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Response

Regulating the Science of Forensic Evidence: A Broken System Requires a New Federal Agency

Jessica D. Gabel* & Ashley D. Champion**

I. Introduction

Science has its watershed moments. In February 2009, the National Academy of Sciences released its much-anticipated diagnosis of and prescription for the problems plaguing the practice of forensic science (NAS Report).¹ The NAS Report confirmed the low but steady noise that had been creeping in the criminal justice system for more than a decade—with the exception of DNA evidence, much of what is presented as forensic science is not really science at all. Instead, a large segment of the high-tech pageantry seen on television, and now expected and employed in court, would fail to clear even the lowest hurdles of stringent scientific inquiry.² The NAS Report concluded that forensic science overpromises but underwhelms although such science is routinely used to demonstrate the certainty of a person's guilt by authoritatively matching evidence from the crime scene or victim to the suspect.³

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1. NAT'L RESEARCH COUNCIL, NAT'L ACAD. OF SCIS., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) [hereinafter NAS REPORT].

2. Jessica D. Gabel, *Forensiphilia: Is the Public Fascination with Forensic Science a Love Affair or Fatal Attraction?*, 36 NEW ENG. J. ON CRIM. & CIV. CONFINEMENT 233, 241–43, 250 (2010).

3. NAS REPORT, *supra* note 1, at 7.

The NAS Report sounded the alarm as to the shortcomings of the forensic science community, raised concerns, and even suggested a remedy by calling for the creation of an independent agency to regulate the field of forensic science.⁴ As the then-President of the American Academy of Forensic Sciences stated, “Justice demands good science and [the forensic science community has] an obligation to provide it.”⁵ Yet more than two years after the release of the NAS Report, problems in forensic science persist,⁶ and although some specific forensic disciplines (namely, fingerprints and firearms) have attempted a modicum of self-improvement,⁷ the implementation and coordination of a “path forward”⁸ likely cannot be accomplished in the absence of federal oversight.

II. State v. Federal Oversight

In *Improving Forensic Science Through State Oversight*, Ryan Goldstein contributes to the discussion by proposing a manifold state system for ensuring the accuracy and reliability of forensic science.⁹ The crux of his argument is that stronger state oversight should supplant the federal oversight suggested by the NAS Report, and that this model would do a better job of

4. See generally NAS REPORT, *supra* note 1, at 1–21 (chronicling, among other things, scientific challenges to forensic evidence, issues with standardization and certification, and problems with interpreting evidence, and outlining proposed regulation of the discipline by an independent agency).

5. Kenneth E. Melson, *Embracing the Path Forward: The Journey to Justice Continues*, 36 NEW ENG. J. ON CRIM. & CIV. CONFINEMENT 197, 198 (2010) (quoting Kenneth E. Melson, *President’s Editorial: “The Journey to Justice,”* 48 J. FORENSIC SCI. 705 (2003)).

6. David S. Caudill, *Lawyers Judging Experts: Oversimplifying Science and Undervaluing Advocacy to Construct an Ethical Duty?*, 38 PEPP. L. REV. 675, 680 (2011) (criticizing prosecutorial misuse of forensic science); see also, e.g., Jennifer L. Mnookin, *The Courts, the NAS, and the Future of Forensic Science*, 75 BROOK. L. REV. 1209, 1241 (2010) (suggesting the need for reforms to the procedures for admission of pattern identification evidence).

7. Christine Funk & Evan Berman, *Rising to the Challenge of the NAS Report: Strengthening Forensic Science in the United States: A Path Forward: A Call for Demonstrated Competence Amongst Legal Practitioners*, 37 WM. MITCHELL L. REV. 683, 697 & n.92 (discussing a federal grant for fingerprint-evidence improvements); Larry Keane, *ABA Committee Adopts Microstamping Resolution*, NAT’L SHOOTING SPORTS FOUND. (Sept. 27, 2010), <http://www.nssfblog.com/aba-committee-adopts-microstamping-resolution> (announcing the support of the American Bar Association for a measure to study firearms microstamping). Microstamping may improve the accuracy with which bullets can be matched with firearms. See *Firearms Microstamping Evaluation and Study Act of 2010*, H.R. 5667, 111th Cong. § 2 (proposing a study to determine whether microstamping technology is a “cost-effective law enforcement tool”).

