FORENSICS AND FALLIBILITY: COMPARING THE VIEWS OF LAWYERS AND JURORS

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I. INTRODUCTION

Is there a CSI-effect for lawyers? Forensic evidence plays an increasingly prominent role in criminal practice, leading some to worry that depictions of forensics in popular media might make jurors over-reliant on forensics—a so-called CSI effect. There is little empirical evidence of a CSI effect among jury-eligible laypersons,[1] and, even if the effect may afflict some, its influence depends upon a case proceeding to a trial. As the Supreme Court

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[1] Tom R. Tyler, *Viewing CSI and the Threshold of Guilt: Managing Truth and Justice in Reality and Fiction*, 115 YALE L.J. 1050, 1055 (2006) (concluding that while CSI effect is plausible it is unclear whom it benefits—prosecutors or defendants); MARICOPA CTY. ATTORNEY'S OFFICE, ANNUAL REPORT 2005, maricopacountyattorney.org/pdfs/annual-reports/2005-MCAO-Annual-Report.pdf (citing Andrew P. Thomas, *The CSI Effect and its Real-Life Impact on Justice: A Study by the Maricopa County Attorney's Office*, PROSECUTOR, Sept.–Oct. 2005, at 10).

has put it: "criminal justice today is for the most part a system of pleas, not a system of trials."[2] However, a CSI effect could be more consequential if it affects how criminal lawyers assess forensic evidence when they negotiate pleas or decide what evidence to present at trial. In this Essay, we begin to examine how lawyers evaluate forensic evidence.

The reality of forensics is very different from the media depictions and even from many courtroom presentations of the evidence. Much of the forensic evidence used in practice is not foolproof. Many traditionally ubiquitous types of forensics, such as fingerprint comparisons, hair comparisons, toolmark evidence, and ballistic evidence, have been criticized as having been presented in exaggerated form and lacking a sufficiently reliable research foundation.[3] Legal debates have focused on how forensics should be regulated in the courtroom, under the federal test based on *Daubert v. Merrell Dow Phamaceuticals, Inc.* and Federal Rule of Evidence 702 or other gatekeeping standards.[4] Similarly, much of the research on how forensics are used, including by these authors, focuses on the courtroom: whether lay jurors fully appreciate the strengths and the weaknesses of forensic evidence, from complex statistical evidence presented in DNA comparisons to more elementary comparisons of latent fingerprints.[5] Yet in an era of plea bargaining, far more relevant than a jury's assessment of the scientific evidence will be the defense lawyer's and prosecutor's assessments during plea negotiations.

This Essay aims to take a closer look at how criminal defense lawyers and prosecutors assess forensics, and compares their views to the views expressed by lay jurors. The National Academy of Sciences underscored in a 2009 report on the state of forensic science that the adversary process is not well suited to improve the quality of forensic evidence, in part because lawyers "generally lack the scientific expertise necessary to comprehend and evaluate

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2 Lafler v. Cooper, 132 S. Ct. 1376, 1381 (2012) (citing Missouri v. Frye, 132 S. Ct. 1399, 1407 (2012) ("Ninety-seven percent of federal convictions and ninety-four percent of state convictions are the result of guilty pleas.")).

3 NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 7 (2009) [hereinafter NAS REPORT] ("With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source."); *see also, e.g.*, Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1 (2009); Jennifer L. Mnookin, *The Courts, the NAS, and the Future of Forensic Science*, 75 BROOK. L. REV. 1209, 1209–10, n.1 (2010); Jennifer L. Mnookin, *The Validity Of Latent Fingerprint Identification: Confessions of A Fingerprinting Moderate*, 7 L., PROBABILITY & RISK 127, 136 (2008); Michael J. Saks & Jonathan J. Koehler, *The Individualization Fallacy in Forensic Science Evidence*, 61 VAND. L. REV. 199, 200–01 (2008).

4 Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993); FED. R. EVID. 702.

5 *See, e.g.*, Brandon L. Garrett & Gregory Mitchell, *How Jurors Evaluate Fingerprint Evidence: The Relative Importance of Match Language, Method Information and Error Acknowledgement*, 10 J. EMPIRICAL L. STUD. 484 (2013).

forensic evidence in an informed manner."[6] The report concluded that, given that reality along with the case-by-case nature of adjudication and the deferential nature of evidentiary rulings and appellate review, policymakers should focus on front-end reform of forensic disciplines.[7] Without disagreeing with that scientific focus, our goal is to assess the seemingly uncontroversial claim that practicing lawyers may incompletely understand the strengths and limitations of forensic evidence, and that their beliefs about how jurors will weigh the evidence may be inaccurate.

Part I of this Essay surveys the literature on the role that evidence plays in the plea bargaining process. That research suggests that factors other than the weight of the evidence, such as the defendant's criminal record, whether the defendant is on bail, whether the defendant can cooperate in other cases, and prosecution policies, often determine the outcomes far more than evidence of guilt.[8] However, surveys of prosecutors have found that they generally report a belief that they should not go forward with cases lacking "strong" supportive evidence, focusing on the likelihood of a conviction at trial.[9] Little research examines the role that forensic evidence specifically plays in this assessment process. Forensic evidence is often not used or tested in criminal cases—probably because many cases do not involve questions of who did the crime or how—although one study did find that its availability does bolster a prosecutor's decision to pursue a case.[10] Furthermore, prosecutors and defense lawyers alike may receive, at best, highly incomplete forensic conclusions from crime labs, without full information about the methods used.[11] As a result, little legal scrutiny of the forensic evidence may occur in the vast bulk of criminal cases.

