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The History of Forensic-Science Evidence in Criminal Trials and the Role of Early “Success” in Establishing Its Putative Reliability

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ARTICLE

THE HISTORY OF FORENSIC-SCIENCE EVIDENCE IN CRIMINAL TRIALS AND THE ROLE OF EARLY “SUCCESS” IN ESTABLISHING ITS PUTATIVE RELIABILITY

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ABSTRACT

This Article posits the history of forensic-science evidence plays a significant role in the unquestioning manner of its modern acceptance. It traces early high-profile forensic science “successes” and the public reactions to them. It argues the public perception of the “advances” of forensic science continues to play a role in the lack of scrutiny given to these disciplines in admissibility decisions today. It concludes, when it comes to forensic science, history should play a different role by serving as a critical warning rather than a congratulatory buttress.

I. INTRODUCTION

There is extensive literature regarding the failure of criminal courts to critically appraise the reliability of forensic-science evidence and their subsequent unquestioning admission of it—particularly with regard to the “pattern matching” disciplines.¹ One of the common critiques of these forensic disciplines is that they are not really sciences at all, in that they were not invented and validated in academic laboratories and “then subjected to peer review in scientific journals,”² but rather were developed by police as an investigatory tool to solve crimes.³

There is also robust literature on the effect that media coverage of criminal trials has on public attitudes toward the criminal justice system generally

1. See Carrie Leonetti, *The Innocence Checklist*, 58 AM. CRIM. L. REV. 97, 100-01 (2021) (explaining how “literature has debunked whole classes of forensic ‘science’ evidence” and providing the publications in support).

2. Radley Balko, *A Brief History of Forensics*, WASH. POST: THE WATCH (Apr. 21, 2015, 8:00 AM), <https://www.washingtonpost.com/news/the-watch/wp/2015/04/21/a-brief-history-of-forensics/> [<https://perma.cc/KL93-SDZU>].

3. *Id.* (“[M]ost forensic disciplines weren’t invented in labs, then subjected to peer review in scientific journals [M]ost were invented by people in law enforcement . . . as an aide to help them solve crimes.”).

and juror decision making specifically.⁴ For example, Edith Greene has documented the way that media coverage on wrongful convictions, stemming from faulty eyewitness identifications, temporarily caused test subjects to become more skeptical of eyewitness testimony.⁵ Conversely, Lisa Kort-Butler and Kelley Hartshorn have documented how crime-related programming that focuses on the heroic role of police and prosecutors has entrenched public support for penal populism and law-and-order crime control policies.⁶

This Article attempts to connect these two disparate concepts by exploring an uncanvassed piece of the criminal courts' failure to adequately scrutinize forensic-science evidence: the roles that the history of forensic science in high-profile investigations and its public image have played in enshrining false confidence in their soundness. Part II profiles the beloved, historical heroes of the forensic sciences like Francis Galton, Sherlock Holmes, and Edmond Locard. It documents the role that their cherished place in history plays in continuing to buttress the perceived reliability of forensic sciences today. Part III explores the public perceptions of high-profile crimes, like those committed by Ted Bundy, that were "solved" by modern-day Sherlock Holmeses using forensic sciences. Part IV demonstrates the way that public perceptions and the "CSI effect" have contributed to the perceived infallibility of forensic science, despite modern scientific techniques having questionable validity. Part V documents how history and public perception play into courts' admissibility and reliability decisions around scientific evidence and weaken their gatekeeping role. Part VI concludes that history and public perception are barriers to courts critically evaluating and screening forensic-science evidence.

II. EARLY HEROES

The image of the forensic detective is a longstanding one, and the public cherishes the stories of the real forensic detectives as much as the fictional

4. See Edith Greene, *Media Effects on Jurors*, 14 L. & HUM. BEHAV. 439, 440 (1990) (addressing "the potential effects of the media on juror and jury decision making"); Valerie P. Hans & Juliet L. Dee, *Media Coverage of Law: Its Impact on Juries and the Public*, 35 AM. BEHAV. SCIENTIST 136, 140–41 (1991) (discussing the literature concerning media coverage of crime and its "impact on people's views of law and justice").

5. See Greene, *supra* note 4, at 441 (documenting mock jurors' skepticism of eyewitness testimony because of publicity surrounding the Titus case).

6. See Lisa A. Kort-Butler & Kelley J. Sittner Hartshorn, *Watching the Detectives: Crime Programming, Fear of Crime, and Attitudes About the Criminal Justice System*, 52 SOCIO. Q. 36, 40 (2011) (explaining how crime programming's emphasis on "justice" advances ideologies regarding crime control).

ones. The oldest and best-known of the forensic pattern-matching disciplines is fingerprint comparison, which was originally developed by British police and was then exported around the globe.⁷

A. *Francis Galton (1822–1911) and Sir Edward Henry (1850–1931)*

Victorian naturalist Francis Galton was one of the earliest forensic detectives, and, despite his white supremacist ideology, he remains a hero in the forensic-science community. Galton was an enthusiastic eugenicist who pioneered the field of forensic fingerprint comparison in his quest to quantify genetic superiority.⁸ Galton observed variations in the paths of individual friction ridges on the surface of human fingertips.⁹ His “Galton points” still form the basis of modern fingerprint identification.¹⁰

Sir Edward Henry was the British Inspector General of Police in Bengal, India.¹¹ He visited Galton’s laboratory in 1893, returned to India, and introduced what would become known as the Galton-Henry system of fingerprint identification in criminal investigations.¹² He later became the

7. See generally *Francis Galton and Fingerprints*, GALTON, <https://galton.org/fingerprinter.html> [<https://perma.cc/W45Y-DQVT>] (discussing Francis Galton’s early involvement with fingerprinting and its involvement in criminal cases and providing online copies of Galton’s original writings on the subject).

8. See Angela Saini, *In the Twisted Story of Eugenics, the Bad Guy Is All of Us*, THE GUARDIAN (Oct. 3, 2019, 2:00 PM), <https://www.theguardian.com/commentisfree/2019/oct/03/eugenics-francis-galton-science-ideas> [<https://perma.cc/GXE2-MAFR>] (describing Galton as “brilliant” and “determined to remove from British society those he considered inferior”).

9. See Andrew Anthony, *UCL Has a Racist Legacy, but Can It Move On?*, THE GUARDIAN: THE OBSERVER (Aug. 2, 2020, 5:00 PM), <https://www.theguardian.com/education/2020/aug/02/ucl-has-a-racist-legacy-but-can-it-move-on> [<https://perma.cc/F3WC-D5HC>] (“[Galton] . . . revolutionised forensic science by showing how fingerprints could be used to identify individuals.”); Phoebe Weston, *UCL May Rename Buildings Honouring Sir Francis Galton, Victorian Scientist Known As Father of Eugenics Who Coined Phrase ‘Nature Versus Nurture’, After Student Protest - but Fellow Academics Say Linking Him to Nazis Is a Slur*, DAILY MAIL (Dec. 6, 2018, 12:17 PM), <https://www.dailymail.co.uk/science-tech/article-6466845/UCL-rename-buildings-honouring-Sir-Francis-Galton-known-father-eugenics.html> [<https://perma.cc/A6DA-RWQA>] (detailing Galton’s contributions to fingerprint identification).

10. See *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 555 (E.D. Pa. Mar. 13, 2002) (“[T]he application of this method, in particular whether a minimum number of Galton points must be identified . . . varies from jurisdiction to jurisdiction.” (quoting *United States v. Llera Plaza*, 179 F. Supp. 2d 492, 513 (E.D. Pa. Jan. 7, 2002), *vacated and superseded on reconsideration by* 188 F. Supp. 2d 549)); Weston, *supra* note 9 (describing Galton’s classification system for fingerprints).

11. *Llera Plaza*, 188 F. Supp. 2d at 554; Cyril John Polson, *Finger Prints and Finger Printing: An Historical Study*, 41 J. CRIM. L. & CRIMINOLOGY 690, 690 (1951).

12. Polson, *supra* note 11, at 690; *Sir Edward Henry, Ex-Police Head, Dies*, N.Y. TIMES, Feb. 21, 1931, at 13 [hereinafter *Henry*].

Commissioner of Scotland Yard (the London Metropolitan Police) and “established the Yard’s Fingerprint Branch,” which implemented the use of fingerprints as evidence in English criminal trials.¹³ Henry’s system resulted in the identification of 10,777 people in the first year after its implementation in 1912.¹⁴ Henry would boast that he could search his file of 25 million print cards and match the correct person in under ten minutes.¹⁵ Henry was made a Companion of the Order of the Star of India in 1898, a Commander of the Royal Victorian Order in 1905, Knight Commander of the Bath in 1910, and a Baronet upon his retirement in 1918.¹⁶

By the end of the nineteenth century, Galton and Henry’s system of fingerprint identification had been adopted by police agencies across Europe.¹⁷ Officials from Scotland Yard introduced fingerprint matching to American law enforcement agents at the 1904 World’s Fair in St. Louis, Missouri.¹⁸ Fingerprint evidence was used for the first time in a United States criminal trial during the 1911 murder prosecution of Thomas Jennings by the State of Illinois.¹⁹ The State of Illinois introduced expert testimony that a latent fingerprint found on the windowsill of the victim’s home matched Jennings’s fingerprint, through a process of analysis that the Illinois Supreme Court described as “peculiar and specialized experience.”²⁰

In litigation challenging the reliability of forensic fingerprint identification, fingerprint examiners continue to extol the virtues of Galton and Henry’s scientific inquiries to establish the *bona fides* of their discipline. For example, in *State v. Kuhl*²¹ in 1918, the Nevada Supreme Court was asked to review the admissibility of the State’s palm print identification in the context of Kuhl’s trial for murdering a mail-stage driver during a stagecoach

13. See *Llera Plaza*, 188 F. Supp. 2d at 554 (describing Henry’s role as Commissioner of Scotland Yard and the establishment of the Yard’s Fingerprint Branch); Polson, *supra* note 11, at 692 (detailing Henry’s contributions to the London Metropolitan Police); Henry, *supra* note 12, at 12.

14. See Henry, *supra* note 12, at 13.

15. *Id.*

16. *Id.*

17. See Balko, *supra* note 2 (characterizing Galton’s fingerprint identification system as a methodology “adopted by police agencies across the U.S. and Europe”).

