

Problems and Projects in the Theory (and Practice) of Evidence Law

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*As for the philosophers, they make imaginary laws for imaginary commonwealths; and their discourses are as the stars, which give little light, because they are so high.—Francis Bacon.*¹

Even today, more than four centuries later, Bacon’s complaint still resonates. Now, as then, the writings of philosophers—even of philosophers of law, who might be expected to be a little more grounded in the real world—all too often “give little light, because they are so high.” I will try to buck this trend by showing you that epistemological ideas really can illuminate real-life legal issues.

I. IDENTIFYING EPISTEMOLOGICAL ISSUES IN THE LAW

Every legal system needs, somehow, to determine the truth of factual questions. At one time, courts in England and continental Europe relied on in-court tests²—“proof” in the old meaning of the English word (a meaning that still survives in descriptions of liquor as “80% proof,”³ and in the old proverb, “the proof of the pudding is in the eating”). In trial by oath, a defendant would be asked to swear on the testament or on a reliquary that he was innocent, and “oath-helpers” or “con-jurors” might be called to swear that *his* oath wasn’t foresworn;⁴ in trial by ordeal, a defendant might be asked, e.g., to pick up a ring from the bottom of a cauldron of boiling

¹ Francis Bacon, *The Advancement of Learning* (1605), in Basil Montagu, ed, *The Works of Francis Bacon* vol 2 (London: William Pickering, 1825) at 295 [Bacon].

² For more details of the history sketched here, see Susan Haack, “Legal Probabilism: An Epistemological Dissent” (first published in Spanish in 2013), in Haack, *Evidence Matters: Science, Proof and Truth in the Law* (New York: Cambridge University Press, 2014), 47–77 [Haack, *Legal Probabilism*].

³ The phrase refers to the strength of the liquor, calculated as twice the percentage of alcohol present; so, e.g., liquor that is “80% proof” would be 40% alcohol. Merriam Webster, *Webster’s Ninth New Collegiate Dictionary* (Springfield, MA: Merriam-Webster Publishing, 1991) at 942 [Webster Dictionary].

⁴ Lisi Oliver, *The Beginnings of English Law* (Toronto: University of Toronto Press, 2002) at 174 ff [Oliver].

water, and his arm would later be checked to determine whether it had healed cleanly or had festered—which supposedly showed that he was guilty;⁵ in trial by combat, the two parties to a case would literally fight it out.⁶ The rationale for these procedures was, presumably, theological: God would strike a man who swore falsely, would ensure that an innocent defendant's wound healed cleanly, would see to it that the party in the right prevailed in combat; and these methods of proof (or "proof") were tolerated, presumably, because such theological assumptions were widely-enough accepted.

In continental Europe, in-court tests by oath and ordeal would gradually be replaced by canonical law and the Inquisition, and then by secular, national legal systems—which, however, still relied on torture to extract confessions.⁷ In 1766 Voltaire, who had long criticized the use of torture to determine guilt, complained about the practice of courts in Toulouse, which acknowledged "not only half-proofs but also quarters [e.g., a piece of hearsay] and eighths [e.g., a rumor]"—and then added up these fractional proofs, so that "eight doubts could constitute a perfect proof." But by this time the system was already in trouble; and in 1808 it would be reformed under Napoleon's legal code.⁸

In England, in-court tests by oath and ordeal were gradually replaced by a nascent system of jury trials.⁹ The first such trial was held in Westminster in 1220: five men accused of murder agreed "to submit to the judgement of twelve of their property-owning neighbors"; and, in a

⁵ Robert Bartlett, *Trial by Fire and Water: The Medieval Judicial Ordeal* (Oxford: Clarendon Press, 1986) at 9 ff.

⁶ George Neilson, *Trial by Combat* (London: Williams and Norgate, 1890).

⁷ Sadakat Kadri, *The Trial: A History, from Socrates to O J Simpson* (New York: Random House, 2005) at 39–45 [*Kadri*].

⁸ *Ibid* at 67–68.

⁹ These early English jury trials were not, to be sure, the first-ever trials by jury. A (very different) kind of jury trial was found in ancient Athens, where in 399 BC Socrates was tried before 501 fellow-citizens: Kadri, *supra* note 7 at 9. On ancient Greek legal procedure more generally, A Andrewes, "The Growth of the Athenian State," in John Boardman & NGL Hammond, eds, *Cambridge Ancient Histories* (Cambridge: Cambridge University Press, 1983) III Part 3, *The Expansion of the Greek World, Eighth to Sixth Centuries B.C.*, chapter 43, 360–91 at 388; Mogens Herman Hansen, *The Athenian Democracy in the Age of Demosthenes: Structure, Principles, and Ideology*, trans JA Cook (Oxford: Blackwell, 1991) at chapter 8.

procedure recognizably descended from the older practice of calling on jurors, these jurymen swore that one of the accused was law-abiding, but that the other four (who in due course were hanged) were thieves.¹⁰ But it would take centuries for the full array of now-familiar common-law evidentiary procedures—witnesses, cross-examination, exclusionary rules of evidence—to evolve.¹¹

Had the theological assumptions on which they rested been true, tests by oath, ordeal, and combat would have been epistemologically reasonable ways to determine facts at issue. But now, because we no longer believe those theological assumptions *are* true, we don't see those proof-procedures as epistemologically defensible. Still, even today some legal systems rely on practices reminiscent of the old provision in trial by oath that whether a defendant needed oath-helpers, and if so, how many, depended on his rank.¹² In traditional Sharia law, as presently practiced in, for example, Saudi Arabia, a man's testimony is given twice the weight of a woman's.¹³ And even in modern, western legal systems there are occasional reminders of the older proof-procedures: for example—rather as the word of the king or a bishop was taken to be sufficient by itself, without his needing to swear a solemn oath or, *a fortiori*, to produce oath-helpers¹⁴—some courts in the US have held government websites to be self-authenticating.¹⁵

¹⁰ Kadri, *supra* note 7 at 70–71. (The defendants, Kadri reports, had been identified by a self-confessed murderer in hopes that, by informing on them, she would save her own life).