To begin to address the need for further research into how lawyers evaluate forensics, in Part II we present the results of two surveys that examine views on fingerprint and DNA evidence.[12] The evidence we gathered suggests possible misperceptions of both the evidence and how jurors will view the evidence. We found that defense lawyers, in particular, may be far more skeptical of forensic evidence than jurors; indeed, defense lawyers may be

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6 NAS REPORT, *supra* note 3, at 12.

7 *Id.*

8 *See infra* Part II.B.

9 BRUCE FREDERICK & DON STEMEN, THE ANATOMY OF DISCRETION: AN ANALYSIS OF PROSECUTORIAL DECISIONMAKING 60 (2012) (Prosecutors reported "a case will not be accepted for prosecution unless it has strong evidence" focusing on the probability of success at trial.).

10 Joseph L. Peterson et al., *The Uses and Effects of Forensic Science in the Adjudication of Felony Cases*, 32 J. FORENSIC SCI. 1730 (1987).

11 *See* FREDERICK & STEMEN, *supra* note 9, at 62 (describing how prosecutors noted their dependence on law enforcement for information about the strength of the evidence, particularly when initially evaluating cases).

12 *See infra* Part II.C.

overly skeptical of even DNA evidence. Civil litigators and criminal defense lawyers expected jurors to place great weight on forensic evidence, but the small numbers of prosecutors who participated in our survey were very concerned that jurors might be skeptical of forensics.[13] Most remarkable, however, was the great weight that jury-eligible adults placed on fingerprint evidence, just as many of the lawyers surveyed would have predicted, and even when compared to the weight they placed on DNA evidence.[14] These results suggest far more must be done to study what information and influences shape the weight both lawyers and jurors place on forensics.

The two surveys described in this Essay were designed to first ask how lawyers view forensic evidence and how they think average jurors would do so; and second, to ask a group of lay people how they view such evidence, posing the same group of questions as a basis for a comparison. Our focus was on two types of forensics: DNA evidence and fingerprint evidence.

DNA evidence has now been in wide use for over two decades, and it has long been admissible in all criminal courts. DNA evidence provides a "gold standard" for forensics, in that it is based on validated population databases, and uses statistical techniques and technology that has been carefully studied by the scientific community.[15] One would expect lawyers to be familiar with DNA testing and to place great weight on DNA test results. Fingerprint evidence had in the past been accepted largely uncritically, but that may be changing in the legal profession and in the scientific community. There have been high-profile errors in fingerprint cases in recent years, as well as more attention to the quality of fingerprint evidence and testimony.[16]

Fingerprint evidence has long been one of the most commonly presented types of forensic evidence used to link individuals to crimes.[17] Fingerprint evidence is often left at crime scenes; it has been in wide use for over a century; police departments routinely check for fingerprint evidence; upon arrest, suspects can be compelled to give fingerprint impressions for comparison; and law enforcement agencies maintain inter-connected databases of fingerprints.[18] The methods used in fingerprint comparisons have changed

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13 *See infra* Part II.D.

14 *See infra* Part II.B.

15 NAS REPORT, *supra* note 3, at 7; *see also* Michael Lynch, *God's Signature: DNA Profiling, The New Gold Standard in Forensic Science*, 27 Endeavour 93 (2003).

16 *See e.g.*, OFFICE OF THE INSPECTOR GEN., U.S. DEP'T. OF JUSTICE, A REVIEW OF THE FBI'S HANDLING OF THE BRANDON MAYFIELD CASE 1 (2006); NAT'L INST. OF JUSTICE AND NAT'L INST. OF STANDARDS AND TECH., LATENT PRINT EXAMINATION AND HUMAN FACTORS: IMPROVING THE PRACTICE THROUGH A SYSTEMS APPROACH (2012).

17 JOSEPH PETERSON ET AL., NAT'L INST. OF JUSTICE, THE ROLE AND IMPACT OF FORENSIC EVIDENCE IN THE CRIMINAL JUSTICE PROCESS 1 (2010).

18 The Integrated Automated Fingerprint Identification System, or IAFIS, is a national database available to federal, state, and local investigators. *See Integrated Automated Fingerprint*

only slightly over the years, basically involving a detailed comparison of latent and known fingerprints under a microscope.[19] While practicing criminal lawyers may not have scientific or statistical expertise, and probably only a few have encountered cutting edge forensic evidence such as low-copy DNA tests, fingerprints should be quite familiar to them.[20]

We hope that these surveys provide a useful starting place for further research and policy as we describe in the concluding Part III of this Essay.[21] We note that policymakers and scholars have increasingly proposed that not just the courtrooms, but crime labs themselves be a central focus for improving the quality of forensic evidence, and we do agree.[22]As Jennifer Laurin has emphasized, it is important to focus not just on the laboratory or on the courtroom, but on police and prosecutors.[23] Defense lawyers should also receive scrutiny. The adversary process, even in plea bargained cases, can be improved. If further empirical research bears out a gap between the scientific research and the understanding of both jurors and lawyers, then the results will support the need for measures such as expanding discovery of forensic evidence. That discovery should include evidence about error rates and expert proficiency to better inform the lawyers about the reliability of the techniques; permitting greater expert discovery and depositions pre-trial; and enhancing criminal defense responsibilities and resources to evaluate and litigate forensic evidence pre-trial.

Identification System Flyer, U.S. DEP'T OF JUSTICE, https://www.fbi.gov/file-repository/about-us-cjis-fingerprints_biometrics-biometric-center-of-excellences-iafis_0808_one-pager825/view (last visited Sept. 28, 2016).

[19] THE EXPERT WORKING GRP. ON HUMAN FACTORS IN LATENT PRINT ANALYSIS, NAT'L INST. OF STANDARDS AND TECH., LATENT PRINT EXAMINATION AND HUMAN FACTORS: IMPROVING THE PRACTICE THROUGH A SYSTEMS APPROACH 1–21 (2012). For criticism of commonly reached claims made when comparing fingerprints, see D.H. Kaye, *The Nonscience of Fingerprinting:* United States v. Llera-Plaza, 21 QUINNIPIAC L. REV. 1073, 1087 (2003); NAS REPORT, *supra* note 3.