18. *Id.*

19. See *id.* (reporting the novel use of fingerprint identification in Thomas Jennings’s prosecution); SIMON A. COLE, SUSPECT IDENTITIES: A HISTORY OF FINGERPRINTING AND CRIMINAL IDENTIFICATION 159–60 (2001) (“The earliest [use] of fingerprinting for forensic identification in the United States came in . . . 1911: *People v. Jennings*, a Chicago murder trial.”).

20. Balko, *supra* note 2.

21. *State v. Kuhl*, 175 P. 190 (Nev. 1918).

robbery.²² In discussing the friction ridge patterns on palm prints, the court noted:

Galton first gave expression to this fact; and Sir E. R. Henry, commissioner of police of the metropolis of London, corroborates with the statement that the inner part of the hand and the sole of the foot are traversed in all directions by lines of varying length. He says that the most conspic[u]ous are the creases caused by the folding of the skin; but the least conspicuous, but much more numerous lines, are the papillary ridges which exist over the whole palmar surface, giving it an appearance that may be likened to that of a newly plowed field with its ridges and furrows, or to sand which the water, in receding from, has left ribbed.²³

The court concluded that the trial court did not err in admitting the testimony.²⁴

More recently, in *United States v. Llera-Plaza*²⁵—an early 2000s case that for a while made waves among federal, criminal practitioners—Llera attempted to challenge courts' uncritical acceptance of the reliability of fingerprint examiners' conclusions regarding "matching" suspect's fingerprints while excluding the implications of any other person's fingerprints.²⁶ In the process, Llera had to overcome formidable psychological resistance stemming from the lengthy history of forensic fingerprint examination and the faith criminal justice practitioners had in it,²⁷ despite surprisingly little evidence of its scientific validity.

Llera moved to exclude the Government's latent fingerprint evidence on the ground that it was not sufficiently reliable for admission.²⁸ In response, the Government's leading fingerprint expert, Stephen Meagher, a Latent

22. *See id.* at 191 (considering whether court recognition of experts on fingerprint identification permits "such experts to testify as to their conclusion upon palm print identification").

23. *Id.*

24. *See id.* at 195–96 (finding no error in the trial court's admission of expert testimony).

25. *United States v. Llera Plaza*, 188 F. Supp. 2d 549 (E.D. Pa. 2002).

26. *See id.* at 550 ("To bar the testimony of [FBI fingerprint examiners and fingerprint specialists] . . . defendants filed a Motion to Preclude the United States from Introducing Latent Fingerprint Identification Evidence.").

27. *See id.* at 572 ("English and American trial courts have accepted fingerprint identification testimony for almost a century.").

28. *See id.* at 550 ("The principal question posed by the defendants' motion . . . was whether . . . fingerprint identification evidence is sufficiently reliable to meet the standards for expert testimony."). *See generally* FED. R. EVID. 702 (outlining the criteria for permitting expert witnesses); *Daubert v. Merrill Dow Pharms., Inc.*, 509 U.S. 579, 585 (1993) (granting certiorari to assess the "proper standard for the admission of expert testimony").

Print Unit Chief at the Federal Bureau of Investigation (FBI) Laboratory, relied heavily on the history of the “Galton points” and Sir Francis Galton’s scientific genius in arguing for the reliable pedigree of fingerprint comparison.²⁹ In discussing (and accepting) Meagher’s testimony, the district court noted: “‘Galton points’ take their name from Francis Galton, the multi-talented English scientist who was a cousin of Darwin’s and a major figure in his own right.”³⁰ Acknowledging Galton’s “malign” history as the “high priest of eugenics,” the court nonetheless praised him as “versatile[] and indefatigably enterprising.”³¹ Galton’s reputation as a scientific genius substituted for a critical examination of the validity of the field that he pioneered in pursuit of demonstrating white supremacy.

B. *Dr. Joseph Bell (1837–1911), Sir Arthur Conan Doyle (1859–1930), and Sherlock Holmes*

From close observation and deduction, gentlemen, you can make a correct diagnosis of any and every case.
—Dr. Joseph Bell³²

Dr. Joseph Emory Bell was a Scottish surgeon “and a professor at the University of Edinburgh Medical School during the 19th century.”³³ He was “known for his legendary diagnostic abilities.”³⁴ Sir Arthur Conan Doyle was one of his students, and Bell is widely regarded as the inspiration for Doyle’s character Sherlock Holmes.³⁵ Bell was notorious for his

29. See *Llera Plaza*, 188 F. Supp. 2d at 554–55 (detailing how Meagher’s testimony referenced Galton and his work).

30. *Id.* at 554.

31. *Id.* at 554–55.

32. W. JERRY CHISUM & BRENT E. TURVEY, *CRIME RECONSTRUCTION 3* (W. Jerry Chisum & Brent E. Turvey eds., 2007).

33. *Id.*

34. Tracy M. Downs & Sutchin R. Patel, *Dr. Joseph Bell: Surgical Sleuth and the Inspiration Behind Sherlock Holmes*, 195 J. UROLOGY (NO. 4S) e532 (2016).

35. See CHISUM & TURVEY, *supra* note 32, at 4 (“Dr. Bell . . . is widely regarded as the primary inspiration for [Sherlock Holmes] and his uncanny deductive abilities.”); Downs & Patel, *supra* note 34, at e532 (“Sir Arthur Conan Doyle . . . based his character, Sherlock Holmes, after one of his professors, Dr Joseph Bell.”); Dean Jobb, *When a Murderous Doctor Met Edinburgh’s Real-Life Sherlock Holmes*, SCOTSMAN (July 23, 2021, 3:15 PM), <https://www.scotsman.com/arts-and-culture/books/when-a-murderous-doctor-met-edinburghs-real-life-sherlock-holmes-3320957> [<https://perma.cc/SRS6-WZBQ>] (characterizing Bell’s “remarkable ‘intuitive powers’” as Conan Doyle’s inspiration for Sherlock Holmes); Brandy McDonnell, *10 Must-See Highlights in ‘Sherlock Holmes: The Exhibition’ at Science*

“astounding skills at observation.”³⁶ Modern doctors still cherish the idea of being medical sleuths and “hanker for medicine as an art.”³⁷

As his notoriety as the model for Sherlock Holmes grew, Bell began to take an interest in forensic cases, “assessing medical evidence and relating it to clues from the scene of the crime.”³⁸ Legend had it that Bell privately informed the editor of the *Scotsman* of the identity of London’s legendary Victorian serial killer Jack the Ripper in 1888.³⁹

At the same time, as the Industrial Revolution solidified itself in urban London, Doyle’s iconic Holmes character captured the public imagination as the first famous crime-scene reconstructionist. Daily newspapers had just come into existence and allowed the widespread publication of news, including crime mysteries from the police blotters.⁴⁰ To this day, Doyle’s books are wildly popular, and films based on the Holmes character are Hollywood blockbusters.

The charm of Holmes’s character was his unique genius. He deployed deductive, logical inquiry and idiosyncratic “scientific” techniques “on bloodstains and fingerprints,” simultaneously outsmarting both the criminals that he pursued and the bumbling police who lacked his intellect and training.⁴¹ As German historian Jürgen Thorwald notes:

Sherlock Holmes was the harbinger of a kind of criminological investigation which did not fit into any of these special disciplines, and which ultimately far surpassed them in range. What Holmes did was to avail himself of all the

Museum Oklahoma, OKLAHOMAN (July 18, 2021, 5:00 AM), <https://www.oklahoman.com/story/entertainment/2021/07/18/10-must-see-highlights-sherlock-holmes-exhibition-science-museum-oklahoma/7394534002/> [<https://perma.cc/7M64-W52H>] (describing how Dr. Joseph Bell served as Conan Doyle’s inspiration for Sherlock Holmes).

36. See McDonnell, *supra* note 35 (“The exhibit also details how Bell’s astounding skills at observation and dedication inspired [Arthur Conan Doyle].”).

37. Louis Appleby, *Dr Louis Appleby on the 19th-Century Medical Sleuth Joseph Bell*, OBSERVER, Aug. 13, 1995.

38. *Id.*

39. *Id.*

40. See McDonnell, *supra* note 35 (outlining how the advent of daily newspapers circulated “sensational stories of crime and mystery”).

41. See Philip K. Wilson, *Sherlock Holmes*, ENCYC. BRITANNICA (Aug. 24, 2022), <https://www.britannica.com/topic/Sherlock-Holmes> [<https://perma.cc/C6ER-GVE2>] (“The prototype for the modern mastermind detective, Holmes . . . pursued criminals throughout Victorian and Edwardian London, and continental Europe.”).

chemical, biological, physical, and technological methods which were springing up at the turn of the century.⁴²

“In 2012, Guinness World Records awarded Sherlock Holmes the world record for the most portrayed literary human character in film and television, noting [he] had been depicted on screen more than 250 times.”⁴³ Holmes’s international popularity was unsurpassed, and his fictional techniques influenced the development of the rudimentary, real-life forensic sciences.⁴⁴

Despite being a fictional character, Holmes is sometimes invoked by modern forensic scientists to add credibility to their craft. For example, one popular forensic–science textbook is titled *The Evidence Never Lies: The Casebook of a Modern Sherlock Holmes*.⁴⁵

C. Dr. Edmond Locard (1872–1966)

Edmond Locard was a French doctor and lawyer who directed the Lyons Institute of Forensic Medicine.⁴⁶ Inspired partly by Doyle, Locard founded what is largely “regarded as the world’s first police crime laboratory” in Lyon.⁴⁷

Locard was another trailblazer in the modern practice of fingerprinting, establishing the first rules for the minimum number of minutiae necessary for identification and pioneering poroscopy—the analysis of pores as part of the individualization process.⁴⁸ He also systematized forensic dust

42. JÜRGEN THORWALD, CRIME AND SCIENCE 234 (Richard Winston & Clara Winston trans., 1967).

43. McDonnell, *supra* note 35.

44. See CHISUM & TURVEY, *supra* note 32, at 11 (“Sir Arthur Conan Doyle’s work with fictional crime fighting did not just entertain and inspire others, although that would have been enough to heavily influence the forensic sciences . . .”).

45. E.g., ALFRED ALLAN LEWIS & HERBERT LEON MACDONELL, THE EVIDENCE NEVER LIES: THE CASEBOOK OF A MODERN SHERLOCK HOLMES (1984).

46. CHISUM & TURVEY, *supra* note 32, at 20.

47. *Id.* at 21–22 (recounting Locard’s establishment of the first police crime laboratory in Lyon).

