific evidence in ways they rarely did before. In particular, the same sort of dignity and adversarialism concerns that have historically attached to self-incrimination doctrine are starting to appear in discussions about using advanced forensic technologies.

Consider, for instance, a recent newspaper article about “surreptitious sampling” of DNA from criminal suspects, a practice that, according to the article, is “growing in popularity.”²³² With the

expert testimony rules.

²²⁹ FED. R. EVID. 403.

²³⁰ FED. R. EVID. 702, advisory committee’s notes on 2000 amendment.

²³¹ FED. R. EVID. 702.

²³² Amy Harmon, *Lawyers Fight DNA Samples Gained on Sly*, N.Y. TIMES, Apr. 3, 2008, at A1, [available at](http://www.nytimes.com/2008/04/03/science/03dna.html?_r=1&scp=1&sq=amy%20harmon%20) http://www.nytimes.com/2008/04/03/science/03dna.html?_r=1&scp=1&sq=amy%20harmon%20

ambition of solving cases, law enforcement personnel will sometimes covertly collect “coffee cups, tissues, straws, utensils and cigarette butts”²³³ from suspects, extract DNA left behind on the objects, and compare it to samples left at crime scenes. That this practice should be considered controversial—at least as a matter of Fourth Amendment doctrine—is curious, given the Supreme Court’s 1988 decision in *California v. Greenwood*.²³⁴ In *Greenwood*, the Court held that a suspected drug dealer had no reasonable expectation of privacy in discarded trash bags, from which police had extracted incriminating evidence.²³⁵

Nevertheless, many find this old practice newly unsettling when it comes in the guise of more sophisticated forensic evidence. The objections that are voiced sound like the same kind of dignity and adversarialism concerns that get routinely expressed in self-incrimination and search and seizure doctrine, but that, given the clear precedent of *Greenwood*, are clearly not accommodated by the existing state of the law. Why is “surreptitious sampling” of DNA material troubling, when doing the same for trash, fingerprints, or saliva (which was done frequently for blood-typing analysis) is not? The answer, I would argue, is that DNA evidence has become critically important in criminal trials, to a degree that trash, blood-type evidence, and even fingerprints never had. As a result, for some, the collection of DNA evidence has become fraught in a way that the older surreptitious sampling cases were not.

To be clear, political nervousness about DNA evidence generally, and thus the desire to distinguish surreptitious sampling of DNA from discarded trash, is an emerging sensibility, and not—at least for now—a dominant one. When recently faced with a surreptitious sampling DNA case,²³⁶ for instance, the majority of justices in the Washington State Supreme Court were *not* troubled. The trial judge had admitted DNA evidence gleaned from a suspect by police trickery; specifically, detectives had mailed a deceptive letter to the defendant and extracted DNA from the flap of his reply envelope.²³⁷ The DNA connected the suspect to the rape-murder of a 13-year-old girl two decades earlier, a crime for which he had been suspected, but without enough evidence to charge him. The majority argued that the logic of *Greenwood* made the result fairly straightforward—but other justices labored to defend a distinction.

awyers%20fight%20dna&st=cse&oref=slogin.

²³³ *Id.*

²³⁴ 486 U.S. 35 (1988).

²³⁵ *Id.*

²³⁶ *State v. Athan*, 158 P.3d 27 (Wash. 2007).

²³⁷ *Id.*

One dissenting justice argued that DNA was different in kind from other evidence a suspect “discards.” Searching for a reason for her intuition, she wrote:

In stark contrast to saliva, fingerprints, and other physical characteristics, one *never* exposes one’s DNA *to the public*. The highly personal information that is revealed after analysis of one’s DNA is never exposed to the public without the aid of modern technological tools. . . . We do not expose DNA to the public when it can be “seen” only with specialized equipment.²³⁸

This objection doesn’t work: neither saliva nor fingerprints reveal anything, either, until an expert uses sophisticated techniques to interpret them. From this perspective, there is still nothing new about DNA that would distinguish it for Fourth Amendment purposes from other discarded material.