[20] Symposium, *Science and the Rules of Evidence*, 99 F.R.D. 187, 233 (1983) (discussing "lack of scientific literacy" of practicing lawyers).

[21] Brandon L. Garrett, *Validating the Right to Counsel*, 70 WASH. & LEE L. REV. 927, 955 (2013) (noting need for research on whether "defense lawyers properly understand expert evidence, or forensic science evidence—and does the presence of that evidence tend to alter defense strategies—and if so, how").

[22] Notice of Establishment of the National Commission on Forensic Science & Solicitation of Applications for Commission Membership, 78 Fed. Reg. 12,355 (Feb. 22, 2013); Paul C. Giannelli, *Independent Crime Laboratories: The Problem of Motivational and Cognitive Bias*, 2010 UTAH L. REV. 247; Jennifer L. Mnookin et al., *The Need for a Research Culture in the Forensic Sciences*, 58 UCLA L. REV. 725, 744–60 (2011); Peter J. Neufeld, *The (Near) Irrelevance of* Daubert *to Criminal Justice and Some Suggestions for Reform*, 95 AM. J. OF PUB. HEALTH S107, S110 (2005).

[23] Jennifer E. Laurin, *Remapping the Path Forward: Toward a Systemic View of Forensic Science Reform and Oversight*, 91 TEX. L. REV. 1051, 1055–56 (2013).

II. FORENSICS AND CRIMINAL ADJUDICATION

A. Forensic Evidence and Criminal Convictions

Far too little is known about the uses to which forensic evidence is put in our criminal justice system and how the actors in the system are affected by the evidence. There is not a great deal of evidence on how often forensic evidence from crime scenes is collected, or how often that evidence is used, or in what types of criminal cases. We do have information from federal surveys of crime labs that provides some sense of the volume and types of requests for testing made each year and how these requests have created a backlog in testing at many labs.[24] Several archival studies have tracked the types of forensics used by type of case, finding that forensics are used far more often in more serious cases like homicides.[25] But otherwise, little information on forensic evidence use in general exists, and most of our understanding comes from its use in specific cases that go to trial.

B. Evidence in the Plea Bargaining Process

In cases that do not go to trial, forensic evidence will often not be fully developed, rendering its role difficult to assess. Prosecutors may not fully examine the evidence or request the expert reports and forensic analysis that they would request should a case proceed to a trial. More problematically, in contrast to the prosecutors, who have primary access to crime labs, the defense may not have resources to adequately examine forensic evidence. The right of defense lawyers to obtain their own forensic experts remains quite unclear, and it is typical in many state courts for indigent defendants not to have any access to their own forensic experts.[26] As Judge Jack Weinstein has put it, "[t]he fact that one side may lack adequate resources with which to fully develop its case is a constant problem."[27]

Not only will the defense not have their own forensic analysis to rely on, but prosecutors may not provide discovery of forensic evidence during plea

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[24] *See* MATTHEW R. DUROSE ET AL., BUREAU OF JUSTICE STATISTICS, DEP'T OF JUSTICE, CENSUS OF PUBLICLY FUNDED FORENSIC CRIME LABORATORIES, 2009, 4, tables 4, 5 (2012). For a discussion of the backlog problem, see Brandon L. Garrett & Kerry Abrams, *DNA and Distrust*, 91 NOTRE DAME L. REV. 757, 779–781 (2015).

[25] *See, e.g.*, PETERSON ET AL., *supra* note 17.

[26] Caldwell v. Mississippi, 472 U.S. 320, 323 n.1 (1985) (finding no deprivation of due process in decision by trial judge to deny access to fingerprint and ballistics experts), *vacated*, 479 U.S. 1075 (1987); Paul C. Giannelli, Ake v. Oklahoma*: The Right to Expert Assistance in a Post*-Daubert*, Post-DNA World*, 89 CORNELL L. REV. 1305, 1416–18 (2004).

[27] Jack B. Weinstein, *Science, and the Challenges of Expert Testimony in the Courtroom*, 77 OR. L. REV. 1005, 1008 (1998).

negotiations.[28] The Supreme Court of the United States has not made it mandatory that prosecutors share impeachment evidence with the defendant during plea bargaining, and lower courts are divided over whether exculpatory evidence that is not used to impeach witnesses must be shared.[29] Police obtain much of the evidence examined from crime scenes, then send it for analysis at law enforcement crime labs.[30] Those crime labs, few of which are independent of law enforcement, may not share forensic reports directly with the defense absent a subpoena, and if they do, they may share only a certificate of analysis presenting a conclusion, and not the details of their analysis.[31] The defense may have a Sixth Amendment right to confront the forensic analyst at trial who prepared the certificate and performed the relevant analysis (depending on whether the evidence is deemed testimonial or not), but not during discovery or plea negotiations.[32] Even if provided information about the forensic analysis, defense lawyers representing indigent defendants are often overburdened with enormous caseloads and few resources to conduct an investigation.[33]

Prosecutors may themselves receive very little from crime laboratories beyond a certificate stating the results of the analysis. Police may communicate far more with the lab than prosecutors.[34] Even given more access to information about the analysis, criminal lawyers have traditionally lacked training to evaluate scientific evidence.[35] Fortunately, recent years have seen greater attention paid to training defense lawyers and prosecutors on the strengths and limitations of various forensic techniques.[36]

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[28] Paul C. Giannelli, *Criminal Discovery, Scientific Evidence, and DNA*, 44 VAND. L. REV. 791, 800–03 (1991).