48. HARRY SÖDERMAN, POLICEMAN’S LOT 25 (1957); see Polson, *supra* note 11, at 696 (characterizing Locard as the inventor of poroscopy).

analysis and pioneered an early form of bloodstain pattern analysis.⁴⁹ Locard helped establish the International Academy of Criminalistics in 1929.⁵⁰

Locard has been called the “Sherlock Holmes of France,” with his ability to solve high-profile crimes dominating the news coverage of French crimes. Locard’s first fingerprint case was the Boudet-Simonin case.⁵¹ Locard was investigating a burglary and theft of valuables from an apartment in central Lyons.⁵² “There were no [eye]witnesses, but a rosewood jewelry box from which [jewelry had been taken] was [] covered with fingerprints.”⁵³ Police determined that the fingerprints of two known thieves named Boudet and Simonin matched those lifted from the jewelry box, but, due to the novel nature of fingerprint evidence at the time, they were not convinced the expert testimony would be sufficient to convict Boudet and Simonin.⁵⁴ They called in Locard who performed a microscopic comparison of the pore locations between the suspect prints and the latent prints, allowing a higher level of detail (and therefore, presumably, an improbable coincidental match).⁵⁵ Locard’s analysis was instrumental in convicting Boudet and Simonin.⁵⁶ Later, the “Affaire de la rue Ravat,” a burglary case, was the first French case to be decided entirely on Locard’s fingerprint testimony, which identified the burglar based on latent prints lifted from a glass vase.⁵⁷

49. See SÖDERMAN, *supra* note 48, at 25 (“[Locard] put the analysis of handwriting on a firmer footing, systemized the analysis of the dust in the clothes of suspects, [and] invented a modified method of analyzing blood stains”); CHISUM & TURVEY, *supra* note 32, at 25 (“[Locard] wrote extensively on how to identify and individuate dust . . . [and] analyze and interpret blood stains”); see also Edmond Locard, *The Analysis of Dust Traces*, (pt. 1), 1 AM. J. POLICE SCI. 276, 293 (1930) (providing a systematic analysis of dust); Edmond Locard, *The Analysis of Dust Traces*, (pt. 3) 1 AM. J. POLICE SCI. 496, 496 (1930) (presenting case findings where dust analysis served as circumstantial evidence).

50. See CHISUM & TURVEY, *supra* note 32, at 23 (“Locard returned to Lausanne and gathered with his European forensic scientist colleagues to form The International Academy of Criminalistics.”).

51. See Polson, *supra* note 11, at 697 (“Locard applied his method with notable success in the now classic Boudet-Simonin case.”).

52. See DAVID R. ASHBAUGH, QUANTITATIVE-QUALITATIVE FRICTION RIDGE ANALYSIS: AN INTRODUCTION TO BASIC AND ADVANCED RIDGEOLOGY 150 (1999) (noting Locard “began to study poroscopy as the result of a break-in and theft . . . in Lyons”).

53. *Id.*

54. See *id.* (“During this time friction ridge analysis was in its infancy and, to a degree, still somewhat novel.”).

55. See *id.* (“After the pore locations were compared, Boudet’s phalange print was found to have 901 pores in the correct relative position. . . . Simonin’s palm print had 2000 pores in agreement.” (citation omitted)).

56. See *id.* (“This amount of third level detail when found in agreement has an enormous value toward individualization. Both men were convicted and sentenced to five years of hard labor.”).

57. See Polson, *supra* note 11, at 697 (“Locard . . . claimed that his case of the ‘Affaire de la rue Ravat’ . . . was the first in France to turn solely upon finger print evidence.”).

Locard is most famous for his eponymous forensic axiom, the Locard Exchange Principle (LEP), which underlies the modern analysis of all trace evidence.⁵⁸ As Craig Cooley explains: “Forensic science is premised on Locard’s theory of exchange, which states that every contact between individuals or objects results in a transfer of material between them.”⁵⁹

Police and prosecutors often invoke Locard’s name or the LEP to bolster the credibility of modern, pattern-matching techniques. For example, in *United States v. Ausby*,⁶⁰ John Ausby was charged with felony murder for raping and murdering Deborah Noel in Washington, D.C., in 1971.⁶¹ Ausby had originally been convicted of rape and murder in 1972.⁶² Ausby’s first conviction was secured in part based on testimony relating to forensic hair comparison, a once-prolific FBI forensic technique that has subsequently been debunked as unreliable.⁶³ In 2015, the FBI reviewed Ausby’s case and concluded that the testimony that its analyst offered at Ausby’s trial relating to “microscopic hair comparison analysis” had “contained erroneous statements” and “exceeded the limits of science.”⁶⁴

Ausby filed a petition for a writ of habeas corpus seeking to vacate his conviction based on the misleading, expert hair-comparison testimony.⁶⁵ The district court denied the petition on the ground that the other evidence of Ausby’s guilt was “overwhelming,” including expert testimony matching Ausby’s fingerprint to one found in Noel’s apartment, forensic firearm evidence that the bullet that killed Noel could have been fired from Ausby’s gun, and the testimony of an eyewitness who identified Ausby as having

58. See CHISUM & TURVEY, *supra* note 32, at 23–24 (“Locard is most famous for the forensic axiom that bears his name: Locard’s Exchange Principle.”).

59. Craig M. Cooley, *Forensic Science and Capital Punishment Reform: An “Intellectually Honest” Assessment*, 17 GEO. MASON C.R. L.J., 299, 343 (2007).

60. *United States v. Ausby*, 436 F. Supp. 3d 134 (D.D.C. 2019).

61. *Id.* at 141.

62. *Id.* at 141 (citing *United States v. Ausby*, 916 F. 3d 1089, 1091 (D.C. Cir. 2019)).

63. See *id.* at 142 (implying the defendant’s conviction turned on false expert testimony). See generally Leonetti, *Innocence*, *supra* note 1, at 101 (describing “microscopic hair comparison and identification” as one of many “debunked . . . classes of forensic ‘science’ evidence”).

64. *Ausby*, 436 F.Supp. 3d at 141 (internal quotation marks omitted). See generally Carrie Leonetti, *Endangered by Junk Science: How the New Zealand Family Court’s Admission of Unreliable Expert Evidence Places Children at Risk*, 43 CHILD.’S LEGAL RTS. J. 17, 63–64 (2022) (“Studies of miscarriages of justice in the criminal justice system are replete with examples of entrenched junk science [such as microscopic hair comparison] being admitted . . .”).

65. See *Ausby*, 436 F.Supp. 3d at 142 (recounting the defendant’s motion to vacate alleged a violation of the “Due Process Clause of the Fifth Amendment and required vacatur of the . . . conviction”). See generally 28 U.S.C. § 2255 (providing habeas corpus relief for an individual in federal custody).

been near Noel's apartment near the time of her rape and murder.⁶⁶ The District of Columbia Court of Appeals overturned the district court's denial of the writ, finding that the unreliable hair-comparison testimony could have "affected the judgment of the jury."⁶⁷

Because it had been almost half a century since the original trial, many of the witnesses from the first trial were no longer available, and many of the trial exhibits, including all the physical evidence, had been lost or destroyed.⁶⁸ The Government sought to introduce the trial transcripts from the original 1972 trial.⁶⁹ Otherwise, it lacked legally sufficient evidence to retry Ausby.⁷⁰ Ausby challenged the prior testimony of the Government's three original expert witnesses, including fingerprint examiner Joseph Mullinax, on inadmissibility grounds under Rule 702 of the Federal Rules of Evidence, which had not yet been adopted at the time of Ausby's original trial and interpreted in *Daubert v. Merrill Dow Pharmaceuticals, Inc.*⁷¹

At Ausby's original trial, Mullinax testified that a latent fingerprint found in Noel's apartment matched a known fingerprint from Ausby without any "doubt."⁷² The fingerprints that Mullinax compared had been destroyed.⁷³ The primary issue with Mullinax's testimony was that he did not apply the ACE-V technique developed by David Ashbaugh—discussed in greater detail below.⁷⁴ Instead, he employed an older technique to compare the suspect and latent prints, which involved a minimum number (ten) of "matching" points.⁷⁵ In defending the reliability of this older, abandoned technique, the Government described it as "roughly consistent with

66. See *Ausby*, 436 F. Supp. 3d at 142–43 (outlining the evidence that resulted in the district court's denial of defendant's § 2255 motion).

67. *Id.* at 142 (quoting *Ausby*, 916 F. 3d at 1090) (internal quotation marks omitted).

68. See *id.* at 143 ("Forty-seven years later, much of this original trial evidence is no longer available.").

69. *Id.* at 144.

70. See *id.* ("Without the trial transcripts, the government does not have sufficient evidence to proceed to trial.").

71. *Daubert v. Merrill Dow Pharms., Inc.*, 509 U.S. 579 (1993); see *Ausby*, 436 F. Supp. 3d at 161 (acknowledging the defendant's prejudice argument because the "original trial, in 1972, predated the adoption of the Federal Rules of Evidence").

72. See *Ausby*, 436 F. Supp. 3d at 162 ("Mullinax stated that 'both of these impressions were made by the same individual . . . John Milton Ausby.'").

73. *Id.*

74. See *id.* at 163–64 (addressing the issue of Mullinax's testimony and the ACE-V method of latent fingerprint examination).

75. See *id.* at 164 (identifying the government's contention regarding the old identification method utilized by Mullinax).

Edmund Locard's 1914 'tripartite rule' for identification, which permitted identification on the basis of between 8 and 12 'concurring minutiae' depending on the clarity of the print and rarity of the minutiae."⁷⁶

The Government's defense of a 1970s fingerprint technique in the face of a challenge that claimed it did not live up to the methodological standards of modern fingerprint comparison consisted, therefore, of a reference to its even older pedigree—despite the notion that forensic sciences are less valid the farther back in time one travels. As Inman and Rudin explain: "As much as the Locard transfer theory has been invoked, no peer-reviewed literature exists that proffers it, tests it, or refutes it. It is axiomatic in forensic science; it is accepted as true without proof."⁷⁷

D. *Edward Oscar Heinrich (1881–1953)*

In the test tube and crucible or through the lens of the microscope and camera I have found in my own practice the evidence of poison, the traces of the deadly bullet, the identity of a clot, the source of a fiber, the telltale fingerprint, the differing ink, the flaw in the typewriter, the slip of the pen upon which have turned in dramatic scenes of our courts the rightful title to an estate, of the liberty, even the life, of an individual.
—Edward Heinrich⁷⁸

In the United States, Berkeley, California, was the early epicenter of pattern-matching, forensic disciplines.⁷⁹ Early twentieth-century Police Chief August Vollmer "emphasized standardization, the adaptation of new technology and specialization with law enforcement agencies," including in forensic science.⁸⁰ Vollmer is also credited with inventing the modern crime laboratory.⁸¹

Edward Heinrich was a chemist and criminologist in Berkeley and a prolific expert witness in various pattern-matching disciplines, including fired-bullet comparison, microscopic hair comparison, and forensic handwriting

76. *See id.* at 164 n.8 (recognizing the government's basis for purporting the reliability of the technique Mullinax used).