¹¹ See e.g., Stephan Landsman, “Of Witches, Madmen, and Product Liability: An Historical Survey of the Use of Expert Testimony” (1995) 13, no 2 Behav Sci & L at 131–57.

¹² Oliver, *supra* note 4 at ff 174.

¹³ Hunt Janin and André Kahlmeyer, *Islamic Law: The Sharia from Muhammad's Time to the Present* (Jefferson, N.C.: McFarland and Company, 2007), at 32.

¹⁴ Oliver, *supra* note 4 at 174.

¹⁵ Federal Rule of Evidence 902 provides that certain kinds of evidence, including documents bearing “a seal purporting to be [sic] that of the United States,” are self-authenticating; and this has been interpreted as including government websites. See e.g., *Estate of Gonzales v Hickman*, ED CV 05-660 MMM (RCx), 2007 WL 3237727, *2 (CD Cal May 30, 2007); *Paralyzed Veterans of Am v McPherson*, No C 06-4670 SBA, 2008 WL 4183981 (ND Cal Sept 9, 2008); *Williams v Long*, 585 F Supp 2d 679, 685 (D Md 2008).

Modern western legal systems, however, don't use anything like those older in-court tests, but instead rely primarily¹⁶ on the presentation of evidence: the testimony of witnesses, documentary evidence, and physical evidence such as the alleged murder weapon, the allegedly forged will, and so forth—"proof" in the current sense of the word, of showing some claim to be true, or likely true. Of course, the rationale for these practices *also* depends on certain presuppositions. This point can be made vivid by thinking about what the consequences would be for the law if these assumptions were false. If, for example, Richard Rorty had been right to insist that the entire epistemological enterprise is misconceived,¹⁷ if standards of what makes evidence stronger or weaker really were, as he professed to believe,¹⁸ purely conventional—not universal, but local to this or that epistemic community, and not truth-indicative, but free-floating¹⁹—then what we optimistically call the "justice system" would really be nothing but a cruel kind of judicial theater.

As this thought-experiment reveals, modern evidentiary procedures (in both common-law and civil-law jurisdictions) presuppose that evidence may be objectively better, or worse; that the better a claim is warranted by the evidence, the likelier it is to be true; and that these or those legal rules and procedures are good-enough ways of ensuring that verdicts are factually sound. In fact, as I understand it, what we ask the finder of fact to do is precisely to determine whether the defendant's guilt or his liability has been

¹⁶ The qualification "primarily" is intended to acknowledge, e.g., the role of legal presumptions.

¹⁷ Richard Rorty, *Philosophy and the Mirror of Nature* (Princeton, NJ: Princeton University Press, 1979) [Rorty]. Rorty's critique of epistemology is, however, nothing but a farrago of confusions and equivocations—confusions and equivocations painstakingly disentangled in Susan Haack, *Evidence and Inquiry* 2d (Amherst, NY: Prometheus Books, 2009) at chapter 9 [Haack, *Evidence and Inquiry* (1993)], and revisited more briefly in Susan Haack, "Confessions of an Old-Fashioned Prig," in Haack, *Manifesto of a Passionate Moderate: Unfashionable Essays* (Chicago, IL: University of Chicago Press, 1998) at 7–30 [Haack, *Manifesto*], and in Susan Haack, "Coherence, Consistency, Cogency, Congruity, Cohesiveness, &c: Remain Calm! Don't Go Overboard!" (2004), in Haack, *Putting Philosophy to Work: Inquiry and Its Place in Culture* expanded ed (Amherst, NY: Prometheus Books, 2013) at 69–82 [Haack, *Putting Philosophy to Work*].

¹⁸ I say "professed" because, I assume, when he needed to choose a medical treatment or find out whether the publisher's check had arrived, Rorty looked to the evidence, just as you or I would do.

¹⁹ Rorty, *supra* note 17, ch 5, §§ 5-6.

established to the legally-required degree of proof by the evidence presented; and this is to make an *epistemological* judgment.

As I put it a decade ago, the law is “up to its neck in epistemology,”²⁰ for even the briefest reflection on the rationale for evidentiary rules and procedures raises a host of questions of interest to an epistemologist. Are degrees and standards of proof best understood as degrees of credence on the part of the fact-finder, as mathematical probabilities, or as degrees of warrant of a claim by evidence? What *is* the relation of degrees of proof to the mathematical calculus of probabilities—and what role, if any, does that calculus have in legal proof?²¹ And if, as I believe, degrees of proof are degrees of warrant, what determines how well this or that evidence warrants a claim? Must we choose between “fact-based” and “story-based” or “narrative” accounts of proof, or are there other possibilities? Can combined evidence sometimes reach a higher degree of proof than any of its elements alone could do? When can we rely on the testimony of a witness, and when should we be suspicious of his honesty, or his competence, or both? Are there special difficulties when the witness is an expert? How are we to distinguish the genuine expert from the plausible charlatan? Is a group of people always, or sometimes, in an epistemologically stronger position than an individual—and if so, when, and why? Was C. S. Peirce right to complain that the adversarial procedures of common-law systems are poorly suited to discovering the truth?²² Was Jeremy Bentham right to argue that, because they prevent relevant evidence from ever being heard, exclusionary rules are a clear impediment to arriving at the facts of a case, and mainly serve the interests of attorneys who benefit from their skill in gaming the system?²³ Etc., etc., etc.