A different justice tried to draw the distinction another way, writing:

A person’s DNA, whether it be contained, for example, in his saliva, in a droplet of blood, or in a strand of hair, is not, as the majority suggests, equivalent to a person’s thumbprint or the cadence of his voice—physical characteristics that truly speak to our identity only. Rather, a person’s DNA goes beyond who we are to what we are.²³⁹

This gets somewhat closer to a meaningful reason to feel differently about DNA: even if we are innocent of the crime for which we are being accused, an analysis of our DNA can reveal a lot of sensitive information about us, such as to whom we are related, diseases to which we might be prone, and the like. The embarrassment of such revelations is, in kind, like the embarrassment of being forced to reveal information during an open-ended interrogation. In this way, modern, sophisticated DNA analysis feels more invasive than older ways of gathering evidence, even older scientific evidence. Perhaps not surprisingly, then, there have been many calls for reform in how the government collects and manages DNA samples.

Yet this sense that DNA sampling is more invasive than fingerprinting and photographing doesn’t withstand closer scrutiny. For one thing, the idea that DNA sampling has greater potential to reveal

²³⁸ *Id.* at 52 (Fairhurst, J., dissenting) (emphasis in original; internal quotes and references omitted).

²³⁹ *Id.* at 38 (Alexander, C.J., concurring). It is telling that, despite this justice’s obvious discomfort with the evidence, she nevertheless voted with the majority. Her argument was essentially that the defendant had acted affirmatively by mailing his DNA to the police, which is different than having passively discarded samples of his DNA—as, for instance, through the normal shedding of skin cells. It was his active participation, according to the justice, that made the sample collection legal. The distinction is almost incomprehensible. Not incomprehensible, though, is what likely motivated the tenuous distinction she drew: if the evidence (and thus its fruits) were discarded, the rapist and murderer of a 13-year-old girl, whose case had remained unsolved for 20 years, would have surely gone free.

more irrelevant, embarrassing or sensitive information than these other forms of forensic evidence doesn't hold up. The patterns that are saved for criminal identification purposes in the CODIS database are "junk" DNA, meaning the FBI deliberately selected a standard set of 13 nonfunctional DNA markers ("loci"),²⁴⁰ "which are very weakly associated (if at all) with disease or behavior [and are not] comparable to the loci used in much more powerful modern genetic testing for the DNA sequences of mutations that do cause disease."²⁴¹ Moreover, older, uncontroversial forms of "surreptitious sampling"—for instance, discarded household garbage bags—hold vast potential for revealing intimate and potentially embarrassing information. In some ways, it is even *more* capable of revealing "who" and "what" we are, in that unlike DNA, it can reveal our tastes and demonstrate our private behaviors. That is, the current science and practice of forensic DNA sampling does not generate significant or unique privacy risks²⁴² and therefore is not meaningfully different from the (mostly uncontroversial) older forms of forensic and other physical evidence that preceded it.

For another, once arrested, your fingerprints and mug shot are "in the system" forever. The FBI has had a unified fingerprint database since the 1920's,²⁴³ and photographs have long been kept and shared across law enforcement jurisdictions.²⁴⁴ Yet the routine fingerprinting, photographing and logging of arrestees—for even the most minor infractions—has historically barely generated a whisper of controversy, let alone systemic calls for reform in how they are collected, stored and managed. Contrast this with the collection and storage of DNA profiles.

²⁴⁰ NAT'L INST. OF JUSTICE, *supra* note 20, at 19.

²⁴¹ D.H. Kaye, *Please, Let's Bury the Junk: The CODIS Loci and the Revelation of Private Information*, 102 NW. U. L. R. COLLOQUY 70 (2007), available at <http://www.law.northwestern.edu/lawreview/colloquy/2007/25/>. Professor Kaye goes so far as to say that "the scenarios for the misuse by the government, insurers, or employers of the STR-identification profiles in NDIS and other law enforcement databases border on science fiction." *Id.* at 81.

²⁴² Of course, storing an actual sample and putting a profile into a database are two different things. The former practice would facilitate more extensive and intrusive testing should the owner of the sample (here, the state) so desire. As for the latter, one cannot know what future technology would allow even with the limited profile information currently stored. But both of these risks are speculative and remote, and at least the former problem—which is the more troubling one—could be resolved by simply storing profiles instead of samples (which is, for practical reasons, what is generally done anyway).