77. KEITH INMAN & NORAH RUDIN, PRINCIPLES AND PRACTICE OF CRIMINALISTICS: THE PROFESSION OF FORENSIC SCIENCE 94 (2001).

78. EUGENE B. BLOCK, THE WIZARD OF BERKELEY 43–44 (1958).

79. *See Balko, supra* note 2 (noting Berkeley, California, was home to pioneers of modern forensics and policing).

80. *Id.*

81. *Id.*

analysis.⁸² He was known as the “Wizard of Berkeley” and the “Sherlock Holmes of America.”⁸³ The news media portrayed him as infallible.⁸⁴

Heinrich's most famous case involved the attempted robbery of a Southern Pacific Express train traveling from Oregon to California during the course of which several train employees were murdered.⁸⁵ The robbers planted explosives as the train was traveling slowly in a tunnel to detach the mail car, which was carrying a large amount of cash, from the rest of the train.⁸⁶ At the wreckage of the train, investigators found a revolver, greasy denim overalls, and a knapsack soaked in creosote.⁸⁷ Police arrested a mechanic who worked nearby because he was wearing overalls similar to those found at the scene, but they could not find any concrete evidence linking him to the train heist.⁸⁸ They called in Heinrich, who concluded:

You are holding the wrong man. The overalls you sent me were worn by a left-handed lumberjack accustomed to working around fir trees. He is a white man between 21 and 25 years of age, not over five feet ten inches tall and he weighs about 165 pounds. He has medium light brown hair, a fair complexion, light brown eyebrows, small hands and feet, and he is rather fastidious in his personal habits. Apparently he has lived and worked in the Pacific Northwest. Look for such a man.⁸⁹

Heinrich continued to testify to the reliability of novel forensic techniques for years. For example, in *People v. Page*,⁹⁰ Page was charged with the murder of his business partner.⁹¹ The State of California called Heinrich to testify that marks found on the inner sole of a shoe found at the scene of the crime matched the tacks in one of Page's shoes to prove that the inner sole came out of Page's shoe.⁹²

82. CHISUM & TURVEY, *supra* note 32, at 25.

83. Jeff Teitelbaum, *Edward Oscar Heinrich (1881–1953)—an American Pioneer in Forensic Science*, 29 FORENSIC SCI. REV. 16, 16 (2017).

84. *Id.* at 18.

85. *Id.*

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.*

90. *People v. Page*, 260 P. 591 (Cal. Dist. Ct. App. 1927).

91. *Id.* at 592.

92. *Id.* at 594.

E. *Dr. Paul L. Kirk (1902–1970)*

Physical evidence cannot be wrong; it cannot perjure itself; it cannot be wholly absent. Only in its interpretation can there be error.

—Paul Kirk⁹³

Kirk was a biochemist and the founding chair of the Department of Criminalistics at Berkeley.⁹⁴ In 1953, he published one of the foundational forensic-science treatises, *Crime Investigation*.⁹⁵ Kirk also published the first edition of *Fire Investigation*, which continues to be the seminal work on fire-scene investigation and reconstruction.⁹⁶ Kirk was probably best known for his involvement in the Sam Sheppard case, discussed in more detail *infra*.⁹⁷

F. *David Ashbaugh*

Modern fingerprint examination is dominated by the systems for classification and analysis developed by David Ashbaugh of the Canadian Royal Mounted Police. Ashbaugh developed the three-level system for classifying fingerprint details called “ridgeology” and played a pivotal role in developing the FBI’s ACE-V (Analysis, Comparison, Evaluation, Verification) system of examination.⁹⁸ Ashbaugh’s ridgeology is considered the gold-standard for fingerprint examination today.

Courts tend to rely heavily on the perception that Ashbaugh’s method is both cutting edge and based on a long historical pedigree, in finding testimony based on it to be sufficiently reliable for admission. For example, in *Llera*, in reaching its determination that the Government’s fingerprint testimony was reliable, the district court relied heavily on the history of

93. PAUL L. KIRK, *CRIME INVESTIGATION* 2 (John I. Thornton ed., 2d ed. 1974).

94. CHISUM & TURVEY, *supra* note 32, at 28–30; Paul L. Kirk, *Criminologist*, 68, N.Y. TIMES (June 8, 1970), <https://www.nytimes.com/1970/06/08/archives/dr-paul-l-kirk-criminologist-68-berkeley-teacher-witness-in.html> [<https://perma.cc/PAU4-FJ6P>].

95. CHISUM & TURVEY, *supra* note 32, at 30.

96. *See generally* DAVID ICOVE & GERALD HAYNES, *KIRK’S FIRE INVESTIGATION* (8th ed. 2016) (noting Kirk’s publication is still being updated and continues to be of use).

97. Kirk, *supra* note 94.

98. *Compare* David R. Ashbaugh, *Ridgeology*, 65 J. FORENSIC IDENTIFICATION 489, 518 (2015) (“The identification process . . . passes through three stages during the course of an examination: analysis, comparison, and evaluation.”), *with* Lucas Zarwell & Gregory Dutton, *The History and Legacy of the Latent Fingerprint Black Box Study*, NIJ (Sept. 19, 2022), <https://nij.ojp.gov/topics/articles/history-and-legacy-latent-fingerprint-black-box-study#citation—0> [<https://perma.cc/RN7A-ZQLA>] (“Today, the principal process used to examine latent prints is analysis, comparison, evaluation, and verification (ACE-V).”).

fingerprinting.⁹⁹ The court noted: “English and American trial courts have accepted fingerprint identification testimony for almost a century.”¹⁰⁰ The court specifically relied on Ashbaugh’s testimony that “the techniques of North American fingerprint identification specialists appear to have reached a level of sophistication paralleling that of their English counterparts” at Scotland Yard.¹⁰¹ The court explained that the North American procedure for fingerprint identification “corresponds almost exactly” with “the fingerprint identification regime which Her Majesty’s Government has now put into force.”¹⁰² The court concluded:

The ACE–V regime that is sufficiently reliable for an English court is, I conclude, a regime whose reliability should, subject to a similar measure of trial court oversight, be regarded by the federal courts of the United States as satisfying the requirements of Rule 702 as the Supreme Court has explicated that rule in *Daubert* and *Kumho Tire*.¹⁰³

The court explained:

I had the opportunity to learn from Allan Bayle, a senior English fingerprint specialist, . . . that the ACE–V process employed by New Scotland Yard is essentially indistinguishable from the FBI’s ACE–V process, and that this formidably knowledgeable and experienced veteran of the Yard—the legendary and actual source of the systematic and comprehensive utilization of fingerprint identification as an instrument of law enforcement—believes in ACE–V without reservation.¹⁰⁴

Similarly, in *State v. Bickart*,¹⁰⁵ the Supreme Judicial Court of Maine (SJC) reviewed the trial court’s admission of a palm-print identification at Bickart’s trial for sexual offense against a toddler.¹⁰⁶ Bickart challenged the testimony as a novel application of fingerprint and palm print identification to analyze palm creases in a photograph and “make an identification of a hand using only its creases.”¹⁰⁷ She argued “the use of creases for identification

99. *United States v. Llera Plaza*, 188F. Supp. 2d 549, 564–71 (E.D. Pa. 2002).

100. *Id.* at 572.

101. *Id.* at 575.

102. *Id.*

103. *Id.*

104. *Id.* at 575–76.

105. *State v. Bickart*, 963 A.2d 183 (Me. 2009).

106. *Id.* at 185–86.

107. *Id.* at 186–87.

purposes without accompanying ridge detail [was] not generally accepted and ha[d] not been subject to peer-reviewed research.”¹⁰⁸ The SJC upheld the trial court’s admission of the testimony.¹⁰⁹ In defending the reliability of the testimony, the State’s experts “referred repeatedly to what both consider the authoritative text on crease and ridge identification analysis, ‘Quantitative and Qualitative Friction Ridge Analysis,’ by David Ashbaugh,” in which he opined that

[P]alm creases can be utilized by themselves for identification purposes, and read a passage to the jury from the text to that effect. Both experts discussed in detail the formation of a person’s palm creases in utero through birth, and also made reference to another study by Scotland Yard that seems to confirm Ashbaugh’s findings on the use of creases.¹¹⁰

The court explained: “while there is not general acceptance of the identification analysis . . . there is some scientific support, as found in the Ashbaugh text”¹¹¹

III. EARLY VICTORIES

The techniques employed by these legendary sleuths became standard forensic practice over the course of the twentieth century. With the trends of urbanization and the nationalization (and even internationalization) of new media outlets, the public increasingly began to follow news reports of high-profile and sensational cases. This trend included grisly murders, which were solved by fledgling forensic sciences. These news reports of terrible crimes solved by the pattern-matching forensic sciences, and the concomitant sense of safety from otherwise undetectable and unsolvable crimes, further entrenched the idea of the forensic scientist as magician and hero in the public imagination.

Americans have a particular fascination with violent crime, especially serial killers. As David Schmid notes: “Sensational coverage of crime has always had a prominent place in American popular culture, from the earliest forms of colonial popular literature, through the ‘yellow journalism’ of the

108. *Id.* at 187.

109. *Id.* at 190.

110. *Id.* at 189–90.

111. *Id.* at 190.

nineteenth century, to the true-crime book and slasher movie of today.”¹¹² This fascination has been enhanced by the “tabloidization” of the mainstream media.¹¹³ As Schmid explains:

Instead of detailed, objective stories about the crime problems facing the United States, now the mass media provide their audience with ‘raw dispatches of the crime of the moment, the frightening—and often false—trend of the week, the prurient murder of the month, the sensational trial of the year.’¹¹⁴

This love/hate fascination with crime and murderers has given rise to the phenomenon of the “crime myth.” Schmid explains: “The social construction of crime myths follows a recurrent pattern, whereby a few isolated criminal events and issues receive brief but incredibly intense media coverage,” focusing on “the most bizarre or gruesome act a journalist or investigator can uncover”¹¹⁵ This Article will now discuss several of the most prominent murder cases in modern American history.