[29] United States v. Ruiz, 536 U.S. 622, 623 (2002) ("Although the Fifth and Sixth Amendments provide, as part of the Constitution's 'fair trial' guarantee, that defendants have the right to receive exculpatory impeachment material from prosecutors . . . a defendant who pleads guilty foregoes a fair trial as well as various other accompanying constitutional guarantees." (internal citation omitted)).

[30] Pamela R. Metzger, *Cheating the Constitution*, 59 VAND. L. REV. 475, 491 (2006).

[31] Metzger, *supra,* at 531 n. 281.

[32] David A. Sklansky, *Hearsay's Last Hurrah*, 2009 SUP. CT. REV. 1 (criticizing the Court's recent Confrontation Clause cases as ignoring or distracting "from other, more promising ways to bring meaning to the Confrontation Clause.").

[33] *Id.*

[34] Andrew E. Taslitz, *Convicting the Guilty, Acquitting the Innocent: The ABA Takes a Stand*, 19 CRIM. JUST. 18 (2005).

[35] *Id.* at 30 ("[T]he casebooks are filled with instances of lawyers failing to spot the simplest and most obvious exculpating evidence in forensic reports.").

[36] CRIM. JUST. SECTION, AM. BAR. ASS'N, ACHIEVING JUSTICE: FREEING THE INNOCENT, CONVICTING THE GUILTY, REPORT OF THE ABA CRIMINAL JUSTICE SECTION'S AD HOC INNOCENCE COMMITTEE TO ENSURE THE INTEGRITY OF THE CRIMINAL PROCESS (Paul C. Giannelli & Myrna S. Raeder eds., 2006); THE PUB. DEF. SERV. FOR D.C., *PDS PUBLICATIONS & LEGAL RESOURCES:*

There is a broader question whether strength of the evidence should or does actually play a driving role during plea bargaining, but little empirical evidence exists on this question as well. Traditionally, plea bargaining was viewed as rational and chiefly motivated by the likelihood of a conviction and a given type of sentence at trial. Scholars have increasingly painted a more complex picture of plea bargaining outside of the "shadow of trial," with greater attention paid to deeper institutional processes and pressures.[37] For some time, studies have examined charging practices in the context of the death penalty, in particular examining whether race is a factor in capital litigation. More recent studies have focused on racial disparities in plea bargaining,[38] but also on other factors, such as the type of lawyer assigned to a case. One recent study, for example, surveyed 186 defense lawyers to focus on whether the preferences of the defendant play a role in plea bargaining, and unsurprisingly found that the defendant's wishes were important.[39]

C. Research on Forensic Evidence and Plea Bargaining

Some of this recent research has focused on the role that evidence plays in plea bargaining, perhaps in part motivated by evidence that innocent people can and sometimes do plead guilty.[40] One recent study asked whether "evidence really matter[s]" at all during plea bargaining, finding that in drug cases handled by the New York County District Attorney's office the evidence played only a limited role in reduced charge and sentence offers.[41] While chemical testing likely played a role in some of these cases, forensic evidence used to address questions of identity would tend to matter less, and other factors like the criminal record of the suspect should be expected to play a

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FORENSIC EDUCATIONAL MATERIALS, WWW.PDSDC.ORG/PROFESSIONAL-RESOURCES/PUBLICATIONS-LEGAL-RESOURCES (LAST VISITED OCT. 3, 2016).

[37] Stephanos Bibas, *Plea Bargaining Outside the Shadow of Trial*, 117 HARV. L. REV. 2463 (2004).

[38] Vanessa A. Edkins, *Defense Attorney Plea Recommendations and Client Race: Does Zealous Representation Apply Equally To All?*, 35 L. & HUM. BEHAV. 413, 416 (2011) (noting "dearth of prior empirical research looking at the factors that affect plea negotiations").

[39] Greg M. Kramer, Melinda Wolbransky & Kirk Heilbrun, *Plea Bargaining Recommendations by Criminal Defense Attorneys: Evidence Strength, Potential Sentence, and Defendant Preference*, 25 BEHAV. SCI. & L. 573 (2007).

[40] For a discussion of guilty pleas by persons later exonerated by DNA testing, see Brandon L. Garrett, *Convicting the Innocent Redux*, *in* WRONGFUL CONVICTIONS AND THE DNA REVOLUTION (forthcoming 2016).

[41] Besiki L. Kutateladze, Victoria Z. Lawsona & Nancy R. Andiloro, *Does Evidence Really Matter? An Exploratory Analysis of The Role of Evidence in Plea Bargaining in Felony Drug Cases*, 39 L. & HUM. BEHAV. 431 (2015).

dominant role.[42] The study authors raise the important point that it is very difficult to conduct archival analysis of plea bargaining: "Detailed information on evidence is rarely recorded electronically, thus necessitating the individual review of criminal case files, which is time-consuming and requires significant efforts for developing data collection protocols and training data entry staff."[43]

In recent years, a few studies have examined the uses of forensic evidence specifically. Landmark studies led by Joseph L. Peterson examined how crime labs, police, and prosecutors use forensic evidence in criminal cases.[44] That work has found that scientific evidence "had a minimal effect on the charging stage of most felony cases," where "guilty pleas were the norm," and where, although "a defendant's prior record overwhelmed most other factors in the incarceration decision, laboratory reports generally led to higher rates of incarceration and were found to be the only type of evidence to influence the length of sentence."[45] Additional archival studies tracking case processing outcomes in criminal cases have found little influence of forensic evidence on charging or convictions in homicides,[46] burglaries,[47] assaults or robberies,[48] or rape prosecutions,[49] except perhaps in cases involving strong

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[42] The authors noted that plea offers were enhanced when the person was arrested not only in a buy-and-bust operation, in which identity would tend not to be as much of an issue, but also in cases with eyewitness identifications, and cases in which currency was recovered. *Id.* at 439.