8. This term, contained in the NAS Report’s title, refers to efforts to improve the discipline of forensic science. See Melson, *supra* note 5, at 198 (identifying efforts to invest in new equipment and to produce peer-reviewed research under the path forward).

9. See Ryan M. Goldstein, Note, *Improving Forensic Science Through State Oversight*, 90 TEXAS L. REV. 225, 227–28, 234 (2011) (proposing a state oversight system to avoid erroneous convictions, and identifying potential contributions of such oversight to improved reliability of forensic evidence).

avoiding crime-lab error (whether deliberate or unintentional).¹⁰ He suggests that a “fortified model” of state oversight would remedy the existing forensic deficiencies.¹¹ Mr. Goldstein correctly concentrates on the need for accuracy and reliability in forensic testing and emphasizes the errors that have occurred in forensic laboratories.¹² Houston is not alone in forensic mishaps.¹³ Laboratories in New York, North Carolina, Washington, Detroit, and Virginia have recently weathered scandals, as has the FBI Laboratory and the United States Army Criminal Investigation Laboratory.¹⁴ Mr. Goldstein urges state lawmakers to authorize and establish a forensic oversight entity for the state.¹⁵ Among other things, he suggests that such entities include an oversight board, a separate investigative arm, and an innocence committee.¹⁶

Mr. Goldstein’s framework is helpful in illustrating what a forensic science oversight body *should* do, juxtaposed against the realistic limitations of the mission and the lessons learned from other doomed attempts, such as the Texas Forensic Science Commission (TFSC).¹⁷ Mr. Goldstein is aware of the overall lack of forensic science education not only among forensic scientists but also among the general public. Indeed, “many legislators (and their constituents) are unaware of the reliability and validity concerns threatening forensic science.”¹⁸ Measuring and ensuring reliability in forensic testing is the ultimate goal and most important component of any oversight. I challenge Mr. Goldstein, however, to consider whether a new

10. *Id.* at 226.

11. *Id.*

12. *See id.* at 227–29 (identifying scientific validity and reliability as problems confronting forensic science).

13. *Id.* at 226.

14. *See* OFFICE OF THE INSPECTOR GEN., U.S. DEP’T OF JUSTICE, THE FBI LABORATORY: AN INVESTIGATION INTO LABORATORY PRACTICES AND ALLEGED MISCONDUCT IN EXPLOSIVES-RELATED AND OTHER CASES, pt. 1, at 2 (1997) (summarizing findings of an investigation of the FBI Laboratory, and finding “significant instances of testimonial errors, substandard analytical work, and deficient practices”); Tresa Baldas & Steve Neavling, *Detroit’s Abandoned Crime Lab Adds to a Disturbing U.S. Trend*, DETROIT FREE PRESS (May 29, 2011), <http://www.freep.com/article/20110529/NEWS01/105290502/Detroit-s-abandoned-crime-lab-adds-disturbing-U-S-trend/> (criticizing Detroit’s crime laboratory, and noting that “New York, North Carolina, Virginia and Washington [are] plagued with similar problems”); Tim McGlone, *Nearly 500 Military DNA Cases Under Investigation*, THE VIRGINIAN-PILOT (May 17, 2006), <http://hamptonroads.com/node/103011> (reporting the investigation of allegations that a scientist at the United States Army Criminal Investigation Laboratory falsified DNA test results in hundreds of cases).

15. *See supra* note 9.

16. *See* Goldstein, *supra* note 9, at 250–56 (outlining a proposal for oversight and investigative functions at the state level, and identifying obstacles to its enactment).

17. *See, e.g., id.* at 245 & n.165 (discussing concerns with the TFSC’s delayed review of the arson evidence that was presented against Cameron Todd Willingham, who was executed). *But see id.* at 246 (declining to dismiss the TFSC as a “failed experiment” due to, among other reasons, the possibility of its use for uncovering new evidence for wrongfully convicted individuals).

18. *Id.* at 254.

independent federal agency that has the ability to regulate all forensic laboratories, administer lab and personnel accreditation, standardize testing, conduct empirical research, and investigate claims of laboratory error and wrongful convictions (via faulty forensics) is the more practical approach.