²⁴³ SIMON A. COLE, *SUSPECT IDENTITIES: A HISTORY OF FINGERPRINTING AND CRIMINAL IDENTIFICATION* 246 (2001). This database has been fully digitized since the 1990's, enabling the use of biometric software. *Id.* at 257.

²⁴⁴ *Id.* at 237-38. "Rogues' galleries" of photographs were started as early as the middle of the nineteenth century. *Id.* at 20. Paris had collected 75,000 mug shots by as early as 1880. *Id.* at 43. This information, too, will soon be fully digitized. The FBI is developing a more expansive "biometric database" that will unify not only mug shots, but also iris scans, palm prints, and the like into one searchable engine. Ellen Nakashima, *FBI Prepares Vast Database of Biometrics*, WASH. POST, Dec. 22, 2007, at A1.

Though the ratchet in practice has usually turned in the direction of allowing more and more individuals to be subject to routine collection of DNA, rather than fewer,²⁴⁵ that trend may not last. For instance, only very recently, the European Court of Human Rights ruled that the U.K.'s practice of storing fingerprint and DNA profiles of all arrestees, including those who are subsequently exonerated, violates the "human right to privacy."²⁴⁶ Notably, the U.K., like the U.S., has routinely stored fingerprint profiles for decades without any such objection.

So as flimsy as these distinctions are, courts and commenters seem increasingly willing to credit them. Along the way, the language of scientific evidence decisions is starting to sound like the language of self-incrimination decisions. Consider again the rhetoric of the two justices of the Washington Supreme Court, and also that of the European Court of Human Rights, which wrote that the U.K. had "overstepped any acceptable margin of appreciation" in striking a balance between individual rights and public interests," and that the U.K.'s policy "constitutes a disproportionate interference in the applicants' right for respect to private life and cannot be regarded as necessary in a democratic society."²⁴⁷

Some early advocates of the *Daubert* approach hoped, perhaps naively, that the decision would take scientific evidence out of the messy realm of the adversarial regime and replace it with a more inquisitorial-style, top-down control.²⁴⁸ The increasingly technocratic nature of trials was seen as a reason for celebration, not despair. But ironically, as scientific evidence has become increasingly reliable compared to the alternatives, objections to it have actually seemed to increase, and the doctrine, instead of getting simpler, has grown more complex. Indeed, nervousness about the effects of the newest forms of forensic evidence on privacy and adversarialism are becoming commonplace. In addition to concerns about the revealing nature of forensic DNA discussed above, there are also, to name just a couple, privacy objections to cameras in public places,²⁴⁹ and arguments that the

²⁴⁵ Indeed, in the federal system, it was only last year that all arrestees were subject to such sampling. Previously, sampling only occurred for those convicted of a felony. Julia Preston, *U.S. Set to Begin a Vast Expansion of DNA Sampling*, N.Y. TIMES, Feb. 5, 2007, at A1.

²⁴⁶ Sarah Lyall, *European Court Rules Against British DNA Database of Suspects*, N.Y. TIMES, Dec. 4, 2008, at A16, available at <http://www.nytimes.com/2008/12/05/world/europe/05britain.html?hp>. Britain has several months to decide how to respond to the ruling. *Id.*

²⁴⁷ *Id.*

²⁴⁸ Jeffrey S. Parker, *Daubert's Debut: The Supreme Court, the Economics of Scientific Evidence, and the Adversarial System*, 4 SUP. CT. ECON. REV. 1 (1995).

²⁴⁹ Christopher S. Milligan, *Facial Recognition Technology, Video Surveillance, and Privacy*, 9 S. CAL. INTERDISC. L.J. 295, 304 (1999) (lamenting "the creeping trend of technology and modern society to invade the individual's sphere of personal autonomy and privacy"); Slobogin, *supra* note 61, at 215 ("It is time to constitutionalize strictures on public surveillance. The advent of sophisticated technology that allows the government to watch, zoom in on, track, and record

complexity of scientific evidence erodes the adversarial system and the role of the jury.²⁵⁰

I have already pointed out that other than questions about reliability, current scientific evidence doctrine neither directly addresses these concerns nor gives them weight as reasons to exclude a particular piece or type of forensic evidence in court. Doctrines that might give them some weight, such as Fourth Amendment law, are often poor fits for making plausible challenges to admissibility, as it was in the surreptitious sampling of DNA case. There have been hints, though, that scientific evidence doctrine *can* accommodate objections as broad as that “complex of values” more native to self-incrimination doctrine, and very occasionally, it already explicitly has.