A. *Leopold and Loeb*

In 1924, the corpse of fourteen-year-old Bobby Franks was found bludgeoned to death, mutilated, and stuffed “into a culvert in a field outside of Chicago.”¹¹⁶ The case shocked Chicago because of its brutality, lack of obvious motivation, and the age of its young victim. The case made national news when, a few days later, two young men, Nathan Leopold and Richard Loeb, were charged with kidnapping and murder.¹¹⁷ The public was particularly fascinated with and horrified by the case because Leopold and Loeb were the brilliant scions of two prominent, wealthy, Jewish families, and their callous murder appeared to have sprung, at least in part, from their

112. DAVID SCHMID, NATURAL BORN CELEBRITIES: SERIAL KILLERS IN AMERICAN CULTURE 13 (2005).

113. *Id.* at 13–14.

114. *Id.* at 14 (quoting DAVID J. KRAJICEK, SCOOPED!: MEDIA MISS REAL STORY ON CRIME WHILE CHASING SEX, SLEAZE, AND CELEBRITIES 9, 63 (1998)).

115. *Id.*

116. Peter I. Rose, *Revisiting the Story of “Leopold and Loeb,”* 46 SOCIO. 522, 522 (2009); see also Simon Baatz, *Leopold and Loeb’s Criminal Minds*, SMITHSONIAN MAG. (Aug. 2008), <https://www.smithsonianmag.com/history/leopold-and-loebs-criminal-minds-996498/> [https://perma.cc/J3CN-MNB4] (reporting on the case).

117. Rose, *supra* note 116, at 522.

illicit sexual relationship with one another.¹¹⁸ The case was the original “Crime of the Century.”¹¹⁹

Leopold and Loeb ultimately confessed to the murder of Franks, who was Loeb’s cousin, as well as to the total absence of motive besides the thrill of committing a heinous murder.¹²⁰ However, Leopold and Loeb originally became suspects after criminalists traced a typewritten ransom note, sent to Franks’ parents, “to a late-model Underwood typewriter with a defective lowercase *t* and *f*.”¹²¹ The case is best known for the capital sentencing hearing that followed their arrests and confessions; however, at the time, its notoriety came in part because of the way that detectives were able to quickly “solve” the case and identify the unlikely perpetrators through scientific investigation.

The case became more famous when Leopold and Loeb hired legendary defense lawyer Clarence Darrow.¹²² The defendants pled guilty to avoid the death penalty, allowing Darrow to argue that their youth, admissions of guilt, traumatic childhoods, and impaired mental capacities warranted a sentence of imprisonment.¹²³ Although they were sentenced to life imprisonment, the case remains one of the most famous and controversial cases involving the death penalty.¹²⁴ Loeb died in prison in 1936 when another inmate stabbed him.¹²⁵ Leopold was paroled in 1958 and granted clemency in 1963.¹²⁶ The case has subsequently been the subject of countless movies, novels, plays, and scholarly treatises, as well as two autobiographies.¹²⁷

118. See Jeremy Lybarger, *Reopening the Case Files of Leopold and Loeb*, PARIS REV. (July 26, 2018), <https://www.theparisreview.org/blog/2018/07/26/reopening-the-case-files-of-leopold-and-loeb/> [<https://perma.cc/6A7M-A2RX>] (highlighting the public’s shock and disbelief at the wealthy Leopold and Loeb’s remorseless killing of Bobby Franks).

119. Rose, *supra* note 116, at 522; Christopher Borrelli, *Would You Buy Leopold and Loeb’s Fingerprints? A Famous Murder Weapon? Chicago Museums Sometimes Face Similar Questions*, CHI. TRIB. (May 13, 2021), <https://www.chicagotribune.com/entertainment/ct-ent-leopold-loeb-memorabilia-sale-20210513-wsekojjx35cytnra4ezf7z7wv4-story.html> [<https://perma.cc/NGS7-Z45K>].

120. Rose, *supra* note 116, at 522.

121. Lybarger, *supra* note 118.

122. See Baatz, *supra* note 116 (“Darrow had achieved notoriety within Cook County as a clever speaker, an astute lawyer and a champion of the weak and defenseless.”).

123. Rose, *supra* note 116, at 522; Baatz, *supra* note 116.

124. See Rose, *supra* note 116, at 522 (explaining how Leopold was well-known among the author’s entire generation).

125. Baatz, *supra* note 116.

126. Rose, *supra* note 116, at 524; Baatz, *supra* note 116; Lybarger, *supra* note 118.

127. Rose, *supra* note 116, at 523.

B. *Dr. Samuel Sheppard*

In 1954, thirty-one-year-old Marilyn Reese Sheppard, four months pregnant, was discovered murdered in her bedroom in Bay Village, Ohio—an affluent suburb of Cleveland.¹²⁸ The victim's affluence, her pregnancy, and the perceived safety of Bay Village, brought this case into the national spotlight. It became more sensational when Reese's husband, Sam Sheppard, was charged with and convicted of her murder.¹²⁹

After the trial, Sheppard's defense team hired Paul Kirk to assist with the appeal of his conviction by reexamining the crime scene.¹³⁰ Kirk opined, based on his bloodstain pattern analysis at the scene, that there were two perpetrators present during Reese's murder.¹³¹ Additionally, Kirk established that the killer had been left handed, while Sheppard was right handed.¹³² He also concluded from tooth fragments found under Reese's body that she had bitten the hand of her killer—and Sheppard lacked corresponding injuries.¹³³

Sheppard's conviction was overturned, and Kirk testified for the defense at the retrial, which resulted in Sheppard's acquittal.¹³⁴ At the time, Kirk's testimony was perceived by the forensic-science community as an act of disloyalty, contrary to the carefully cultivated image that most forensic scientists project as “speaking for the victims” who could not speak for themselves.¹³⁵ As a direct result of his testimony for the defense in *Sheppard*, Kirk was barred from membership in the American Academy of Forensic Sciences (AAFS).¹³⁶

Over time, however, Kirk's image has been repaired, probably in part due to the fictionalization of the case in the public eye. The Harrison Ford movie *The Fugitive* was loosely based on Sam Sheppard's trial and

128. CHISUM & TURVEY, *supra* note 32, at 31.

129. *Id.*

130. *Id.* at 32.

131. *Id.*

132. Kirk, *supra* note 94.

133. *Id.*

134. CHISUM & TURVEY, *supra* note 32, at 32.

135. *See id.* (“Dr. Sam Gerber . . . was a very powerful person in the county and in the forensic field He was also vindictive as shown by his personal attacks on Prof. Paul Kirk. Many believe he was behind the movement that kept Dr. Kirk out of the American Academy of Forensic Sciences.”).

136. *Id.* at 32–33.

conviction,¹³⁷ although the real-life Sheppard never dramatically fled and evaded capture by the United States Marshals Service.¹³⁸ Ford's depiction of the innocent victim of false accusations, a frameup, and police incompetence, no doubt in conjunction with the changing public perceptions around wrongful convictions, realigned Kirk's position in the real Sheppard case from the side of darkness to the side of light. AAFS now awards the Paul L. Kirk Award as the highest honor in its criminalistics section.¹³⁹

Kirk's public rehabilitation, however, was not the result of a critical examination of the field of forensic science. Instead, it tells a tale of the heroic forensic scientist who ignored the public's bloodlust for retribution and followed science to its rightful conclusion.

C. *Ted Bundy*

Theodore Robert Bundy was "the exemplary American serial killer."¹⁴⁰ He was responsible for a string of dozens of sexually motivated abductions, rapes, and murders of girls and young women across Washington, Colorado, Utah, and Florida in the 1970s.¹⁴¹ Bundy also engaged in necrophilia with the corpses, often for days after he had killed them.¹⁴²

Bundy was linked to the murder of Caryn Campbell in Colorado, the first murder with which he was charged, through a hair match between Campbell's hair and hairs found in Bundy's car.¹⁴³ He was linked to two of his last murders, frenzied slayings at the Chi Omega sorority house at Florida

137. See Arnie Rosenberg, *F. Lee Bailey Say 'Fugitive' Was Sam Sheppard*, THE BALTIMORE SUN (Aug. 6, 1993, 12:00 AM), <https://www.baltimoresun.com/news/bs-xpm-1993-08-07-1993219100-story.html> [<https://perma.cc/W4QC-S6EX>] (claiming "'The Fugitive,' as a concept, was triggered by the Sheppard murder case").

138. See *id.* ("In the movie, . . . [Harrison Ford's character] escapes from custody.")

139. CHISUM & TURVEY, *supra* note 32, at 33.

140. SCHMID, *supra* note 112, at 211.

141. *Id.* at 81. Bundy confessed to thirty murders but hinted there were many more, and many commentators believe that the likely number of his victims is closer to one hundred. Erica Goode, *F.B.I. Creates DNA Profile of Ted Bundy, Giving Fresh Hope on Unsolved Cases*, N.Y. TIMES (Aug. 10, 2011), <https://www.nytimes.com/2011/08/10/us/10bundy.html> [<https://perma.cc/LGC9-ULXS>]; Jeca Taudte et al., *Chi Omega Survivor of Ted Bundy Murders: 'I Was Asleep' When Evil Opened Door "and Attacked Me"*, AM. BROAD. CO. NEWS (Feb. 13, 2019), <https://abcnews.go.com/US/chi-omega-survivor-ted-bundy-murders-asleep-evil/story?id=60894306> [<https://perma.cc/E2FY-VSU8>].

142. Katie Dowd, *Netflix's Ted Bundy Documentary Is Almost Everything That's Wrong with the True Crime Genre*, S.F. GATE (Jan. 28, 2019), <https://www.sfgate.com/crime/article/conversations-with-a-killer-review-netflix-13567369.php> [<https://perma.cc/4QMK-BSKM>].

143. Chad Abraham, *Ex-Sheriff Recalls Bundy, His Escape in Aspen, Manhunt*, ASPEN DAILY NEWS (Jan. 31, 2019), https://www.aspendailynews.com/news/ex-sheriff-recalls-bundy-his-escape-in-aspen-manhunt/article_31f08b0e-250c-11e9-afaf-df3822fbaf0a.html [<https://perma.cc/42N8-88E7>].