[43] *Id.* at 431. Due to these constraints, few similar studies exist. However, one other study focused on juvenile defendants and the role that the strength of the evidence played in plea bargaining. *See* Jodi L. Viljoen, Jessica Klaver & Ronald Roesch, *Legal Decisions of Preadolescent and Adolescent Defendants: Predictors of Confessions, Pleas, Communication with Attorneys, and Appeals*, 29 L. & HUM. BEHAV. 253 (2005) (finding that defendants aged 15–17 and younger were more likely to confess and plead guilty based on a perception that there was strong evidence against them, while those from 11–15 did not have outcomes predicted by strength of evidence).

[44] Joseph L. Peterson et al., *Effect of Forensic Evidence on Criminal Justice Case Processing*, 58 J. FORENSIC SCI. S78-S90 (2013); *see also* Peterson et al., *supra* note 10.

[45] Peterson et al., *supra* note 10, at 1744.

[46] Deborah Baskin & Ira Sommers, *The Influence of Forensic Evidence in the Case Outcomes of Homicide Incidents*, 38 J. OF CRIM. JUST. 1141 (2010) [hereinafter Baskin & Sommers, *Influence of Forensic Evidence*] (examining processing of 400 homicides in five counties, and finding that while police submitted evidence for lab analysis in a high percentage of cases, 88.5%, particularly firearms and fingerprint evidence, presence of a forensics link, in 13.5% of the cases, was not significantly associated with charging or conviction).

[47] Deborah Baskin & Ira Sommers, *Solving Residential Burglaries in the United States: The Impact of Forensic Evidence on Case Outcomes*, 13 INT'L J. OF POLICE SCI. & MGT. 70, 70–86 (2011) [hereinafter Baskin & Sommers, *Solving Residential Burglaries*] (finding few burglaries had forensic evidence collected or tested).

[48] Deborah Baskin & Ira Sommers, *The Influence of Forensic Evidence on the Case Outcomes of Assault and Robbery Incidents*, 23 CRIM. JUST. POL'Y REV. 186 (2012).

DNA evidence.[50] For example, in a study of 400 homicide cases, Deborah Baskin and Ira Sommers found that presence of a forensics link was not associated with charging or convictions, but rather a relationship between the victim and the suspect was associated with conviction, as were cases with multiple victims, as well as the race of the victim.[51] The same authors studied the use of forensics in residential burglaries and found very few such cases were solved, with forensic evidence failing to predict convictions; only witness reports predicted convictions.[52] These findings may largely reflect the characteristics of the types of criminal cases, however, and the tangential role that forensics will play in many criminal cases, where the culprit's identity is often known, the case is not a high priority for law enforcement, or the culprit does not leave trace evidence that can be analyzed.

Archival studies cannot directly measure how lawyers use forensics or evaluate forensics in the cases, even where forensic evidence may have played a role. A more direct way to address the influence of forensic evidence is to survey practicing lawyers. A few studies have surveyed lawyers concerning the so-called "CSI Effect" among jurors, asking whether the lawyers think that jurors expect that there be scientific evidence to support a criminal conviction, with mixed results.[53] The views of lawyers about jurors' expectations, whether accurate or not, may play a real role in their own lawyerly assessment of the evidence. Studies have not directly asked lawyers, however, how they weigh forensic evidence.

III. STUDY OF CRIMINAL LAWYERS AND FORENSICS

A. Survey Design and Methods

To begin to fill this lacunae, we surveyed practicing lawyers and laypersons to obtain their general views on two of the most common forms of forensic evidence, fingerprints and DNA. In particular, we asked five key questions of both groups:

(1) In general, how reliable do you think fingerprint evidence is?

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49 Rebecca Campbell, Debra Patterson, Deborah Bybee & Emily R. Dworkin, *Predicting Sexual Assault Prosecution Outcomes: The Role of Medical Forensic Evidence Collected by Sexual Assault Nurse Examiners*, 36 CRIM. J. & BEHAV. 712 (2009).

50 Michael Briody, *The Effects of DNA Evidence on Homicide Cases in Court*, 37 AUSTL. & N.Z. J. CRIMINOLOGY 231 (2004) (studying 150 homicide cases in Queensland, of which half had DNA and half did not, finding that DNA evidence was associated with jury decisions to convict, but not with guilty pleas).

51 Baskin & Sommers, *Influence of Forensic Evidence*, *supra* note 46.

52 Baskin & Sommers, *Solving Residential Burglaries*, *supra* note 47.

53 *See supra* note 1.

(2) Do you believe that each person's fingerprints are unique (i.e., do not match anyone else's fingerprints)?
(3) Do you believe that each person's DNA profile is unique (i.e., does not match anyone else's DNA profile)?
(4) How much confidence do you believe the average juror has in the reliability of fingerprint-based identifications?
(5) How much confidence do you believe the average juror has in the reliability of DNA-based identifications?

Survey participation was voluntary and anonymous, and neither sample can be considered a representative sample of the lawyer or general adult populations. Nonetheless, the responses are interesting and should motivate further study.

Two hundred and sixty-four lawyers participated in the survey, many of whom were asked to participate through public defender and prosecutors association such as the Virginia Association of Criminal Defense Lawyers (VACDL) and Virginia Association of Commonwealth's Attorneys (VACA) (which both distributed the survey information in an email listserv to members), as well as large nationwide organizations like the National Association of Criminal Defense Lawyers (NACDL) (which distributed the survey information in its monthly newsletter to members). We also circulated the survey to large individual criminal defense and prosecution offices, such as the offices in Cook County, Illinois, Los Angeles County, the Public Defender Service for the District of Columbia, and the Judge Advocates General Legal Center and School.