Start with the reliability analysis itself, since most scientific evidence discussions, *as* scientific evidence discussions—in academic journals, in legislatures, and in courts—begin and end with it. The doctrine concerning reliability has transformed from being very simple to startlingly complicated. For a very long time, the *Frye* standard governed questions of reliability. It held that if a scientific technique or process had gained “general acceptance” in the relevant scientific community, then the evidence was admissible (barring, of course, any other independent reason for excluding it). But as David Faigman describes it, once the use of scientific evidence reached a “tipping point”—that is, when it went from a trickle to a fairly sudden “tidal wave” in the very early 1990’s²⁵¹—courts began revising the doctrine, making it increasingly complex. This, of course, eventually resulted in

the activities of anyone, anywhere in public, twenty-four hours a day, demands regulation.”), location tracking devices such as EZ Pass and cell phones to identify the comings and goings of motorists, Tresa Baldas, *Lawyers Debate High-Tech Evidence*, LEGAL INTELLIGENCER, Aug. 25, 2004, at 4 (“Even as we’re creating this surveillance monster in our midst, we are not creating the chains for the monster, which is law.”); Kevin McLaughlin, *supra* note 67, at 425 (“[B]ecause cell phone location tracking implicates a number of core Fourth Amendment doctrines, it should constitute an unreasonable search.”), and data mining, James X. Dempsey & Lara M. Flint, *Commercial Data and National Security*, 72 GEO. WASH. L. REV. 1459, 1459 (2004) (“While there are some legal constraints on the government’s use of commercial data for counterterrorism purposes, they are fragmentary, incomplete, and unresponsive to the kinds of uses that are associated with the current emphasis on the prevention of terrorism through intelligence collection and analysis.”); Charles Weiss, *The Coming Technology of Knowledge Discovery: A Final Blow to Privacy Protection?*, 2004 U. ILL. J.L. TECH. & POL’Y 253, 253 (2004) (“Expected advances in information technology for pattern recognition (‘connecting the dots’) are likely to greatly increase the scope and sophistication of already powerful techniques for zeroing in on individual citizens and generating a detailed profile of their lives. These techniques may well prove to be valuable tools for the fight against terrorism. At the same time, they are likely to sweep away what little is left of U.S. privacy law, which has already been weakened by the dramatic advances in technology for surveillance and data mining, by the elimination of barriers between data acquisition by government and the much less regulated private sector, and by the whittling away of Fourth Amendment protections by the courts.”).

²⁵⁰ See, e.g., Joseph Sanders, *Scientifically Complex Cases, Trial by Jury, and the Erosion of Adversarial Processes*, 48 DEPAUL L. REV. 355, 356-57 (1998).

²⁵¹ Faigman, *supra* note 23, at 112-13 (2003).

Daubert and its progeny, which employ myriad non-exhaustive and non-dispositive factors for courts to balance when deciding whether an expert's testimony is reliable.²⁵² The factors include whether the science has been published in peer reviewed journals, whether it is subject to a known or knowable rate of error, whether the science stems from a field of research that exists independent of litigation, whether the expert has accounted for obvious alternative explanations, and so on. (For good measure, it also includes *Frye*'s "general acceptance" test.) As with all open-ended balancing tests, the *Daubert* line of cases leaves vast room for judicial discretion—and thus room to incorporate a varied "complex of values," explicitly or not.

But courts have not limited themselves to just complicating the reliability analysis. They have also already hinted that other concerns might provide a justification for excluding otherwise relevant and accurate scientific evidence. Rule 403 is obviously capacious enough to enable such a move explicitly, and indeed, courts have already used it to exclude reliable scientific evidence on liberty-order grounds. As one example, in 2006, the Pennsylvania Supreme Court suggested that an inequality of resources between defendant and the state could be a reason to exclude a prosecutor's computer-generated crime simulations.²⁵³ But courts have also managed to shoehorn their anxieties about the liberty-order balance indirectly and somewhat awkwardly into the "assist the trier of fact" prong of Rule 702. The history of two forms of scientific evidence—one of which is now ubiquitous in trials (photography), the other of which is extremely rare (lie detector tests)—suggests how.