If the troubling number of laboratory scandals demonstrates anything, it is that such incidents are not unique to one state. Rather, such errors are the result of a systemic lack of education, research, ethics training, and regulation.¹⁹ Widespread mistakes in a structure that lacks any safeguards demonstrate the need for one regulatory body to manage the problems and forge a new direction. Moreover, cash-strapped states are unlikely to devote funding to the creation of a new entity to supervise a system that state politicians likely do not view as broken.²⁰ Creating an oversight board might signify a tacit acknowledgement that states should decouple crime labs from law enforcement agencies because of the potential for bias—a result that undermines the very notion of “criminal justice.”

In January 2011, Senator Patrick Leahy introduced a bill “[t]o establish an Office of Forensic Science and a Forensic Science Board, to strengthen and promote confidence in the criminal justice system by ensuring consistency and scientific validity in forensic testing, and for other purposes.”²¹ The bill is imperfect but a decent start to creating a national forensic clearinghouse.²² Mr. Goldstein is correct in that the “strings attached” approach of extracting a uniform forensic science protocol only applies to laboratories that receive federal dollars vis-à-vis Coverdell grants.²³ This is an unworkable model to truly accomplish the recommendations of the NAS Report.

A more effective framework would create an agency—much like the Food and Drug Administration—that has the power to regulate and

19. See Jim McKay, *Police Crime Labs Struggle with Funding, Training and Bias Issues*, GOV'T TECH. (July 8, 2008), <http://www.govtech.com/public-safety/Police-Crime-Labs-Struggle-with-Funding.html> (observing that some problems with the Houston lab, such as poor training and official guidance, “may be inherent in crime labs across the country”).

20. See Marvin Zalman, *An Integrated Justice Model of Wrongful Convictions*, 74 ALB. L. REV. 1465, 1474 & n.35 (2011) (noting the “status quo” response of policy makers to progressive reforms of the criminal justice system); cf., e.g., Criminal Justice and Forensic Science Reform Act of 2011, S. 132, 112th Cong. § 201(a) (as referred to S. Comm. on the Judiciary, Jan. 25, 2011) (conditioning federal funding of forensic science laboratories upon accreditation in accordance with federal standards).

21. S. 132, at pmb1.

22. See Amy Driver, *Ken Melson's Hatred of Oversight, In His Own Words*, BULLETPATH (July 1, 2011), <http://www.bulletpath.com/2011/ken-melson%E2%80%99s-hatred-of-oversight-in-his-own-words> (identifying institutional concerns, such as those relating to transparency, with proposed oversight functions in the legislation). *But see, e.g., id.* (recognizing the benefits of a proposal for mandatory certification standards and standardized protocols for forensic analysis).

23. See Goldstein, *supra* note 9, at 242 (recognizing a federal requirement under the Coverdell program whereby funds are conditioned upon a state's submission of a certification to the U.S. Attorney General regarding its oversight of forensic investigations).

administer forensic science services. Such a system has been established in the medical field. The Centers for Medicare and Medicaid Services (CMS) regulates laboratory testing under the Clinical Laboratory Improvement Amendments of 1988 (CLIA).²⁴ As detailed *infra*, CLIA covers *all* laboratories that conduct testing on human specimens for the purposes of diagnosis and treatment.²⁵ A laboratory that falls under CLIA's purview must receive a federal certificate in order to perform clinical laboratory tests.²⁶ CLIA laboratory tests fall into three broad categories: waived, moderate complexity, or high complexity.²⁷ As the labels indicate, these tests are scored according to the simplistic (waived) or advanced technical nature (high complexity) of the test.²⁸ Those that fall in between these categories qualify as tests of "moderate complexity."²⁹ Facilities that perform moderate-to-high complexity tests are required to undergo regular inspection, registration, quality assurance checks, and proficiency testing (i.e., clinical validity).³⁰

Together with Senator Leahy's proposal, the CLIA framework would further a more uniform forensic science system. Moreover, this would still preserve Mr. Goldstein's state-based forensic structure. Consider the Environmental Protection Agency. Among other things, it promulgates rules that serve as the minimum baseline for vehicle emission standards.³¹ Nonetheless, states may choose to enhance those regulations and require more. California is one such state.³² Thus, using Mr. Goldstein's model, a state could choose to boost any oversight administered by a federal forensic science agency.