²⁰ Susan Haack, “Epistemology Legalized: Or, Truth, Justice, and the American Way,” (2004), in Haack, *Evidence Matters*, *supra* note 2 at 27–46 [Haack, *Epistemology Legalized*].

²¹ Haack, *Legal Probabilism*, *supra* note 2.

²² CS Peirce, *Collected Papers*, eds Charles Hartshorne, Paul Weiss, and Arthur Burks (Cambridge, MA: Harvard University Press, 1931–58) 2.635 (1878) [Peirce]; also in *Writings: A Chronological Edition*, ed, the Peirce Edition Project (Indianapolis, IN: Indiana University Press, 1982–present) 3:331. See also Haack, *Epistemology Legalized*, *supra* note 20 at 49–55.

²³ Jeremy Bentham, *Rationale of Judicial Evidence* (New York: Garland, 1978) [Bentham]. See also Haack, *Epistemology Legalized*, *supra* note 20 at 55–61.

II. CHARACTERIZING LEGAL EPISTEMOLOGY

The word “epistemology” is a relatively recent coinage, dating from the mid- to late-nineteenth century.²⁴ But epistemology, the philosophical theory of knowledge, is very old, dating back at least to Plato’s efforts to distinguish genuine knowledge (*episteme*) from mere belief or opinion (*doxa*).²⁵

In the course of its long history, epistemology has undertaken a whole range of projects: not only distinguishing genuine knowledge from mere belief or sheer opinion, but also offering definitions or explications of the concept of knowledge; proposing arguments to establish that knowledge is possible—or that it isn’t; articulating the differences between knowing that *p*, knowing *X*, and knowing how to Φ ; exploring the relations of knowledge, certainty, and probability; asking how we know mathematical truths, empirical truths, moral truths, religious truths, etc., etc.; reflecting on supposed sources of knowledge—intellectual intuition, sensory experience, introspection, memory, inference, testimony, revelation, religious experience?—and their interrelations; articulating the structure of evidence and the determinants of evidential quality; trying to understand what makes evidence relevant to a claim, and what it means to describe evidence as misleading; characterizing procedures of inquiry and what makes them better or worse; distinguishing genuine inquiry from pseudo-inquiry and “advocacy research”; exploring epistemological virtues, such as intellectual honesty, patience, and thoroughness, and epistemological vices, such as self-deception, hastiness, and carelessness; looking at the effects of the environment in which inquiry takes place on how well or poorly it is conducted; evaluating the effects of sharing information; suggesting how to assess the worth of testimony, and investigating social aspects of knowledge more generally; and so on and on.

And what, exactly, do I mean by “legal epistemology” or “epistemology legalized”? In my mouth, these phrases refer, not to a

²⁴ Webster Dictionary, *supra* note 3 at 419 dates the word to c.1856; but fifty years later we find Peirce complaining that it is “an atrocious translation of *Erkenntnislehre*.” Peirce, *supra* note 22 at 5.494 (c.1906).

²⁵ See, e.g., Plato, *Republic*, trans GA Grube, revised by CDC Reeve (Indianapolis, IN: Hackett Publishing Company, 1992) Book 7.

specialized, peculiar genre of epistemology, but simply to *epistemological work relevant to issues that arise in the law*.

John Stuart Mill writes in the introduction to his *System of Logic* (1843) that “[t]he business of the magistrate, of the military commander, of the navigator, of the physician, of the agriculturalist is to judge of evidence and act accordingly.” For they all “have to ascertain certain facts, in order that they apply certain rules”²⁶ The word “epistemology” hadn’t yet become current; but Mill’s agreeably old-fashioned phrase, “judge of evidence,” identifies what I take to be the *core* epistemological concern: to understand what evidence is, how it is structured, and what makes it better or worse, stronger or weaker. And, as Mill’s putting “the magistrate” at the top of his list signals, it is precisely *this* aspect of epistemology that is most relevant to legal issues about proof and proof-procedures.

Relevance, however, is a matter of degree; some epistemological work is highly relevant to legal concerns, some relevant but less so, some only marginally relevant—and some not relevant at all. Moreover, not all legally-relevant epistemology will be helpful. What we need is not only epistemological theory *focused centrally on evidence and its evaluation* (though it may, to be sure, use other words, such as “data,” “reasons,” or “information”), but also epistemological theory *detailed enough* to get a serious grip on specific questions raised by evidentiary procedures in the law; and, of course—well, *true* epistemological theory.

When I speak of the relevance of epistemology to the law, I refer to the field or discipline of epistemology, *not* to a professional specialism—which is by no means the same thing. Of late, philosophy has become hyper-professionalized and hyper-specialized,²⁷ so that by now there is a whole cadre of people self-identified as epistemologists. And these days many seem to use the word “epistemology” to refer to whatever those who identify themselves professionally as specialists in epistemology do. But

²⁶ John Stuart Mill, *A System of Logic: Being a Connected View of the Principles of Evidence and the Methods of Scientific Investigation* 8th ed (London: Longman, Green, 1970, 1843) at 7. Nowadays, we would probably say, not “judge of evidence,” but “judge the weight [or the worth] of evidence”); but Mill’s phrase is exactly apt—as is his addendum, “and act accordingly”: the navigator must assess the evidence, say, that a storm is coming, and do what is necessary to protect his ship, a physician must assess the evidence that, say, the patient is having a heart attack, and treat him appropriately, and so on.