I have already mentioned Jennifer Mnookin's fascinating account of forensic photography. In her telling, skepticism about the accuracy of photographic images was only one part of judicial reluctance to immediately allow the new technology to be presented to juries.²⁵⁴ Another element, perversely, was nervousness that photographs were *too* accurate. Mnookin explained:

[I]f there exists evidence both absolutely probative and utterly irrefutable, the trial itself is rendered a formality, the playing out of the inevitable rather than a site for decision-making and the exercise of judgment. To put the issue in its starkest form, if a photograph caught a perpetrator in the act, why would one need a jury (or lawyers or a judge) at all? . . . Evidence 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

²⁵² See *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993); see also *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999); *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997).

²⁵³ *Commonwealth v. Serge*, 896 A.2d 1170, 1183-84 (Pa. 2006).

²⁵⁴ Mnookin, *supra* note 8, at 23-33.

threaten the system altogether.²⁵⁵

Citing examples such as the Rodney King verdict, Mnookin points out that anxieties about the power of photographic images to displace trials altogether seem quaint today.²⁵⁶ Yet, at the time, anxiety was powerful enough to provide some judges reason to exclude photographs altogether.²⁵⁷

Lie detector tests provide another good example of the potential for scientific evidence doctrine to embrace a “complex of values” approach to admissibility. Polygraph tests were first invented early in the twentieth century, but, despite vast improvements in their technology over the last century, they still have not had much success in being admitted as evidence in court.²⁵⁸ In the 1998 case *United States v. Scheffer*,²⁵⁹ the Supreme Court explained why. The opinion starts with a straightforward reliability argument, stating that the tests are so unreliable that a jurisdiction is entitled to categorically exclude them.²⁶⁰ How unreliable are they? The Court reports various assessments of the tests’ accuracy, ranging from at best an impressive 87% chance of detecting deception, to at worst, still better than chance.²⁶¹

Even the lowest estimate the Court reports, however, makes for an unconvincing argument for exclusion, since “slightly” better than chance still means that, as long as the jury appreciates their limits, the tests provide better information to the jury than not having the test at all. After all, in the law of evidence, “a brick is not a wall.” Evidence just has to make a verdict more or less probable than it would be without the evidence; anything with an accuracy level greater than mere chance satisfies that criterion.²⁶² Moreover, the range of reliability reported by the Supreme Court is highly misleading; the vast majority of studies suggest that lie detector technologies perform far better than chance. Indeed, an analysis by the National Academy of Sciences showed that the median accuracy rate for polygraph testing was .86—a rate

²⁵⁵ *Id.* at 57.

²⁵⁶ *Id.* at 57-58.

²⁵⁷ *Id.* at 55-58.

²⁵⁸ The famous pre-*Daubert* “general acceptance” standard for the admissibility of scientific evidence is itself a product of a murder defendant’s unsuccessful proffer of a polygraph test. *See United States v. Frye*, 293 F. 1013 (D.C. Cir. 1923). After the court disallowed the exonerating results of Frye’s examination, he was convicted. Years later, he was exonerated after another man confessed to the crime. *See* U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, SCIENTIFIC VALIDITY OF POLYGRAPH TESTING: A RESEARCH REVIEW AND EVALUATION—A TECHNICAL MEMORANDUM 30 (1983).

²⁵⁹ 523 U.S. 303 (1998).

²⁶⁰ *Id.* at 309-11.

²⁶¹ *Id.* at 310 n.6.

²⁶² This follows from Bayes’ Rule. *See generally* NAT’L ACAD. OF SCI., COMM. TO REVIEW THE SCIENTIFIC EVIDENCE ON THE POLYGRAPH, THE POLYGRAPH AND LIE DETECTION 42-45 (2003).

“comparable to various diagnostic tests used in medicine”²⁶³ that would unquestionably be admitted as evidence in court.