The lawyer survey obtained demographic and other background information on respondents, such as gender, age, political party affiliation, average years of practice, average number of jury trials, and nature of practice (defense-oriented, prosecution-oriented or other). The participants were on average fairly experienced (with a mean of 15 years of practice and 44 jury trials). The average age was 44, with half of the respondents being male and half female. Self-reported political views tended towards the liberal, with only 10% describing themselves as "somewhat conservative" and only 1% as "very conservative." Of those who answered the type-of-practice question, 81% had a defense-oriented criminal practice, 5% were prosecution-oriented, and 2% were in civil practice. The sample therefore largely consisted of fairly experienced defense lawyers with liberal politics. Thus, the results are more suggestive of the views of criminal defense lawyers than of prosecutor's assessments of forensics.[54]

[54] Nor did sufficient participants take the survey to permit analysis of additional hypothetical scenarios concerning how lawyers weigh evidence during plea bargaining.

In a second survey, jury-eligible adults were recruited through Amazon's Mechanical Turk ("mTurk") service to ask the same questions concerning their views on the reliability and confidence they place in fingerprint and DNA evidence that were asked of our lawyer sample.[55] The survey was taken by 251 individuals in December 2015. The participants included 147 men and 101 women, with an average age of 32. Their political views were more balanced than those of the participating lawyers, with 48 labeling themselves very liberal, 81 somewhat liberal, 70 in the middle, 40 somewhat conservative and 21 very conservative. Only 45 of the participants had previously served on a jury.

B. Fingerprint Evidence

The survey first posed a question about how respondents viewed the reliability of latent fingerprint evidence, asking: "In general, how reliable do you think fingerprint evidence is?" Most lawyer respondents characterized fingerprint evidence as somewhat to very reliable, but a large minority (over 30%) characterized fingerprint evidence as somewhat to very unreliable. Figure 1 provides detailed information on responses.

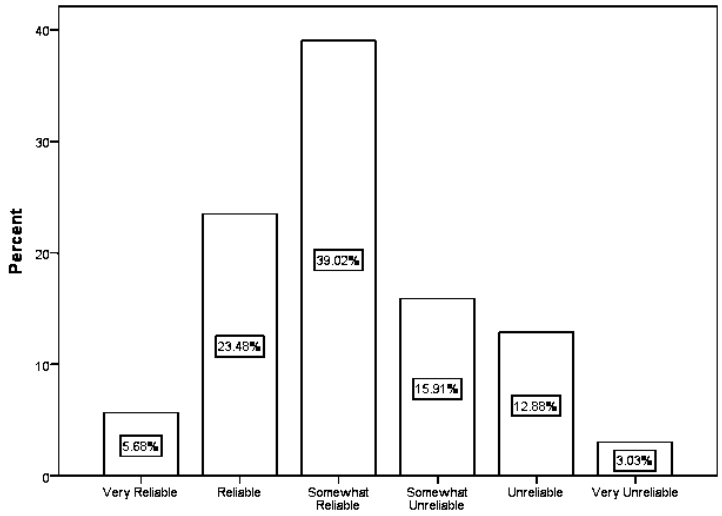

Fig. 1. Criminal Lawyer's Perceptions of General Fingerprint Reliability

[55] Regarding the increased use of data collected through mTurk, see Garrett & Mitchell, *supra* note 5, at 492 n.4.

A predicate to the use of fingerprints as a reliable means of identification is the assumption that fingerprints are unique to individuals. Surprisingly, only a bit more than half of our lawyer sample (53.4%) stated that they believe fingerprints are unique, with the remainder stating they do not believe fingerprints are unique.

These findings differ greatly from prior evidence we obtained from a large sample of the general public. In a prior survey, lay participants overwhelmingly indicated a belief in the uniqueness of fingerprints, with 97% holding that view.[56] Most lay participants also rated the reliability of fingerprints as high.[57] We also found that more detailed descriptions of the methods used when conducting latent fingerprint examinations did not increase ratings of reliability, indicating a very high and difficult to alter baseline belief in reliability of fingerprint evidence.[58]

In contrast, the lawyers surveyed here appeared to be far more skeptical of fingerprint evidence, both as to uniqueness and the general reliability of the evidence. Because of the possibility that lawyers were personally skeptical of fingerprint evidence but cognizant that a jury would not be similarly skeptical, we asked lawyers how confident they believe the average juror is in the reliability of fingerprint identifications. Here lawyers seemed to think jurors were far less skeptical than they were: 55.3% believed the average juror would find fingerprint evidence "almost infallible,"36.6% believed the average juror would place "considerable confidence" in fingerprint matches, 5.3% believed the average juror would have "some confidence" in fingerprints, and almost none reported believing the average juror would have no confidence in fingerprints. Therefore, many of our respondents seemed not to attribute their own skepticism to jurors.

Laypersons participating in our second survey expressed views on fingerprinting evidence that were similar to the views the lawyers expected them to hold. Almost all of the lay respondents thought that fingerprint evidence was very reliable or reliable (Figure 2 provides the full breakdown of responses), and consistent with the results of our earlier study, almost 95% of respondents believed that fingerprints are unique and do not match anyone else's prints.[59]

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[56] *Id*. at 497, 504 (reporting in first survey that "[a]mong U.S.-only respondents, 97% (581/598) indicated a belief in fingerprint uniqueness" and reporting in second survey that 94.5% or 651 of 689 responded affirmatively.).

[57] *Id.* at 504.

[58] *Id.* at 504–05.

[59] *Id.* at 497, 504.