24. Pub. L. No. 100-578, 102 Stat. 2903 (codified as amended at 42 U.S.C. § 263a (2006)). The Centers for Disease Control and Prevention (CDC) shares some of CMS's laboratory authority through the Clinical Laboratory Improvement Advisory Committee (CLIAC). Rebecca Antar Novick, *One Step at a Time: Ethical Barriers to Home Genetic Testing and Why the U.S. Health Care System Is Not Ready*, 11 N.Y.U. J. LEGIS. & PUB. POL'Y 621, 629 (2008). CLIAC's Charter authorizes the Committee to advise the CDC, FDA, Department of Health & Human Services, and CMS as to any revisions necessary to carry out the mandate of CLIA. *Id.*

25. Novick, *supra* note 24, at 624–25.

26. *Id.* at 625.

27. *Id.*

28. *Id.* at 625–26.

29. *See id.* (identifying the criteria for distinguishing between tests falling into these categories, including the level of technical aptitude needed to perform the tests).

30. *Id.*

31. U.S. ENVTL. PROT. AGENCY, EMISSIONS STANDARDS REFERENCE GUIDE, *available at* <http://www.epa.gov/otaq/standards/index.htm> (last updated July 13, 2009).

32. *See, e.g.,* CAL. DEP'T OF MOTOR VEHICLES, BEFORE BUYING A VEHICLE FROM OUT OF STATE—BE SURE YOU CAN REGISTER IT IN CALIFORNIA FFVR 29 (2011), http://dmv.ca.gov/pubs/brochures/fast_facts/ffvr29.htm (noting that some vehicles "are made with smog equipment that meets federal emission standards, but not California standards").

III. The Devil in the Details: Potential Problems with Relying on State Oversight

While Mr. Goldstein aptly identifies some of the gaps in current efforts to regulate and oversee forensic science—namely, the fragmentation caused by differing regulations among jurisdictions and labs within states³³—the proposition that oversight is best left to individual state governments sells the notion of a forensic science overhaul short. First, left to their own devices, states have created the very fragmentation that Mr. Goldstein’s criticism of current forensic regulations focuses on. Next, curing that fragmentation with a multifaceted state model may actually shift the problem up a level: jurisdictional irregularities would simply move from county lines to state lines, resulting in inconsistencies among the states.

Mr. Goldstein’s proposed model to cure intrastate fragmentation to the contrary, the logical remedy for this interstate fragmentation would be an independent federal agency. Using a top-down mentality, a federal-level agency would establish standardized testing procedures, review policies, and personnel qualifications. More importantly, it would cure both the intrastate and interstate fragmentation at the heart of the current dysfunctional framework of regulation.³⁴ Further, because the national baseline would only set the floor of minimum regulatory requirements, it can cure the problem from the top down without quashing state innovation.³⁵ As intimated above, Mr. Goldstein’s proposal could still permit states to exceed the national forensic standards.³⁶ Consequently, incorporating his solid and comprehensive framework into an independent federal agency would satisfy the goals of reliability and validity while simultaneously advancing the ability of states to adopt and enhance those guidelines to suit their specific needs and aspirations.

States’ current oversight efforts, when present, do not work. As Mr. Goldstein suggests in his note, because there is not a federal system of regulation, such oversight is currently left to the states.³⁷ The fragmented, dysfunctional patchwork of regulations governing forensic science is a result of this misplaced trust in the states. An apt and timely example of such regulatory failure is the execution of Troy Davis in Georgia.³⁸ Davis was

33. Goldstein, *supra* note 9, at 230–31.

34. See Kent Roach, *Forensic Science and Miscarriages of Justice: Some Lessons from Comparative Experience*, 50 JURIMETRICS 67, 74 (2009) (acknowledging difficulties with current forensic science regulation arising from federalism in the United States).

35. See Goldstein, *supra* note 9, at 234 (recognizing that state governments understand their justice systems and can experiment with forms of oversight).

36. See *supra* text accompanying notes 31–32.

37. See generally Goldstein, *supra* note 9, at 235–56 (describing various oversight systems used by states, including innocence commissions and investigative panels).