Perhaps perceiving the limitations of its argument about reliability, the Court quickly moves off the subject, spending considerable time describing the primary reason polygraph examinations can be categorically excluded: “preserving [the jury’s] role” at trial.²⁶⁴ “A fundamental premise of our criminal trial system,” the Court wrote, “is that the *jury* is the lie detector.”²⁶⁵ Evidence that merely replicates what a juror should be doing on his or her own cannot be considered helpful, since juries are “presumed to be fitted . . . by their natural intelligence and their practical knowledge of men and the ways of men” to be able to detect falsehoods.²⁶⁶ This theme has recurred throughout cases rejecting polygraph evidence. Indeed, other courts have stated it even more forcefully:

A determination of whether a witness is telling the truth is well within the province of all jurors’ understanding and abilities [T]he importance of maintaining the role of the jury . . . justifies the continued exclusion of polygraph evidence . . . [P]olygraph evidence so directly abrogates the jury’s function that its admission is offensive to our tradition of trial by jury²⁶⁷

In extolling jurors’ abilities as human lie detectors, the Supreme Court tellingly employs the word “presumed.” Jurors are not obviously better than polygraph machines at detecting liars. In fact, they are downright terrible at the task—a fact that members of the Court, and every other jurist, surely knows. A great deal of empirical evidence reveals that people do not perform at levels much better than chance in discerning falsehoods. In experimental studies, lay participants accurately detect lies at a mean rate of 57%.²⁶⁸ Trained subjects rarely do any better; ironically, they usually do worse.²⁶⁹ Moreover, it is well established that confidence in one’s ability to detect lies is unrelated to one’s actual ability to do so.²⁷⁰

Despite the fact that lie detector machines perform at least as well as, and almost certainly better than, people do at detecting falsehoods, the Court held that the machines are nevertheless unhelpful to juries.

²⁶³ *Id.* at 122.

²⁶⁴ *Scheffer*, 523 U.S. at 309, 312-13.

²⁶⁵ *Id.* at 313 (internal quotes omitted).

²⁶⁶ *Id.*

²⁶⁷ *State v. Porter*, 698 A.2d 739, 769-70 (Conn. 1997).

²⁶⁸ ALBERT VRIJ, *DETECTING LIES AND DECEIT: THE PSYCHOLOGY OF LYING AND ITS IMPLICATIONS FOR PROFESSIONAL PRACTICE* 68 (2000).

²⁶⁹ Kassin & Gudjonsson, *supra* note 96, at 58 (citing Kassin, Meissner & Norwick, *supra* note 120, at 211-27).

²⁷⁰ Bella M. De Paulo, Kelly Charlton, Harris Cooper, James Lindsay & Laura Muhlenbruck, *The Accuracy-Confidence Correlation in the Detection of Deception*, 1 PERSONALITY & SOC. PSYCHOL. REV. 346 (1997).

Perversely, again, their superior levels of accuracy are at least part of what made the Court nervous. The worry seems to be that highly accurate, sophisticated and impressive scientific evidence doesn't aid juries so much as lead them around by the nose. "Jurisdictions . . . may legitimately be concerned about the risk that juries will give excessive weight to the opinions of a polygrapher, clothed as they are in scientific expertise and at times offering. . . a conclusion about the ultimate issue in the trial. Such jurisdictions may legitimately determine that the aura of infallibility attending polygraph evidence can lead jurors to abandon their duty to assess credibility and guilt."²⁷¹ In short, lie detector machines are problematic, and therefore excludable, not (just) because of questions about their accuracy, but because they interfere with fundamental democratic values that criminal trials are supposed to exhibit.

Two objections come to mind here regarding the claims I have made, using both photographs and lie detector tests as examples. First, one could doubt whether the courts really would be suspicious of a form of evidence on the grounds that it was too convincing. Imagine, for instance, we actually could generate a test that we were 100% confident was error-free (in collecting, processing and interpreting it) and that, moreover, was dispositive by itself of guilt or innocence. Would the courts really be skeptical of it? The answer to this objection is that it is simply the wrong hypothetical—there is no such thing, and never will be, scientific evidence that is genuinely immune from any doubt. Because of this, courts can always supplement, or even fully mask, their concerns that a piece of sophisticated scientific evidence will be so convincing that a jury will defer to it uncritically, by arguing that the evidence is actually not sufficiently reliable.