State University after he escaped from jail in Colorado, through a forensic dental match between his teeth and bite marks on the buttocks of one of his victims.¹⁴⁴ Florida prosecutors also presented forensic testimony that his hair matched hairs found inside a pantyhose mask left behind at the scene of the crime.¹⁴⁵ Additionally, prosecutors used forensic fiber analysis to convict him of his final murder, that of twelve-year-old Kimberly Leach—committed after the Florida State murders but before his capture.¹⁴⁶

Ted Bundy is a celebrity, a staple of American popular culture, and the most famous American serial killer.¹⁴⁷ Ann Rule's 1980 best-selling true-crime book *The Stranger Beside Me* made Bundy a household name.¹⁴⁸ His fame was amplified by his brazen escape from the courthouse in Colorado after his first arrest, his insistence on representing himself in his murder trial in Florida, and his decision to refuse a plea bargain that would have spared him the death penalty.¹⁴⁹

Bundy, invariably described as “handsome” and “charming,” was a magnet for women known as “Ted groupies.”¹⁵⁰ He was also simultaneously the target of intense hatred.¹⁵¹ When the State of Florida executed Bundy in 1989, there was a carnival of cheering, celebratory crowds outside the prison.¹⁵²

In 2019, thirty years after Bundy's execution, Netflix released a documentary called *Conversations with a Killer: the Ted Bundy Tapes*, followed by a feature film starring Zac Efron called *Extremely Wicked, Shockingly Evil, and Vile*.¹⁵³ The Netflix documentary is based on the work of journalists Hugh Aynsworth and Stephen Michaud, who persuaded Bundy to engage in almost one hundred hours of taped interviews between his conviction and execution.¹⁵⁴ The Bundy case is still touted as an example of the crime-solving power of forensic bite mark evidence, even though bite mark matching as a forensic

144. Goode, *supra* note 141; Taudte, *supra* note 141.

145. Taudte, *supra* note 141.

146. *Id.*

147. See SCHMID, *supra* note 112, at 242 (“A close reading of true-crime narratives about serial killers demonstrates that while Ted Bundy, Jeffrey Dahmer, and Aileen Wuornos are all celebrities, only Bundy can be regarded as ‘famous’ in anything close to the conventional sense of that word.”).

148. *Id.* at 197.

149. *Id.* at 16–17, 211–12.

150. *Id.* at 212.

151. *Id.* at 215.

152. *Id.*; David Von Drehle, *Audiences Love Villains. They Should Stop Loving Ted Bundy*, WASH. POST, Feb. 5, 2019.

153. Von Drehle, *supra* note 152.

154. *Id.*

discipline has been largely discredited and abandoned, even by forensic odontologists.¹⁵⁵

D. *Jeffrey MacDonald*

In 1970, the pregnant partner and two young daughters of United States Army Captain and Green Beret doctor Jeffrey MacDonald were beaten and stabbed to death in their home on Fort Bragg, North Carolina.¹⁵⁶ When military police responded, they discovered MacDonald, the sole survivor, with two stab wounds and a collapsed lung, but the wounds were relatively minor, particularly compared to those of the rest of his family.¹⁵⁷

MacDonald has always insisted that he is innocent, claiming that he woke up to find three men and a woman, “drug-crazed hippies,” chanting “kill the pigs” and “acid is groovy.”¹⁵⁸ MacDonald told investigators in the Army Criminal Investigation Division that he had fallen asleep on the sofa in his living room when he awoke to screaming and saw three men and a woman in his home.¹⁵⁹ He claimed when he confronted the intruders, they attacked him with a club and an ice pick, and he lost consciousness.¹⁶⁰ Investigators did not believe MacDonald’s account because of the relatively minor nature of his injuries and the absence of evidence of the struggle that MacDonald described.¹⁶¹

There was some evidence to suggest that MacDonald’s account might be true. A neighbor of MacDonald reported seeing a suspicious vehicle in the vicinity around the time of the murders.¹⁶² A woman named Helena

155. Michael J. Saks et al., *Forensic Bite-mark Identification: Weak Foundation, Exaggerated Claims*, 3 J. L. & BIOSCIENCES 538, 540–41 (2016).

156. Robert Sam Anson, *The Devil and Jeffrey MacDonald*, VANITY FAIR (Jan. 1, 2007), <https://www.vanityfair.com/magazine/1998/07/macdonald199807> [https://perma.cc/9PQ8-UMSP]; Daren Briscoe, *Crime: the Green Beret Murderer Hasn't Given Up*, NEWSWEEK (Aug. 30, 2004), <https://www.newsweek.com/crime-green-beret-murderer-hasnt-given-126637> [https://perma.cc/G4PK-PBMJ].

157. Anson, *supra* note 156.

158. Briscoe, *supra* note 156; Paul Woolverton, *Judge Rejects Release for “Fatal Vision” Murder Defendant Jeffrey MacDonald*, FAYETTEVILLE OBSERVER (Apr. 9, 2021), <https://www.fayobserver.com/story/news/2021/04/09/judge-rejects-release-fatal-vision-murder-defendant-jeffrey-macdonald-fort-bragg-fortbragg/7164248002/> [https://perma.cc/YPV6-M7FK]; Rodger Mullen, *New Evidence? FX Series Examines Jeffrey MacDonald Fort Bragg Murder Case*, FAYETTEVILLE OBSERVER (Sept. 17, 2020), <https://www.fayobserver.com/story/news/2020/09/17/jeffrey-macdonald-murder-cases-subject-fx-series/5814669002/> [https://perma.cc/Y6MJ-CBU5].

159. Woolverton, *supra* note 158.

160. Anson, *supra* note 156; Woolverton, *supra* note 158.

161. Anson, *supra* note 156; Woolverton, *supra* note 158.

162. Anson, *supra* note 156.

Stoeckley initially made a series of inconsistent and damning admissions suggesting she had been present in the MacDonald home during the killings, after a tip from a neighbor suggested she may have been involved, but Stoeckley later recanted her story.¹⁶³

The military concluded the evidence was too ambiguous either to try MacDonald for the murders or to exonerate him.¹⁶⁴ In 1979, civilian authorities charged MacDonald with the murders in response to public pressure.¹⁶⁵ Federal prosecutors claimed that MacDonald killed his family with an ice pick then stabbed himself to make it look like he was attacked while trying to protect his family.¹⁶⁶

By the time of MacDonald's trial, Stoeckley insisted that she could not remember where she had been on the night of the murders.¹⁶⁷ The evidence against MacDonald included testimony that fibers from his pajamas were found in locations that called into question his version of events.¹⁶⁸

MacDonald was convicted of the murders.¹⁶⁹ In 1982, he was sentenced to three consecutive life sentences,¹⁷⁰ but his case has never left the public eye. The litigation either to exonerate him or keep him in prison has been extensive.¹⁷¹ The case has gone to the United States Supreme Court seven times.¹⁷²

The evidence for and against MacDonald has also continued to fluctuate over time, partly because of vigorous private investigation attempts on his behalf. After MacDonald's trial, Stoeckley gave a full written confession to private investigators working for MacDonald, implicating herself and five other "cult" members in the "human sacrifice," but she did so under

163. *See id.* ("Stoeckley's story had major problems. The biggest by far was that it didn't come close to jibing with McDonald's.").

164. *See* Mullen, *supra* note 158 ("An Article 32 investigation into the case was held, but in October 1970, the Army dropped all the charges against McDonald.").

165. *Id.*

166. *See* United States v. MacDonald, 32 F. Supp. 608, 629 (E.D.N.C. 2014) (highlighting the prosecution's theory of "MacDonald [putting] the garment on his wife and then stab[bing] her with an icepick to make his account of the murders more believable" (internal quotation marks omitted)).

167. Anson, *supra* note 156.

168. *Id.*

169. Greene, *supra* note 4, at 439; Briscoe, *supra* note 156.

170. Briscoe, *supra* note 156.

171. *See* Anson, *supra* note 156 (specifying MacDonald's appeals claims concerning "the impartiality of his judge, the ethics of his prosecutors, [and] the validity of the more than 1,000 pieces of evidence used against him"); Briscoe, *supra* note 156 (describing how MacDonald refuses to seek parole at the age of sixty).

172. Anson, *supra* note 156.

circumstances of duress.¹⁷³ Her confession did not match MacDonald's account of the murders.¹⁷⁴ The FBI was able to establish conclusive alibis for many of the individuals whom she named as accomplices.¹⁷⁵ Stoeckley later recanted the confession.¹⁷⁶ MacDonald insisted that the prosecution pressured her to recant her claim.¹⁷⁷ Multiple people confessed to killing MacDonald's family, including Cathy Perry, whom Stoeckley had identified as one of her accomplices.¹⁷⁸ Perry's confession, however, was also wildly inconsistent with the facts of the crime, which was perhaps unsurprising given that she had schizophrenia.¹⁷⁹ Stoeckley died in 1983, so any conclusive determination of whether she was involved is impossible.¹⁸⁰

The case has been a divisive one ever since the investigation began, with sustained media focus.¹⁸¹ It has been characterized as "the granddaddy of true crime."¹⁸² One camp believes that MacDonald was wrongfully convicted after a sloppy investigation and rush to judgment by army investigators, who dismissed the true version of events and focused on the husband as the most likely killer.¹⁸³ The other camp perceives MacDonald as a murderous psychopath and his protestations of innocence as cynical and dishonest.¹⁸⁴

The *MacDonald* case has captured the American public's attention for decades. His "case has been the subject of countless articles, a best-selling book, and a top-rated TV movie . . ."¹⁸⁵ In 1983, Joe McGinnis published *Fatal Vision*, a popular book made into a television miniseries, which

173. *Id.*

174. *Id.*

175. *See id.* (detailing various alibis for Stoeckley's accomplices).

176. *Id.*

177. *See id.* (describing the possible link between Stoeckley's death and prosecutorial pressure).

178. *See id.* ("MacDonald's only solace was that Helena Stoeckley's supposed cohort Cathy Perry had confessed.")

179. *See id.* (comparing the inconsistencies with Perry's confession to the actual events of the crime).

180. Mullen, *supra* note 158.

181. *See* Anson, *supra* note 156 (discussing the extensive media attention MacDonald's case has received); Mullen, *supra* note 158 ("The case has never really left the public consciousness, inspiring books, magazine articles, television shows and podcasts.")