38. There are several issues surrounding Davis’s execution that are beyond the scope of this Response, including a broad constitutional question. See Motion for Stay of Execution Pending

convicted of first degree murder in connection with the 1989 shooting of Savannah police officer Mark MacPhail and was sentenced to death in 1991.³⁹ Davis asserted his innocence throughout his twenty-year incarceration and even professed it on his deathbed.⁴⁰ In addition to the eyewitness testimony, which is not pertinent to this discussion, the ballistics evidence, which represented the only physical evidence tying Davis to the crime, was debunked and withdrawn after his conviction.⁴¹ Roger Parian, the prosecution's ballistics expert, testified that the bullets found at the site of a pool party where Troy Davis allegedly fired a gun, wounding another man, could be matched to ones found in officer MacPhail's body.⁴² But that evidence was rebutted by retired Georgia Bureau of Investigation ballistics expert Kelly Fite, who stated in a report that he prepared for the defense team, "As it appears now, the [ballistics] testing already conducted in this case is wholly lacking in reliability."⁴³ Indeed, this was not the first time Parian's testimony had been called into question: his inaccurate, overly presumptive testimony in another death-penalty case resulted in an overturned conviction.⁴⁴

Certiorari Review Pursuant to this Court's All Writs Jurisdiction Under 28 USC § 1651, at 2, *Davis v. Humphrey*, No. 11A317, 2011 WL 4386165 (U.S. Sept. 21, 2011) [hereinafter Motion for Stay] (reporting plans to file a Petition for a Writ of Certiorari that asserts "substantial constitutional errors" related to the evidence that was presented at Davis's 1989 trial). The pertinence of the case here lies in the only forensic evidence, a ballistics comparison, which was later discredited. See Tim Murphy, *Troy Davis Executed in Georgia*, MOTHER JONES (Sept. 21, 2011), <http://motherjones.com/mojo/2011/09/troy-davis-executed-georgia> (explaining that the ballistics evidence used to convict Davis has since been "debunked").

39. Michael King, *Timeline of Troy Davis Case*, USA TODAY (Sept. 22, 2011), <http://www.usatoday.com/news/nation/story/2011-09-21/troy-davis-timeline/50498302/1>.

40. *Troy Davis' Story and Other Controversial Death Row Cases*, INT'L BUS. TIMES (Sept. 22, 2011), <http://www.ibtimes.com/articles/218404/20110922/troy-davis-story-controversial-death-row-cases.htm> (noting that Davis's last words were "[t]he incident that night was not my fault, I did not have a gun").

41. Jen Marlowe, *Georgia Plans to Kill Troy Davis Next Week. Can it Still Be Stopped?*, COLORLINES: NEWS FOR ACTION (Sept. 14, 2011), http://colorlines.com/archives/2011/09/georgia_plans_to_kill_troy_davis_next_week_can_it_still_be_stopped.html.

42. Carlos Campos, *1989 Death-Penalty Case: New Questions Cast Doubt on Conviction*, ATLANTA J.-CONST. (Aug. 5, 2007), available at 2007 WLNR 15006686.

43. *Id.* Additionally, Fite mentioned in his report that the prosecution and ballistics expert conveniently left out the timing of both shootings, which would have shown that it would have been "difficult, if not impossible" for the same weapon to have been used in separate crimes to which Davis had been linked. *Id.* Questions about the ballistics testing gave rise to a last-minute appeal on the eve of Davis's execution. His attorneys filed a state court appeal arguing that this testing was flawed. Melanie Eversley, *Last-Minute Appeal to Halt Execution for Troy Davis Rejected*, USA TODAY (Sept. 21, 2011), <http://www.usatoday.com/news/nation/story/2011-09-20/troy-davis-clemency-denied/50475190/1>.

44. See Campos, *supra* note 42 (explaining that Parian testified that a limb hair on the victim had similar characteristics to hair recovered from the suspect and that they could be a match, but he failed to disclose that the FBI analysis of the hair "concluded the sample was 'not suitable for significant comparison purposes'. . . [meaning] there was no way to link the hair to [the suspect] using credible scientific methods").