²⁷ See Susan Haack, “Out of Step: Academic Ethics in a Preposterous Environment,” in Haack, *Putting Philosophy to Work*, *supra* note 17 at 251–68.

this, while no doubt helpful to the careers of members of the guild, threatens to narrow the scope of the epistemological enterprise to issues that happen to be fashionable in the Analytic Epistemologists' Union (AEU).²⁸ Indeed, so severe is the hyper-specialization that the AEU seems, in turn, to have splintered into sub-groups—the virtue epistemologists, the feminist epistemologists, the social epistemologists, etc. Moreover, self-styled “social epistemologists” are sometimes thought, by themselves and others, to have the monopoly on legally-relevant epistemology.²⁹ But this, though again no doubt helpful to the careers of members of the guild, threatens to narrow the scope of the epistemological ideas brought to bear on the law even further, to the current preoccupations of this sub-group—which is particularly unfortunate when, as happens more often than one would like, social epistemology is conducted without benefit of a good understanding of evidence and its quality.³⁰

Neither *all* the work of those specialists and sub-specialists in epistemology nor *only* the work of those specialists and sub-specialists is helpful in understanding the evidentiary issues with which the law deals. Some of the work of specialist-epistemologists (e.g., the seemingly endless attempts to refute the skeptic, those constantly-recycled “Gettier

²⁸ My coinage, of course. See e.g., my “Foreword” to the 2nd edition of Haack, *Evidence and Inquiry*, *supra* note 17 at 23.

²⁹ For example, the only category acknowledged by the Philosophy Research Network (PRN: the relevant branch of SSRN, the Social Sciences Research Network) in which work on legal epistemology seems to belong is “Social Epistemology and Testimony.”

³⁰ For example, to judge by the index, in Alvin I Goldman, *Knowledge in a Social World* (Oxford: Clarendon Press, 1999) (an influential foray into “social epistemology”) there are *no references to the concept of evidence*—except in the chapter on the law!

paradoxes,”³¹ efforts to catalogue and classify the epistemic virtues)³² is irrelevant, or only marginally relevant, to legal concerns. Moreover, much work by specialist-epistemologists even on legally-relevant topics—e.g., about the evaluation of testimony, or the epistemological consequences of evidence-sharing—isn’t detailed enough, or isn’t detailed enough in the relevant respects, to be very helpful to an understanding of evidentiary issues in the law; and a good deal of the work of professional epistemologists (e.g., efforts to understand epistemic justification in terms of the truth-ratios of belief-forming processes)³³ is, to put it bluntly, just wrong-headed.³⁴

Besides, before the current hyper-specialization set in, when philosophers felt somewhat freer to go where their intellectual bent and the task at hand took them, inductive logician L. J. Cohen had contributed significantly to issues in legal epistemology.³⁵ And there have long been legal scholars and judges who have made real contributions to epistemological issues in the law: I think, e.g., of Jeremy Bentham’s

³¹ Edmund Gettier, “Is Justified True Belief Knowledge?” (1963) 23 *Analysis* at 121–23; reprinted in Louis J. Pojman, ed, *Theory of Knowledge: Classical and Contemporary Sources* 2d ed (Belmont, CA: Wadsworth, 1998) at 142–43 [Pojman]. In a paper I wrote in 1983 but did not publish until 2009 (when a new wave of Gettierology was well under way), I had argued that these paradoxes arise from the mismatch between the concept of knowledge, which is categorical, and the concept of justification, which is gradational; and that in consequence there *can be no* definition of knowledge which does not *either* allow such paradoxes *or else* lead to skepticism. Susan Haack, “‘Know’ is Just a Four-Letter Word,” in the 2nd edition of Haack, *Evidence and Inquiry*, *supra* note 17 at 301–31. This diagnosis, I still believe, simply dissolves the supposed problem on which so much energy has been, and continues to be, wasted.

³² See e.g., Linda Zagzebski, *Virtues of the Mind* (New York: Cambridge University Press, 1996); Abrol Fairweather and Linda Zagzebski, eds, *Virtue Epistemology: Essays on Epistemic Virtue and Responsibility* (New York: Oxford University Press, 2001).

³³ See e.g., Alvin I Goldman, “What is Justified Belief?” in George Pappas, ed, *Justification and Knowledge* (Dordrecht, Netherlands: Reidel, 1979) at 1–21 [Goldman, *What is Justified Belief*]; *Epistemology and Cognition* (Cambridge, MA: Harvard University Press, 1986); Alvin I Goldman, “Two Concepts of Justification” in James Tomberlin, ed, *Philosophical Perspectives, 2: Epistemology* (Atascadero, CA: Ridgeview, 1988) at 51–70.

³⁴ As I argued in excruciating detail in Haack, *Evidence and Inquiry*, *supra* note 17, ch 7.

³⁵ L Jonathan Cohen, *The Probable and the Provable* (Oxford: Clarendon Press, 1977).

battery of criticisms of exclusionary rules of evidence;³⁶ of John Wigmore's diagrammatic representations of the structure of evidence;³⁷ of Judge Learned Hand's diagnosis of the "logical anomaly" at the heart of expert-witness testimony;³⁸ and of Leonard Jaffee's reflections on the role of statistical evidence at trial³⁹—to mention just a few. For that matter, there is a good deal of epistemology built into such routine legal materials as jury instructions on standards of proof,⁴⁰ and a good deal of epistemology implicit in judicial rulings.⁴¹

Thoughtful scientists have also made real epistemological contributions: Percy Bridgman,⁴² for example, whose reflections on the pointless "ballyhoo" made about the "scientific method" and the need to get down, instead, to the nuts and bolts of scientific work reveal the naïveté of some judicial observations about the supposed method of science, notably Justice Blackmun's comments on "methodology" in *Daubert*,⁴³ or W K Clifford,⁴⁴ whose reflections on when and why it is appropriate to rely on experts' opinions, and when and why it is inappropriate, have a lot to teach us about expert testimony. And many novelists explore epistemological themes—often, to be sure, matters of epistemic character, with only indirect bearing on legal issues, as with Samuel Butler's remarkable portrayal of

³⁶ Bentham, *supra* note 23.