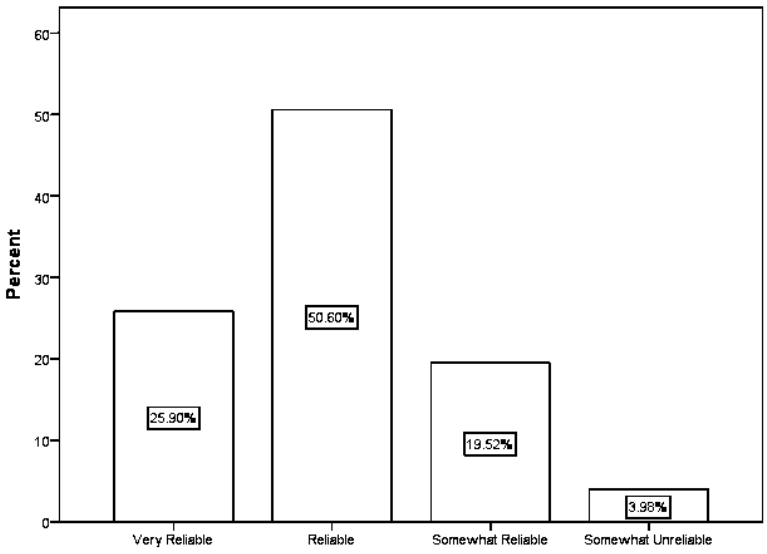

Fig. 2. Lay Perceptions of General Fingerprint Reliability

While only suggestive of the views of the general public, respondents in our current and prior polls placed considerable confidence in fingerprint evidence.[60] Experts, on the other hand, express much greater concern about the accuracy and reliability of fingerprint-based identifications. The 2009 National Academy of Sciences report noted that "the scientific foundation of the fingerprint field has been questioned," and that while "uniqueness is commonly assumed" as to a person's fingerprints, there is a question whether "one can determine with adequate reliability that the finger that left an imperfect impression at a crime scene is the same finger that left an impression . . . ."[61] Many lawyer views seem closer to that of the expert, though interestingly, our lawyer respondents may be too skeptical that fingerprints are unique identifiers of individuals.

C. DNA Testing

The remarkable weight that our lay respondents were willing to place on fingerprint evidence looks more surprising when compared with our

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[60] This is also consistent with a finding in a study that found that jurors rated fingerprint evidence as 91% accurate. Joel D. Lieberman, Courtney A. Carrell, Terance D. Meithe & Daniel A. Krauss, *Gold Versus Platinum: Do Jurors Recognize the Superiority and Limitations of DNA Evidence Compared to Other Types of Forensic Evidence*, 14 PSYCHOL., PUB. POL'Y, & L. 27 (2008).

[61] NAS REPORT, *supra* note 3, at 43.

findings with respect to DNA evidence. Fewer lay respondents (91.57%) viewed DNA profiles as unique identifiers than the number viewing fingerprints as unique, though both types of evidence were seen as unique identifiers by the great majority of respondents. More lawyers again expressed greater skepticism about DNA's uniqueness (78.4%). It is possible that lawyers expressed greater skepticism about both fingerprint and DNA uniqueness not because they doubt the biological uniqueness of either but because they doubt the accuracy of identification tests. Unfortunately, our survey did not address this possibility, and so it cannot be eliminated as the explanation for the disparity in views.

Errors can occur with any type of forensic testing in the laboratory, and there have been errors in DNA typing in criminal cases (including in cases leading to wrongful convictions).[62] It is possible for someone's DNA profile to match someone else's, depending on the DNA profile observed, and how much of the DNA is tested as part of that "profile."[63] Indeed, the results of DNA tests are presented as a random matches probability or coincidental match probability.[64] Although that probability is often highly unlikely, it may be higher in cases of only partial DNA matches or mixtures of DNA from multiple sources.[65] It is also the case that non-random matches are possible for twins.[66] In addition, partial matches are more likely for relatives.[67] In contrast, mitochondrial DNA is matrilineally inherited, and quite a few relatives might be a complete match. Y-STR testing examines the Y chromosome which is paternally inherited and would match a person's male-line relatives.[68] Whether the participants were aware of such genetics we do not know, but detailed knowledge of genetic evidence could also have played a role in generating the disparity in views.

Lawyers and members of the general public also differed in their views of how the "average juror" views DNA evidence. Most lawyers (83%) expected the average juror to believe DNA evidence is "almost infallible," with almost all remaining lawyer respondents (15%) believing the average juror would place "considerable confidence" in DNA; thus, our lawyer respondents expect most jurors to find DNA evidence more convincing than fingerprint evidence. However, as noted above, slightly fewer of lay respondents thought DNA

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62 LORI B. ANDREWS ET AL., GENETICS: ETHICS, LAW, AND POLICY 558 (3d ed. 2010).

63 *Id.* at 563–64.

64 *Id.* at 558.

65 For an excellent description of these features of DNA testing and evidence, see ERIN E. MURPHY, INSIDE THE CELL: THE DARK SIDE OF FORENSIC DNA 22–23 (2015).

66 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. LEGAL STUD. 395, 396 (2005).

67 ANDREWS, *supra* note 62, at 559–60.

68 MURPHY, *supra* note 65, at 192–93.

evidence is unique compared to fingerprint evidence, and laypeople also had a more cautious assessment of what the average juror would think about DNA evidence at a trial, with fewer (44%) thinking jurors believe DNA is almost infallible and many more believing jurors will only have some or no confidence in DNA evidence (11.6%). To the extent our lay respondents were treating their own views as those of the "average juror," at least for our sample, potential jurors did not have as much confidence in DNA evidence as our lawyer respondents expected. These findings suggest that lay views on DNA deserve more attention. If the general public is less impressed with DNA evidence than lawyers expect, this expectation-reality gap could adversely affect risk assessments during plea negotiations.