182. Mullen, *supra* note 158.

183. *See* Anson, *supra* note 156 (stating "[t]here are many who believe [MacDonald]" and his claimed innocence).

184. *See id.* (explaining Bernard L. Segal's opinion concerning the disdain some people have for MacDonald).

185. *Id.*

strongly suggested that MacDonald was guilty.¹⁸⁶ In 2012, Errol Morris published *A Wilderness of Error*, later made into a documentary, which suggested that MacDonald had been wrongfully convicted.¹⁸⁷

After decades of countervailing portrayals in the media, subsequent DNA tests on hair samples retrieved from underneath the fingernail of one of the victims did not match MacDonald.¹⁸⁸ MacDonald argued that it must have come from one of the real killers.¹⁸⁹ Once again, however, the value of the evidence depended on the viewpoint of the observer as to MacDonald's guilt. To MacDonald's supporters, the presence of unexplained DNA on the victims justified exoneration. To MacDonald's condemners, the hair samples created a sensational smoke screen with no real relevance to the question of whether MacDonald killed his family.

In 2011, MacDonald filed a petition for a writ of habeas corpus on the ground of actual innocence based on the DNA test results.¹⁹⁰ In 2014, the district court denied the application, holding that the DNA results did not exculpate MacDonald.¹⁹¹ In 2018, the United States Court of Appeals for the Fourth Circuit affirmed the district court's denial of the application.¹⁹²

IV. PUBLIC REACTIONS

Kort-Butler and Hartshorn have documented how documentary television programs that follow and report on police investigations “usually follow detectives or forensic analysts as they try to solve a mystery.”¹⁹³ They argue that this “infotainment” industry increasingly blurs the line between news media and fictional crime dramas like *CSI: Crime Scene Investigation* and *Law & Order*.¹⁹⁴

186. Mullen, *supra* note 158.

187. *Id.*

188. *See* Anson, *supra* note 156 (“DNA testing on two tiny hairs found beneath the fingernails of [MacDonald's] murdered children . . . [M]icroscopic examination determined they weren't his.”).

189. *See id.* (describing MacDonald's desire to discuss the possibility of receiving a new trial because DNA testing of hair located underneath the victim's fingernails did not implicate him).

190. *See* United States v. MacDonald, 641 F.3d 596, 616 (4th Cir. 2011) (“[W]e acknowledge that MacDonald has a daunting burden ahead in seeking to establish that he is eligible for habeas corpus relief solely because of his ‘actual innocence.’”).

191. *See* United States v. MacDonald, 32 F. Supp. 3d 608, 707 (E.D.N.C. 2014) (finding MacDonald's inability to satisfy the “burden required for this court to grant the relief he requests”).

192. United States v. MacDonald, 911 F.3d 723, 724 (4th Cir. 2018).

193. Kort-Butler & Hartshorn, *supra* note 6, at 36.

194. *See id.* at 39 (“The factual information about a crime is supplemented with, and enhanced by, fictionalized recreations.”).

Scholars have documented the idea of a “media loop”: the circular relationship of feedback between media coverage of criminal investigations and the public perception of them.¹⁹⁵ These high-profile cases being solved by modern-day Sherlock Holmeses feed into the public image of forensic scientists as genius superheroes. The public’s clamor for more magical sleuthing has driven the image and reputation of forensic scientists even higher. The feedback loop can be seen in several modern examples.¹⁹⁶

A. *Joseph James DeAngelo*

Between 1974 and 1986, a string of serial rapes and murders went unsolved across California.¹⁹⁷ At the time, law-enforcement agencies thought that they were the work of different offenders in different regions of California, most notably the Visalia Ransacker, Sacramento’s East Area Rapist, and the Los Angeles Night Stalker.¹⁹⁸ It was not until 2013 that journalist Michelle McNamara suggested the thirteen murders and fifty rapes might have been committed by a single, prolific sex offender and serial killer, whom she named the Golden State Killer.¹⁹⁹

Because the Golden State Killer’s crimes occurred before the advent of forensic DNA analysis, he left his DNA at dozens of crime scenes.²⁰⁰ The case was finally solved and the offender, former police officer Joseph DeAngelo, was identified in 2018 when police ran a DNA profile extracted from one of the crime scenes against the database of an open-source genealogical website called *GEDMatch*.²⁰¹ The genealogical search revealed a partial

195. See PETER K. MANNING, *POLICING CONTINGENCIES* 76–77 (2003) (“An image shown, now reshown in another context, reframed by the media, enters a media loop.”).

196. See PHILIPPA GATES, *DETECTING MEN: MASCULINITY AND THE HOLLYWOOD DETECTIVE FILM* 159 (2006) (describing society’s perception of detectives as adversarial forensic heroes up against serial killers).

197. Ray A. Wickenheiser, *Forensic Genealogy, Bioethics and the Golden State Killer Case*, 1 *FORENSIC SCI. INT’L: SYNERGY* 114, 115 (2019); Noel King, *HBO’s ‘I’ll Be Gone in the Dark’ Brings The Golden State Killer To The Small Screen*, *NAT’L PUB. RADIO* (June 26, 2020, 4:58 AM), <https://www.npr.org/2020/06/26/883496022/hbos-ill-be-gone-in-the-dark-brings-the-golden-state-killer-to-the-small-screen> [<https://perma.cc/9YZA-2C8K>].

198. Wickenheiser, *supra* note 197, at 115; King, *supra* note 197.

199. King, *supra* note 197.

200. Katie Dowd, *Why Has the Zodiac Killer Never Been Caught?*, *SFGATE* (Jan. 6, 2021, 11:33 AM), <https://www.sfgate.com/sfhistory/article/why-has-Zodiac-Killer-never-been-caught-15847923.php> [<https://perma.cc/YZ57-RPF9>].

201. Rebecca Armitage, *The Golden State Killer: How It Took Four Decades to Catch the Serial Predator who Terrorised California*, *ABC NEWS* (Aug. 21, 2020, 11:54 PM), <https://www.abc.net.au/news/2020-08-22/the-forty-year-hunt-for-the-golden-state-killer/12579638> [<https://perma.cc/9QLM-8H63>]; Wickenheiser, *supra* note 197, at 115.

match to the profile of a seventy-three-year-old man in a nursing home in Oregon, who was later determined to be a distant relative of DeAngelo.²⁰² Police obtained and compared samples of DeAngelo's DNA collected from his trash, which matched the crime-scene samples.²⁰³ In August of 2020, DeAngelo pled guilty to thirteen murders and thirteen sexual assaults.²⁰⁴

News media intensely covered the investigation, partly because of the prolific and horrible nature of the offenses and the perception that the “familial DNA search,” which the police performed to identify DeAngelo, was cutting edge and controversial.²⁰⁵ Public interest in the case remains intense. In 2020, Home Box Office (HBO) announced that they were releasing a true-crime documentary about the Golden State Killer titled *I'll Be Gone in the Dark*.²⁰⁶

B. “CSI”

In the early 2000s, *CSI: Crime Scene Investigation* was the most popular television program in the world.²⁰⁷ Its success was followed by spinoffs and dozens of other forensic-science themed shows.²⁰⁸ The term “CSI effect” was coined by an article in *Time* magazine in 2002, which described “a growing public expectation that police labs can do everything TV labs can.”²⁰⁹ The CSI effect is the subject of countless media and academic articles on the relationship between public perception and jury decision-making.²¹⁰ The effect has been described as an offshoot of the media loop, which has led to an inability of the public to distinguish fiction and reality.²¹¹

202. Wickenheiser, *supra* note 197, at 115.

203. *Id.*

204. *Serial Killers Fast Facts*, CNN (Apr. 24, 2022, 9:09 AM), <https://www.cnn.com/2013/07/09/us/serial-killers-fast-facts/index.html> [<https://perma.cc/DX3B-U9BE>].

205. *See* Wickenheiser, *supra* note 197, at 120 (“Using the Golden State Killer as an example, searching [familial] individuals in a database could be considered a violation of their 4th amendment rights.”).

206. King, *supra* note 197.

207. Simon A. Cole & Rachel Dioso-Villa, *Investigating the ‘CSI Effect’ Effect: Media and Litigation Crisis in Criminal Law*, 61 STAN. L. REV. 1335, 1337 (2009).

208. *See id.* at 1338 (describing the proliferation of *CSI* spinoffs because of the original's success).

209. Jeffrey Kluger, *How Science Solves Crimes*, TIME (Oct. 21, 2002) <https://content.time.com/time/subscriber/article/0,33009,1003480,00.html> [<https://perma.cc/KR5Y-8K7A>].

210. *See* Cooley, *supra* note 59, at 308–09 (“These shows not only glamorize and distort forensic science’s capabilities, they also generate increased awareness of forensic science . . .”).

211. *See* Michael Mopas, *Examining the ‘CSI Effect’ Through an ANT Lens*, 3 CRIME MEDIA CULTURE 110, 112 (2007) (describing the expectation crime shows create with respect to forensic

V. THE IMPACT OF HISTORY ON MODERN ADMISSIBILITY PRACTICES

The storied history of forensic detectives continues to impact courts' decisions around the reliability of forensic testimony. The case of Clemente Aguirre exemplifies the way that the forensic pattern-matching disciplines are allowed to self-corroborate their own reliability.²¹²

A. *Case Study: Clemente Aguirre-Jarquín*

In 2004, Clemente Aguirre was convicted of the murders of his neighbors Cheryl Williams and Carol Bareis and sentenced to death.²¹³ Bareis, Williams's mother,²¹⁴ was partially paralyzed and spent most of her time in a wheelchair.²¹⁵ Williams was stabbed 129 times.²¹⁶ Bareis was stabbed twice.²¹⁷

When the police came to Aguirre's house and asked if he knew anything about the murders next door, he told the officers that he had seen Williams dead after entering the home.²¹⁸ Aguirre was able to describe the crime scene with particularity.²¹⁹ At trial, Aguirre explained that he did not call the police after discovering the bodies because he was undocumented and afraid of deportation.²²⁰

Forensic evidence played a pivotal role in the case, not only linking Aguirre to the crime scene, which he had already admitted to entering, but also to the murder weapon and the act of the murder itself.²²¹ Investigators found sixty-seven bloody shoe impressions inside the victims' home.²²² A

analysis of crime scene evidence); see also Glenn E. Rice, *TV is Making Jurors Suspicious About Evidence: CSI: Courtroom Stalemates Increase*, KANSAS CITY STAR, Aug. 10, 2005, at A1 ("TV shows such as 'CSI: Crime Scene Investigation' are shaping the public's expectations and demands of jurors as they weigh evidence.").