This is certainly what courts do with polygraph tests, and used to do with photographs. But I have also noted the curious parallels between the early days of photographs and modern computer crime scene simulations.²⁷² Computer simulations have sparked the familiar anxiety about being so "life-like" that the jury may rendered "unable to visualize an opposing or differing version of the event."²⁷³ When courts go on to exclude these simulations, they virtually always add a coda of reasons for thinking the simulation was not sufficiently reliable. Usually, the argument is that the simulation is not "sufficiently similar" to other testimony about what the crime scene looked like.²⁷⁴ So, which

²⁷¹ *Scheffer*, 523 U.S. at 314.

²⁷² See *infra* notes 10-14 and accompanying text.

²⁷³ *State v. Farner*, 66 S.W.3d 188, 209 (Tenn. 2001); see also *Hinkle v. City of Clarksburg*, 81 F.3d 416, 424-25 (4th Cir. 1996) ("[T]he jury viewing a recreation might be so persuaded by its life-like nature that it becomes unable to visualize an opposing viewpoint of those events.").

²⁷⁴ See, e.g., *Farner*, 66 S.W.3d at 209-10; *Harris v. State*, 152 S.W.3d 786, 793 (Tex. App. 2004); *State v. Hultenschmidt*, 102 P.3d 192, 197-98 (Wash. Ct. App. 2004); *Shennet v. State*,

do we believe is motivating the court's concerns: the "usurping the jury" argument or the reliability argument? With lie detector machines and early photographs, the reliability argument has almost never been a compelling reason to exclude. For one thing, as long as a reasonable juror *could* find the evidence credible, minor and even moderate doubts about reliability are relevant to how much weight the jury should give them (which is up to their discretion), not to the admissibility of the evidence in the first place. The same is true with computer simulations, when courts offer, as a reason to exclude, the argument that the reenactment is not "sufficiently similar" to other testimony and evidence about the crime scene. Just as importantly, there is no obvious standard for how similar is similar enough for computer reenactments; when computer simulations are admitted, it is virtually always despite an admitted lack of complete similarity with other evidence.²⁷⁵ (Indeed, some courts complain when the simulation is *too* similar—for instance, when it includes gratuitous details such as facial expressions.²⁷⁶) The reliability arguments instead often seem to be a way to give traction to "role of the jury" anxieties.

And what, exactly, is that role of the jury? This question leads to the second objection about the claims I have made: even if courts really do care so deeply about the role of the jury that they are willing to exclude otherwise relevant and reliable evidence to maintain it, one could argue that that is a different concern than the "complex of values" protected by the rule against self-incrimination. Yet preserving the jury is not valuable for its own sake. It's only valuable because we have a belief in, or at least a commitment to, the jury as the best way to process criminal accusations and pass judgment on them. The trial is a formal ritual in which juries are genuine third parties who are presented with evidence by both the state and the defendant, and who then must systematically weigh it in secret, democratic deliberations. They function as a body designed to serve as a representative of both the defendant (as her peers) and of the state. With rare exception, they are the last word at trial on the issue of guilt. When they do their jobs, they certainly embody the values of both adversarialism and dignity of the accused that the self-incrimination doctrine reflects.

To the extent that the doctrine surrounding scientific evidence doesn't either protect or even describe these values as effectively and eloquently as self-incrimination doctrine does, in part that is to be expected at this early stage in its evolution. Right now, the doctrines of

937 So. 2d 287, 292 (Fla. Dist. Ct. App. 2006).

²⁷⁵ See, e.g., *Hinkle*, 81 F.3d at 425; *Webb v. CSX Transp., Inc.*, 615 S.E.2d 440, 448-49 (S.C. 2005).

²⁷⁶ *Byrd v. Guess*, 137 F.3d 1126, 1134 (9th Cir. 1998); *State v. Steward*, 643 N.W.2d 281, 295 (Minn. 2002).

scientific evidence do *not* embrace a “complex of values” in the way self-incrimination barefacedly does. Though I can only offer a few examples today of how the anxieties of the liberal state have already been transferred onto scientific evidence, I have at least shown how it can be done. Still, not all of the failures of scientific evidence doctrine to reflect this “complex of values” can be explained by our being only in the first inning of the game. The fit may never be as comfortable as it is with self-incrimination doctrine, if for no other reason than that the rules of evidence governing admissibility of scientific evidence cover not only criminal trials, but civil as well. Anxieties about the liberty-order balance simply don’t arise in tort, yet scientific evidence doctrine must govern those cases, too. I suspect that the solution will be a divergence between the rules of admissibility for the two types of cases,²⁷⁷ adding further complexity to the doctrine.