³⁷ John Henry Wigmore, *The Principles of Judicial Proof as Given by Logic, Psychology, and General Experience as Illustrated in Judicial Trials*, 5th ed (Littleton, CO: Fred B Rothman & Co, 1981, 1913).

³⁸ Learned Hand, "Historical and Practical Considerations Regarding Expert Testimony" (1901) 15 Harv L Rev at 40–58 [*Hand*].

³⁹ Leonard R Jaffee, "Of Probativity and Probability: Statistics, Scientific Evidence, and the Calculus of Chances at Trial" (1984–5) 46 U Pitt L Rev at 925–1083.

⁴⁰ See §4 below.

⁴¹ See, for example (on the weight of combined evidence), *Milward v Acuity Specialty Prod*, 639 F.3d 11 (1st Cir 2011).

⁴² Percy W Bridgman, "On 'Scientific Method'" in Bridgman, ed, *Reflections of a Physicist* 2d ed (New York: Philosophical Library, 1955) at 81–83.

⁴³ *Daubert v Merrell Dow Pharm Inc* (1993), 509 US 579, 589–95 [*Daubert III*].

⁴⁴ William Kingdon Clifford, "The Ethics of Belief" in Leslie Stephen & Frederick Pollock, eds, *The Ethics of Belief and Other Essays* (London: Watts & Co, 1947) at 70–96, 85 ff.

self-deception, hypocrisy, and sham inquiry in *The Way of All Flesh*,⁴⁵ but sometimes strikingly legally relevant.

You can learn a lot about what makes evidence misleading from Michael Frayn's playful treatment in *Headlong*,⁴⁶ or (in a more directly legal way) from Scott Turow's exploration in *Reversible Errors*.⁴⁷ You can learn even from (good) *bad* novels, such as Arthur Hailey's *Strong Medicine*,⁴⁸ which is quite revealing about what can go wrong, epistemologically speaking, with a pharmaceutical company's trials of a drug.

Of course legal epistemology, like all legal philosophy, is inherently susceptible to certain pitfalls. One very real danger, foreshadowed in the quotation from Bacon with which I began, is ascending to so high a level of abstraction that you fail to engage in a meaningful way with any real-world legal system. And then there's the opposite danger, being so closely concerned with the evidentiary practices of a particular jurisdiction that you fail to engage with legal practices that are even slightly different—a danger Bacon also notes; though he attributes it to lawyers, who, he complains, “write according to the states where they live, what is received law.”⁴⁹ It's

⁴⁵ Samuel Butler, *The Way of All Flesh* (New York: American Library, 1998). This semi-autobiographical *Bildungsroman* tells the story of a young man who grows from callow boy to self-deceived curate, and finally, after professional and personal disgrace, achieves intellectual adulthood. It is discussed at length in Susan Haack, “The Ideal of Intellectual Integrity, in Life and Literature” in Haack, *Putting Philosophy to Work*, *supra* note 17 at 209–220 [Haack, “*The Ideal of Intellectual Integrity, in Life and Literature*”].

⁴⁶ Michael Frayn, *Headlong* (New York: Picador, 1999) tells the story of a hapless philosophy lecturer who, hoping to buy a painting cheaply from his financially stressed and artistically clueless aristocratic neighbor, uncovers evidence suggesting that the painting is, as he suspects, a missing Bruegel—no, that it isn't—yes, that it is—no, that it isn't, . . . and so on and on through the whole book.

⁴⁷ Scott Turow, *Reversible Errors* (New York: Warner Vision Books, 2002) tells the story of an attorney who, required by the court to take on the last-minute appeal of a death-row inmate, uncovers more and more evidence indicating that his client is guilty—until, at last, he finds the one piece of evidence that puts all the rest in a different light, and shows the client to be innocent after all.

⁴⁸ Arthur Hailey, *Strong Medicine* (London: Pan Books, 1984) tells the story of a drug company's development of a drug against morning-sickness in pregnancy, a drug that turns out to cause terrible birth defects. (Bendectin, the drug at issue in *Daubert*, which the plaintiffs believed had caused their son's birth defect, was also prescribed for the treatment of morning-sickness).

⁴⁹ Bacon, *supra* note 1 at 295.

also all too easy to confuse the epistemologically ideal with the best that's practically feasible—and it can be very hard to figure out what practical constraints we simply have to live with, and what could, and perhaps should, be overcome. And yet another problem is keeping clear which elements of the rationale for, or which elements of criticisms of, various evidentiary rules and procedures are truly epistemological, and which depend, rather, on concern for various policy objectives.