212. See *Aguirre-Jarquín v. State*, 9 So.3d 593, 603 (Fla. 2009) ("[E]ven though the newly discovered evidence showed that Aguirre's print was not identifiable on the murder weapon, his print on the weapon was cumulative . . .").

213. *Id.* at 600.

214. *Id.* at 598.

215. *Id.*

216. *Id.* at 599.

217. *Id.*

218. See *id.* ("[Aguirre] told the officers that he went into the home and saw that Cheryl was dead.").

219. See *id.* (detailing how Aguirre "approached law enforcement officers and told them that he had information about what occurred").

220. *Id.* at 600.

221. See *id.* at 599 (addressing the forensic evidence concerning the victims' stab wounds, murder weapon, and shoe impressions).

222. *Id.*

crime scene analyst testified that sixty-four of the impressions were “comparable” and “consistent with” Aguirre’s shoes.²²³ DNA testing established that Williams’s blood was found on the soles of Aguirre’s shoes. Also, Bareis’s blood and DNA were found on his t-shirt, shorts, and underwear.²²⁴

Aguirre was employed as a preparation cook.²²⁵ A search of the crime scene revealed a ten-inch chef’s knife on the ground between Aguirre and Williams’s residences.²²⁶ A forensic analyst testified at Aguirre’s trial that the knife was the same “make and model” of knife used at the restaurant where Aguirre worked and that all the victims’ stab wounds were consistent with the recovered knife.²²⁷ A fingerprint analyst testified that a palm print lifted from the murder weapon matched Aguirre’s left palm print.²²⁸

Finally, a bloodstain-pattern analyst testified that Aguirre’s shorts had contact stains on both the front and back and impact spatter on the back consistent with having been present during the murders.²²⁹ The analyst also testified that Aguirre’s socks had contact stains and spots that were “consistent with dropped blood.”²³⁰

After Aguirre’s conviction, new evidence came to light that called into question some of the State’s forensic evidence.²³¹ It was subsequently determined that the palm-print comparison, which the analyst had testified matched Aguirre’s palm print to the one found on the murder weapon, was actually inconclusive.²³²

Aguirre motioned for a new trial based on the newly discovered palm-print evidence; however, the trial court denied his motion, and the denial was affirmed on appeal due to the “vast amount of evidence linking Aguirre to the murders.”²³³ Logically, the testimony of the palm-print analyst could have meant only one of two things. Best case scenario, the “science” of palm-print comparison was so subjective and standardless that there was no

223. *Id.*

224. *Id.*

225. *Id.* at 598.

226. *Id.*

227. *See id.* at 598–99 (explaining the connection between the murder weapon, victims’ stab wounds, and Aguirre’s workplace).

228. *Id.* at 603.

229. *Id.* at 599.

230. *Id.*

231. *See id.* at 602–03 (“Aguirre claims that the trial court improperly denied his motion for a new trial based on newly discovered evidence.”).

232. *Id.* at 603.

233. *See id.* (“[T]he trial court did not abuse its discretion in denying the motion for new trial based on newly discovered evidence.”).

replicable protocol for distinguishing a “match” from an inconclusive comparison. Worst case scenario, the forensic analyst had testified falsely, claiming dishonestly to have found a match where none existed.²³⁴ Either way, the discovery of the withheld information should have given the court pause when assessing the weight of the “vast amount” of other scientific evidence: matching shoeprint impressions in blood to the soles of a suspect’s shoes, matching knife wounds to the blade of a particular knife, and matching bloodstain patterns to activities in a bloody crime scene.²³⁵ Each of these evidentiary pieces suffer from the same methodological flaws as testimony that a palm print could only have been left by a particular suspect’s palm.²³⁶ The court nonetheless rejected Aguirre’s challenge to the admission of misleading evidence regarding the palm-print match because of the balance of the other pattern-matching forensic evidence in the case.²³⁷

B. *Analysis*

“Over the past century, little has changed with respect to how forensic identification examiners render identifications.”²³⁸ Ordinarily, science is meant to be progressive, but the long, unchanged history of pattern-matching forensic sciences is often used by forensic analysts, prosecutors, and courts to buttress their reliability. For example, in *Pettus v. United States*,²³⁹ Pettus was charged with the rape and murder of an elderly woman in her home.²⁴⁰ To link Pettus to the victim, the Government introduced expert testimony from an FBI forensic document examiner that a handwritten note left on her body had been written by Pettus.²⁴¹ The testimony was based on two assumptions: “that no two people write exactly alike, and that a document examiner can determine if the writer of a known writing also wrote a

234. *See id.* (finding the inconclusive nature of the print identification inconsequential because the remaining evidence produced at trial outweighed any doubts concerning print forensics).

235. *See id.* (implying a lack of evidentiary assessment because the court conclusively determined “[t]here was extensive evidence produced at the trial which linked Aguirre to the murders”).

236. *See id.* (explaining how a “trial court is . . . charged with determining if the evidence would be cumulative in nature with respect to the evidence presented at the trial” (citing *Jones v. State*, 709 So.2d 512, 521 (1998))).

237. *See id.* (asserting “the trial court did not abuse its discretion in denying the motion for new trial” because the other forensic evidence implicated Aguirre).

238. Cooley, *supra* note 59, at 368.

239. *Pettus v. United States*, 37 A.3d 213 (D.C. 2012).

240. *Id.* at 215.

241. *See id.* at 215–16 (detailing how the FBI document examiner’s handwriting analysis indicated “that appellant was the author of the murder scene note”).

questioned writing given sufficient samples for comparison.”²⁴² These assumptions are the same assumptions that underlie all the pattern-matching forensic disciplines, which have been the subject of a great deal of recent criticism.

Pettus challenged the admissibility of the testimony on the ground that the recent report by the National Academy of Sciences²⁴³ demonstrated that the pattern-matching forensic sciences had not been scientifically validated.²⁴⁴ In opposition to Pettus's motion to exclude the testimony, the Government argued that the handwriting identification was reliable because it had “long been an acceptable practice.”²⁴⁵ The longstanding, perceived reliability of the forensic sciences became the lodestar of actual validity.

Craig Cooley explains the relationship between the history and role of forensic science in this way:

Criminal investigators and prosecutors had to somehow convert circumstantial physical evidence into “[u]npeachable physical evidence.” Similarly, they had to convince jurors that this evidence was presented by forensic experts whose veracity and perceptual acuity were beyond reproach. . . . To accomplish this, criminal investigators ingeniously crafted various purportedly scientific techniques, which were premised on the supposedly irrefutable scientific fact that nature never repeats itself. Investigators and prosecutors then went on an extensive public relations campaign, professing that these scientific techniques were impervious to error and doubt because they were based on objective science, which did not require probabilistic reasoning or interpretation.²⁴⁶

VI. CONCLUSION

Philippa Gates has documented the rise of the “forensic scientist” and “contemporary criminalist” as a new cultural hero, the “protagonist with a

242. *Id.* at 223.

243. *See generally* NAT'L RSCH. COUNCIL, NAT'L ACAD. OF SCIS., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 166 (2009) (“The scientific basis for handwriting comparisons needs to be strengthened.”).

244. *See Pettus*, 37 A.3d at 215 (upholding the admissibility of forensic handwriting comparisons and related expert opinion).

245. Brief for Amicus Curiae Public Defender Service in Support of Appellant at 2, *Pettus v. United States*, 37 A.3d 213 (D.C. 2012) (No. 08-CF-1361), 2010 WL 8510644, at *2.

246. Cooley, *supra* note 59, at 416–17.

higher education and a knowledge of the literary classics,” and “the descendant of the classical sleuth.”²⁴⁷ She explains:

From William Powell to Humphrey Bogart—or debonair to tough; from Bruce Willis to William Petersen—or wisecracking to wise: the celluloid detective has evolved over time, processing society’s fears about crime and articulating debates about law enforcement and justice The criminalist is a modern-day incarnation of the classical sleuth first envisioned by Edgar Allan Poe in the 1840s with C. Auguste Dupin, the hero of a handful of “tales of ratiocination,” and popularized by Sir Arthur Conan Doyle’s famous detective Sherlock Holmes in the late 1800s.²⁴⁸

This history and public perception matter because they are among the barriers to courts critically evaluating and screening evidence generated by the pattern-matching disciplines. When defendants challenge the prosecution’s forensic evidence as scientifically invalid or unreliable in application, they are not just attempting to debunk questionable science, but also maligning more than a century of sleuths and heroes and destroying cherished cultural myths around the scientific investigator.

Take Bundy as an example. Much of the forensic evidence used to convict him, including microscopic hair comparison and forensic bitemark matching, have subsequently been debunked.²⁴⁹ Although Bundy confessed to the killings and there was other evidence establishing his guilt, challenging these sciences still means, in some sense, challenging the strength of evidence against Bundy. Even further, challenging the evidence in the *Bundy* trial would mean siding with the Devil.

When it comes to the pattern-matching forensic sciences, history should play a different role by serving as a critical warning rather than a congratulatory buttress. The history of sciences that have been conclusively discredited should give courts more caution, not less, when they are asked to review their beloved cults of investigation. After all, the scientific “genius” who gave us the original myth of fingerprints was also a devotee of phrenology and white racial superiority, which seems to be a compelling argument for

247. GATES, *supra* note 196, at 159.

248. *Id.* at 3–5.

249. See Leonetti, *supra* note 1, at 101 (“The literature has debunked whole classes of forensic ‘science’ evidence.”); David Wilson, *Forensic science can be a useful tool to discover the real tooth . . .*, DAILY RECORD (Aug. 16, 2021, 7:04 PM), <https://www.dailyrecord.co.uk/news/scottish-news/forensic-science-can-useful-tool-24766065> [<https://perma.cc/3R4C-F2PJ>] (“[I]here have recently been criticisms of the scientific foundation for [forensic odontology] . . .”).

taking his other scientific contributions with a grain of salt. We are living in a moment in which we are finally having serious discussions about pulling down glorified monuments to the Great White Fathers of the past. Perhaps it is time for Francis Galton to take his place in history next to Robert E. Lee.