The history of photographs and lie detectors show that scientific evidence doctrine should be able to expand to include concerns beyond whether or not a particular brand of scientific evidence is empirically reliable in a simple sense. In this way, the lie detector and photograph examples suggest the capacity of the doctrine to embrace, express and protect as rich a “complex of values” as self-incrimination routinely does now. The rhetoric courts have used in these examples are not very typical today.²⁷⁸ Yet, as scientific evidence begins to displace confessions, I suspect that these kinds of analyses will become more and more common. Time will tell whether or not the doctrine will be able to increase in complexity and flexibility enough to bear the full weight of our liberty-order anxieties.

CONCLUSION

I have made two claims in this article. First, reliance on confessions to solve and prosecute crimes is on the wane. I have *not* claimed that confessions will disappear altogether. There will surely always be cases where confessions are relevant, and even critical, evidence. Nevertheless, given their relative disadvantages when compared with increasingly reliable and cheap scientific evidence,

²⁷⁷ Informally, we can already see this. For instance, the standard of “substantial similarity” in computer simulation cases seems tougher to meet in criminal cases than it does in civil.

²⁷⁸ *Scheffer*, for instance, had an unusual posture, in that it involved a Sixth Amendment challenge to Military Rule of Evidence 707, which is a per se ban on lie detector tests in the military courts. *United States v. Scheffer*, 523 U.S. 303, 306-08 (1998). Though the reliability discussion in *Scheffer* does not read differently than other challenges to the admissibility of whole classes of scientific evidence, undoubtedly the Constitutional hinge enabled the Court to speak more naturally about broader policy concerns in a way that would have been more surprising in a run-of-the-mill evidence case.

confessions should retreat to a supporting role where today they typically take center stage. My prediction is that confessions will simply switch positions with scientific evidence in importance: confessions will be like scientific evidence was maybe twenty years ago, and scientific evidence will be like confessions are today.

Second, I have argued that the level of concern about the liberty-order balance, and the interest in maintaining the criminal trial as a valuable ritual of liberal democracy, will remain static. The only thing that will change is its primary locus of expression. Today, since confessions remain the leading actor in criminal trials, the doctrine that surrounds them is as complex, indeterminate and far-reaching as the “complex of values” it has evolved to express. By contrast, and commensurate with its more minor role, the doctrine of scientific evidence is typically fairly straightforward, focusing on a (usually) simple analysis of reliability. However, as scientific evidence gains in importance, we should expect to see increasing complexity in the doctrine that governs it—and, indeed, we are already seeing the beginnings of that.

Such an expansion of scientific evidence doctrine will not be easy or quick. Discussions of privacy, legitimacy, and the like, topics which are by no means unfamiliar to discussions about the admissibility of confessions and other forms of evidence, currently feel out of place with scientific evidence. By what process will they become more common? So far, most of the expansive, non-reliability concerns with scientific evidence have entered via the “assist[ing] the trier of fact” prong of Rule 702, or on the issue of “prejudice” to the jury under Rule 403. Both of these are rhetorically broad enough to carry a great deal of the weight of what I have described as our liberal anxieties about criminal justice.

Indeed, these prongs are so broad that there is a risk that what started its doctrinal life as a straightforward, relatively easy-to-administer assessment of empirical reliability, will grow into a field as loose and indeterminate as self-incrimination doctrine ever was. Then again, that is perhaps the point. In order to do the job of addressing this country’s long-standing and conflicting anxieties about a too-powerful government and an oppressive criminal justice regime, alongside the desire for civil order and punishment of those who would defy it, scientific evidence doctrine *needs* to be complicated and indeterminate. It needs to be able to, ironically, slow down and perhaps even confuse the standards of admissibility. When the standards for admissibility of central, critical criminal trial evidence are transparent and simple, it is easy to spend too little time thinking about them, and to mistakenly treat the issues they raise as unproblematic.

In short, the more exasperating and confusing scientific evidence

doctrine becomes, the better it will perform its expressive job—a pattern familiar from self-incrimination. Thus, even as self-incrimination slowly fades out, its spirit will live on in our modern approach to scientific evidence.