Then there's what I think of as the problem of “conceptual slippage”: the small (and sometimes not-so-small) differences between legal and epistemological uses of the same terms. The concept of *evidence*—which in legal contexts includes physical evidence, rarely considered by epistemologists, is itself an example; then there's *reliability*—a technical term in reliabilist epistemology and, since *Daubert*, a very different technical term in US evidence law—and moreover one that doesn't, like the ordinary concept, come in degrees;⁵⁰ *causation*—which, as articulated over centuries of tort law, has diverged both from ordinary and from scientific usage;⁵¹ and *knowledge*—which, as it appears in “*scienter*” requirements, e.g., that the defendant “knew or should have known” that the goods he bought suspiciously cheaply were stolen,⁵² seems quite far

⁵⁰ *Daubert III*, *supra* note 43 at 590 n.9. I should note that Federal Rule of Evidence 702 (which *Daubert III* was interpreting) was modified in 2000, coming into effect in its modified form in December that year; was “restyled” in 2011; and now requires that expert testimony be “based upon sufficient facts or data,” and is “the product of reliable principles and methods,” which the witness “has applied... reliably... to the facts of the case.” The first of these three clauses may hint at a gradational understanding of “reliable”; but the second and third, like that footnote in *Daubert III*, suggest a categorical understanding.

⁵¹ See e.g., Lawrence M Friedman, *A History of American Law* (New York: Simon and Schuster, 1973) at 409 ff.

⁵² The Model Penal Code explains the presumption of knowledge in such cases as requiring: (a) that a dealer be found in possession of stolen property from two or more persons on separate occasions; or (b) that he have received stolen property in another transaction within the year preceding the transaction charged; or (c) being a dealer in the type of property received, he acquired it for a consideration he knows is far below its reasonable value. Model Penal Code § 223.6(2) (ALI 1962), in 10A *Uniform Laws Annotated* 561 (West Group 2001). Statutes on receiving stolen property vary somewhat from state to state: e.g., the Minnesota statute speaks of the defendant's “knowing or having reason to know” that the property was stolen (Minn Stat Ann § 609.53 (West 2009)); the Missouri statute adds to the provisions of the Model Penal Code that the defendant knew the property to be stolen or acquired it “under such circumstances as would reasonably induce a person to believe the property was stolen” (Mo Ann Stat § 570.080 (Vernon 1999 & Supp

removed from most epistemologists' conceptions. Moreover, even when a concept is of interest both to legal scholars and to epistemologists, their focus is often very different. The AEU's interest in the definition of knowledge, for example, is often motivated by the hope of refuting skepticism or, more recently, resolving a new rash of Gettier-type paradoxes; and epistemological interest in testimony is often focused on a (not always well-defined) idea of "social knowledge."

III. ARTICULATING LEGALLY-RELEVANT EPISTEMOLOGICAL IDEAS

The epistemological ideas developed in my *Evidence and Inquiry*⁵³ and later modified, refined, and amplified in chapter 3 of *Defending Science—Within Reason*⁵⁴ are focused centrally on the structure of evidence and its evaluation; and they interlock both with my ideas about the nature and conduct of inquiry,⁵⁵ and with my ideas about epistemological character.⁵⁶ They are worked out in greater-than-usual (though, inevitably, still far from perfect) detail; and they are at least approximately true—or so I believe: if I didn't, I'd drop them and start again! So, given the argument of the previous section, they should prove legally helpful; as, in fact, I believe they have. Setting questions of epistemic character aside (because, fascinating as they are, their relevance to the law is very indirect), I will focus here on questions about *inquiry* and its conduct, and about when and how evidence contributes to the *justification* of a belief or the *warrant* of a claim.

2012)); and the Delaware statute speaks of the defendant's "knowing that [the property] has been acquired under circumstances amounting to theft, or believing that it has been so acquired" (11 Del Code Ann § 851 (Mitchie Supp 2012)).

⁵³ Haack, *Evidence and Inquiry*, *supra* note 17; Susan Haack, "A Foundherentist Theory of Empirical Justification," in Pojman, *supra* note 31 at 283–93 [Haack, "A Foundherentist Theory of Empirical Justification"].

⁵⁴ Susan Haack, *Defending Science—Within Reason: Between Scientism and Cynicism* (Amherst, NY: Prometheus Books, 2003) [Haack, *Defending Science*].

⁵⁵ See Susan Haack, "Preposterism and Its Consequences" (1996), in Haack, *Manifesto*, *supra* note 17 at 188–204.

⁵⁶ See Haack, "The Ideal of Intellectual Integrity, in Life and Literature" *supra* note 45, where I argue, *inter alia*, that epistemic virtues such as intellectual honesty concern a person's relation to evidence: e.g., his willingness to acknowledge, and adapt his beliefs in response to, contrary evidence.

Inquiry and Pseudo-Inquiry: Inquiry, as I understand it, is an attempt to discover the truth of some question or questions; by which I mean, simply, that the goal of an inquiry into whether p , say, is to end up concluding that p , if p , and that not- p , if not- p (and that it's more complicated than a simple matter of whether p or not- p , if it *is* more complicated than that). Pseudo-inquiry, by contrast, is an attempt to make the best possible case for some conclusion determined in advance. So a genuine inquirer is motivated to seek out all the evidence he can; to judge as fairly as possible how strong it is, in what direction it points, and how clearly; and to draw a conclusion only when he judges that he has adequate evidence to do so. A pseudo-inquirer, by contrast, will seek out all the favorable evidence he can, and try to play down or explain away any evidence unfavorable to his predetermined conclusion. "Advocacy research" (as we might call, e.g., a trade union's efforts to find evidence in support of their demands) is a form of pseudo-inquiry.

In real life, of course, people's motives are usually mixed; and what we find is not so much a clean, sharp demarcation between pseudo-inquiry and the real thing as a continuum from less to more commitment to arriving at a predetermined upshot, from less to more openness to all the evidence. In line with this, how well inquiry is conducted depends, *inter alia*, on how honest, thorough, and competent the search for evidence is, and how honest, thorough, and competent the appraisal of its worth. And as this reveals, inquiry conducted in an environment in which there is pressure to reach a predetermined conclusion, or for that matter to reach *some* conclusion right away, is likely to be less well-conducted than inquiry free of such pressures.