The Troy Davis case is illustrative of Mr. Goldstein's point that further regulation is necessary to create a unified, accurate, and reliable system of forensic services. Such a system could better guard against overstated testimony, like that used in the Troy Davis case, and potentially bring forensic science closer to the *CSI* pedestal that judges, attorneys, and laypersons alike have placed it on.⁴⁵ This case also supports Mr. Goldstein's point that states *should* have innocence commissions to identify and rectify inaccurate and unreliable forensic evidence that has tainted a case.⁴⁶ We do not agree, however, that an innocence commission should be mandated, as Mr. Goldstein suggests.⁴⁷ Innocence commissions are controversial, and mandating them as part of a regulatory plan could lead to state refusal to implement one. While Mr. Goldstein's overall point that regulation is needed is well-taken, an independent federal agency is better equipped to *start* the revolution than the states are. Chief among our reasons for this inclination is that implementing state programs for oversight and regulation falls short of addressing the more global hydra of inconsistencies *between* state lines likely to occur as a result of such bottom-up regulation.

Our second point of concern with regard to a state-regulation model is that there is not currently any minimal baseline standard that the states can use as a basis for their regulatory framework. Curing fragmentation locally may simply perpetuate the problem nationally. We believe it is necessary to first establish that baseline in the form of an independent federal regulatory body before worrying about individual state standards. This top-down approach is necessary to avoid a scenario like the current one, where some states have opted out of forensic science regulation altogether.⁴⁸ By requiring a minimum standard, a federal agency can ensure that the validity and reliability concerns voiced by Mr. Goldstein are addressed and corrected. Further action by states above and beyond this baseline would not be required, but state experimentation and innovation would also not be precluded. Thus, much like other federal minimum standards, states would be free to require more than the minimum as they see fit.⁴⁹

Because the regulation of forensic services is a nationwide problem, anything short of a federal solution would merely shift the jurisdictional

45. *See supra* text accompanying note 2.

46. Goldstein, *supra* note 9, at 246–49, 253. An innocence commission in the Davis case could have identified whether the evidence that his counsel characterizes as “false, misleading and materially inaccurate,” Motion for Stay, *supra* note 38, at 2, rendered his conviction unreliable.

47. *See* Goldstein, *supra* note 9, at 252–53 (recommending adoption of mechanisms designed to remedy evidentiary errors, including innocence commissions or investigative panels).

48. *See id.* at 235 (recognizing the lack of institutional oversight in many states); *see also* Paul C. Giannelli, *Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs*, 86 N.C. L. REV. 163, 212 (2007) (observing that only New York, Oklahoma, and Texas require accreditation of their crime labs).

49. *See supra* text accompanying note 32.

fragmentation from county lines to state lines, and soon enough, a federal agency would be required to resolve those discrepancies and unify the field of forensic sciences. That should happen now, rather than after states have already established their own scheme of regulation.

IV. Conclusion

In his book, *The Structure of Scientific Revolutions*, Thomas S. Kuhn notes that when scientists encounter anomalies that cannot be explained by the universally accepted paradigm, it fosters a paradigm shift that leads to a scientific revolution.⁵⁰ Kuhn explains that when enough substantial anomalies have accumulated against a current paradigm, the scientific discipline is flung into crisis until a new dynamic philosophy or system supplants it.⁵¹ Some of the more notable scientific revolutions include (1) the progression from Newtonian physics and Maxwell's electromagnetic fields to Einstein's theory of relativity, and (2) the replacement of the caloric theory of heat with the theory of energy conservation.⁵² How a new paradigm takes hold requires a new generation of thinkers and ideas. In this vein, Kuhn quoted Max Planck: "[A] new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."⁵³

If one can call the post-NAS Report climate a forensic revolution, it follows that the new and innovative thinkers and critics in the field are those who will evolve our analysis and interpretation of such evidence and implement a genuine change. Mr. Goldstein is among those thinkers, and he should be commended for defying the status quo of forensic analysis and politics.

50. See THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 144–65 (3d ed. 1996) (explaining the sources of paradigm shifts, including that the old paradigms do not explain phenomena as simply and elegantly as the new paradigms, and observing that paradigm shifts in science occur when there is cause to doubt "fundamental tenets" of an old paradigm).

51. *Id.*

52. *Id.* at 98–109.

53. *Id.* at 151.