D. Defense Versus Prosecution

Because we sampled from a large number of jurisdictions and obtained participation from many criminal defense lawyers, we are confident that our results say something important about how criminal defense lawyers view fingerprint and DNA evidence (even though our study cannot and should not be treated as consisting of a representative sample of defense lawyers). We were disappointed that more prosecution-side attorneys did not participate, but we did have a sufficient number of prosecutors participate to examine areas of possible disagreement between the defense and prosecution perspectives. With the important caveat that our survey cannot only be suggestive of possible differences, we did observe that the defense lawyers were far more skeptical of fingerprint evidence than the group of prosecutors who did participate. Defense lawyers tended to find fingerprint evidence somewhat reliable or unreliable, many defense lawyers did not concede that fingerprints are unique identifiers. Of the 14 respondents who identified as working on the prosecution side, 11 labeled fingerprints unique, while three did not; most viewed fingerprint evidence as reliable or very reliable. With respect to DNA evidence, 12 perceived DNA as a unique identifier, while two did not, but all believed the average juror would see DNA evidence as almost infallible or have considerable confidence in such evidence. Our small sample of prosecutors had more confidence in both DNA and fingerprint evidence than defense lawyers, but they also indicate slightly more worry about jury skepticism of forensic evidence. Further work surveying prosecutors is needed to obtain a better understanding of how prosecutor expectations about jurors affect their plea offers and decisions to go to trial.

E. Juror Demographics

Among the lay respondents, males and females did not differ noticeably except with respect to the question about the uniqueness of fingerprints: more women (99%) than men (92.5%) believed fingerprints are unique. There were no noticeable differences in responses across political

views or by political party, nor in the answers of those who have and have not served on a jury. As noted above, there were overall differences in beliefs about how average jurors would weigh fingerprint and DNA evidence, but standard demographic differences do not appear to account for these differences.

IV. CONCLUSION

Our review of the existing literature reveals the need for more empirical research into the role that forensic evidence plays in the vast majority of criminal cases, which are plea bargained, and not subjected to adversary testing at a criminal trial. Our survey results suggest that, at least for fingerprinting and DNA evidence, lawyer views and lay views sometimes differ with respect to the nature and reliability of this evidence, with DNA being seen as less convincing by some members of the general public than our lawyer respondents expected.

The skepticism of many of the lawyers who took our survey suggests that lawyers do understand forensic evidence is not infallible and that it should be carefully considered. Just because these defense lawyers were personally skeptical of the forensic evidence does not mean that these lawyers would or would not effectively litigate the evidence in court, nor that they will have the tools to do so, in many jurisdictions lacking access to their own forensic experts in cases involving indigent defendants, and often lacking adequate discovery regarding law enforcement forensics during the plea bargaining process.

Whether defense lawyers will be able shake the confidence that many jurors bring to the courtroom with respect to the reliability of forensic evidence will depend on the skill and resources of the lawyers as well. Both prosecutors and defense lawyers face a difficult task of communicating complex expert evidence to jurors,[69] but our results suggest that most jurors will enter the courtroom with a default view that both DNA and fingerprinting evidence are at least somewhat reliable if not nearly infallible.

It is highly unusual to find reported cases in which criminal lawyers, whether prosecutors or defense attorneys, are found to have been at fault for failure to adequately litigate forensic evidence. It is not easy to prove that prosecutors intentionally fabricated or concealed exculpatory forensic evidence, and hopefully such misconduct is not common. The Supreme Court has held that there are only somewhat limited defense rights to access forensic experts,

[69] *See* Valerie P. Hans, et al, *Science in the Jury Box: Jurors' Views and Understanding of Mitochondrial DNA Evidence*, CORNELL L. FAC. PUB. (2007), http://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1081&context=lsrp_papers; 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).

even in cases that go to a trial.[70] The standards for showing ineffective assistance of counsel during plea bargaining and at trial are highly flexible and deferential.[71] That said, the Court has on occasion intervened, as in the recent decision of *Hinton v. Alabama*, to find defense lawyers ineffective due to failure to adequately litigate forensic evidence, including by failing to present effective expert evidence.[72] The ethical and constitutional obligations of lawyers makes it particularly important that defense lawyers and prosecutors understand the strengths and limitations of forensic evidence in the first instance, so that they can make the case, when needed, that closer examination is warranted.

The National Academy of Sciences report may be quite right that lawyers "generally lack the scientific expertise necessary to comprehend and evaluate forensic evidence in an informed manner."[73] But lawyers negotiate the vast majority of criminal cases, and in those few cases that do go to a trial, the jurors who engage in fact-finding will typically lack expertise far more so than the lawyers. The centrality of plea bargaining to criminal justice makes it all the more important to improve not just the underlying quality of the forensics, but to continue to study and improve the understanding of criminal lawyers.

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[70] *See, e.g.*, Giannelli, *supra* note 26, at 1320–22; Darian B. Taylor, Annotation, *Adequacy of Defense Counsel's Representation of Criminal Client—*Daubert *or* Frye *Challenge to Expert Witness or Testimony*, 103 A.L.R. 6th 247 (2015).

[71] *See, e.g.*, Paul C. Giannelli & Sarah Antonucci, *Forensic Experts and Ineffective Assistance of Counsel*, 48 No. 6 CRIM L. BULL. ART. 8 (2012).

[72] Hinton v. Alabama, 134 S.Ct. 1081 (2014). For a detailed discussion of *Hinton*, the more recent ruling in *Maryland v. Kulbicki*, 136 S.Ct. 2 (2015), and ineffective assistance claims regarding forensics in the lower courts, see Brandon Garrett, *The Constitutional Regulation of Forensics*, 73 WASH & LEE L. REV. (forthcoming 2017).

[73] NAS REPORT, *supra* note 3, at 12.