Evidence and Warrant: My account of what makes a person justified in believing something, or what makes a claim warranted is, in brief, evidentialist, experientialist, gradational, foundherentist, quasi-holistic, and worldly; and, in its most developed form, it combines individual and social elements. Each of these points, obviously, requires considerable amplification and explanation.

My theory is *evidentialist*:⁵⁷ by which I mean that it rests on the assumption that whether, and if so to what degree, a person is justified in

⁵⁷ I first used the term in Haack, *Evidence and Inquiry*, *supra* note 17 at 22, 118, 191, 194, 195, 271. After I had introduced it, I found it had already been used, with at least roughly the same meaning, in Richard Feldman & Earl Conee, "Evidentialism," (1985) 48 *Philosophical Studies* at 15–34. (I gather from our correspondence that Prof Goldman thinks evidentialism denies that there is any

believing something depends on how good his evidence is—“his evidence” including both his experiential evidence and his background beliefs or reasons. My theory is also, as this reveals, *experientialist*: i.e., it takes the evidence with respect to empirical claims to include a subject’s sensory experience, his seeing, hearing, etc., this or that and his remembering seeing, hearing etc., this or that.⁵⁸ From a purely epistemological perspective, it is crucial to spell out what, exactly, experiential evidence is, and how, exactly, it contributes to justification;⁵⁹ but for present purposes I will set these issues aside, except to say that I conceive of experiential evidence as consisting, not of propositions believed, but of perceptual events, and of its causal role in bringing about beliefs as contributing to justification in virtue of the way language is learned.⁶⁰

My theory is also *gradational*: i.e., it construes the quality of evidence (and hence of epistemic justification), not as categorical, but as a matter of degree: evidence with respect to a claim may be stronger, or weaker; a person may be more, or less, justified in believing something; and a claim or proposition may be warranted in greater, or in lesser, degree.⁶¹

And my theory is *foundherentist*: i.e., it is intermediate between the traditionally-rival families of theories of epistemic justification, foundationalism and coherentism—which, however, don’t exhaust the options. Unlike coherentism, but like (some forms of) foundationalism, foundherentism allows a role for experiential evidence as well as for

connection between epistemic justification and likely truth; but as readers of the last chapter of *Evidence and Inquiry* will clearly see, in my case at any rate, this is egregiously false.)

⁵⁸ I also include introspective evidence under “experiential evidence,” but have no theoretical account of such evidence to offer.

⁵⁹ See Haack, *Evidence and Inquiry*, *supra* note 17, ch 5 (but note that, when I turn to the explanation of what makes evidence better or worse, I rely on propositional proxies for experiential states); Haack, *Defending Science*, *supra* note 54 at 61–63.

⁶⁰ The picture I offer is of language as learned in part by ostension and in part by verbal definition, but with a gradualist twist: all language-learning involves both—the more observational a term, the greater the role of ostension, and the more theoretical the term, the greater the role of intra-linguistic connections. This is why a person’s being in, say, the kind of perceptual state a normal person would be in when seeing a cardinal bird three feet away in good light gives support to his belief that there is a cardinal in front of him (how much depending also to some degree on other beliefs of his, e.g., about how normal his vision is). For a fuller account, see again Haack, *Defending Science*, *supra* note 54 at 61–63.

⁶¹ Haack, *Evidence and Inquiry*, *supra* note 17, ch 4.

reasons; unlike foundationalism, but like coherentism, it allows pervasive relations of mutual support among beliefs.⁶²

The foundherentist account of the structure of evidence is informed by an analogy with a crossword puzzle: experiential evidence is the analogue of the clues, and reasons (a person's background beliefs, ramifying in all directions) the analogue of already-completed crossword entries. The same analogy also informs the foundherentist account of the determinants of evidential quality, of what makes evidence stronger or weaker, better or worse; which has three dimensions:

- how *supportive* the evidence is of the belief in question (analogue: how well a crossword entry fits with the clue and any completed intersecting entries);
- how *secure* the reasons are, independently of the belief in question (analogue: how reasonable those intersecting completed crossword entries are, independently of the one in question);
- how *comprehensive* the evidence is (analogue: how much of the crossword has been completed).

Because this theory of what makes evidence better or worse is multi-dimensional, it doesn't guarantee a linear ordering of degrees of justification; nor, *a fortiori*, does it offer anything like a numerical scale. And, as this suggests, it precludes identifying degrees of warrant with mathematical probabilities.⁶³

Of course, each of the determinants of evidential quality needs to be spelled out in a lot more detail—much more detail than I can make room for here. But, briefly and roughly: how well a body of evidence supports a conclusion depends on the degree of explanatory integration of this evidence with that conclusion, i.e., how well evidence and conclusion fit together in an explanatory account.⁶⁴ How supportive a particular piece of evidence is depends on whether, and if so, how much, adding that piece of evidence enhances the explanatory integration of the whole. Evidence may be *positive* with respect to a claim, i.e., support it to some degree; or

⁶² *Ibid*, ch 1; see also Haack, "A Foundherentist Theory of Empirical Justification," *supra* note 53.

⁶³ This argument is made in much more detail in Haack, *Legal Probabilism*, *supra* note 2 at 80–83.

⁶⁴ Hence the need for propositional proxies for experiential evidence (note 59 above): an explanatory account needs to be, as the phrase suggests, a set of propositions.

negative, i.e., undermine it to some degree; or it may be *neutral* with respect to the claim in question, neither supporting it nor undermining it—i.e., *irrelevant* to that claim.

How well evidence E justifies a belief is enhanced the *more* independently secure the positive reasons are, but the *less* independently secure the negative reasons are. I should also note that, while the independent security requirement might appear, at first glance, to be circular—since “secure” here is a synonym for “justified”—there is really no vicious circle, and no infinite regress. The independent security requirement applies only to reasons for a belief, not to the experiential evidence that ultimately grounds our beliefs about the world; and this consists of events, not propositions, and so neither has nor stands in need of justification.

How comprehensive evidence is depends on how much of the evidence relevant (positively or negatively) to the proposition in question it includes.

My theory is *worldly*: i.e., its account of evidential quality isn't purely formal or syntactic, but material; i.e., it depends on facts about the world. Why so? First, the foundherentist understanding of supportiveness of evidence relies on the idea of degree of explanatory integration of evidence-plus-conclusion; and genuine explanation requires a vocabulary that picks out real kinds of thing or stuff.⁶⁵ Second, the foundherentist understanding of comprehensiveness relies on the concept of relevance; which, again, isn't a formal but a material matter. Is the way this job applicant loops the letter “g,” for example, relevant to whether he can be trusted with the firm's money? It depends on whether graphology (the theory that handwriting is indicative of character) is true—i.e., on facts about the world.

My theory is *quasi-holistic*: i.e., it is neither atomistic (as foundationalist theories usually are), nor fully holistic (as coherentist theories usually are). The evidence relevant to a claim is usually complex and ramifying; but not everything is relevant to everything. So what I offer is a kind of articulated quasi-holism.

⁶⁵ Haack, *Defending Science*, *supra* note 54, ch 5.

And, in its most fully-developed form, my theory *combines individual and social elements*. In *Evidence and Inquiry* I focused on *what makes an individual more or less justified* in believing something at a time; but by the time of *Defending Science* I was able to go beyond this to construct an account of *what makes a claim more or less warranted* at a time. (In ordinary English, of course, the words “justification” and “warrant” are more or less interchangeable; but I have adopted them as technical terms to represent these two different, though related, concepts.) *Evidence and Inquiry* focused on the evidence that actually leads someone to believe something at a time. The result was an account of justification that is personal (because it depends on the quality of the evidence that causes a person to have a certain belief), but not subjective (because how good a person’s evidence is doesn’t depend on how good he believes it to be).⁶⁶ *Defending Science* focused instead on the evidence a person possesses at a time, whether or not this is what causes him to have the belief in question at that time. This shift made it possible to construct, first, an account of how warranted a claim is for a person at a time; then an account of how warranted a claim is for a group of people at a time—which requires, *inter alia*, an understanding of what is involved epistemologically in relying on others’ testimony; and finally, an account of how warranted the claim is by the evidence available at the time.⁶⁷

IV. APPLYING THESE EPISTEMOLOGICAL IDEAS TO EVIDENTIARY ISSUES

As I will show, these epistemological ideas illuminate a number of the issues about evidence and evidentiary procedure listed earlier. By way of preliminary, however, I need to articulate the epistemological dimensions of the legal concepts of burden, degree, and standard of proof.

⁶⁶ Haack, *Evidence and Inquiry*, *supra* note 17 at 58, 160.

⁶⁷ This is worked out in some detail in Haack, *Defending Science*, *supra* note 54, ch 3. The reason for starting with the individual is simple, but crucial: the warrant of any empirical claim depends ultimately on experience, i.e., on sensory interactions with the world; and it is individuals who have such interactions. This point is not a new one; it is made, for example, in Bertrand Russell, *Human Knowledge, Its Scope and Limits* (New York: Simon and Schuster, 1948) at 8; but the account I construct to accommodate it is not, so far as I know, to be found, even in embryo, elsewhere.

US law assigns burdens of proof (also known as burdens of persuasion): i.e., it specifies which party has the obligation to establish the elements of a case; and it sets standards of proof: i.e., specifies to what degree those elements must be proven for the party that has the burden of proof to prevail. In criminal cases, the burden of proof falls on the prosecution, which is required to make its case “beyond a reasonable doubt”;⁶⁸ in civil cases, the burden of proof falls on the plaintiff, who is normally required to make his case “by a preponderance of the evidence” or, as is sometimes said, “more probably than not”; and in a smaller class of cases, e.g., those involving issues of citizenship, an intermediate standard, “clear and convincing evidence,” applies.⁶⁹

The different standards indicate that legal proof must be understood as coming in degrees, a matter of more and less; but there is disagreement about what, exactly, these degrees of proof are degrees *of*. Some (stressing the phrase, “burden of persuasion”) take them to be fact-finders’ degrees of belief;⁷⁰ some (stressing the phrase “more probable than not”) take them to be mathematical probabilities;⁷¹ and some—the subjective Bayesians—

⁶⁸ “The requirement that guilt of a criminal charge be established by proof beyond a reasonable doubt dates at least from our early years as a nation.” *In re Winship*, (1970) 397 US 358 at 362. “[The] demand for a higher degree of persuasion in criminal cases was recurrently expressed though ancient times, [though] its crystallization into the formula ‘beyond a reasonable doubt’ seems to have occurred as late as 1878.” Charles T McCormick, *Handbook of the Law of Evidence* (St. Paul, MN: West Publishing Co, 1954) at 681–82.

⁶⁹ Kenneth S Broun et al, eds, *McCormick on Evidence* vol 2 (St. Paul, MN: Thomson/West, 2006) at 487–90 [Broun et al]. The details may differ, but my understanding is that approximately the same structure is found in many legal systems. Not in all, however: according to Jean-Sébastien Borghetti, “Litigation on Hepatitis B Vaccination and Dymelinating Disease in France: Breaking Through Scientific Uncertainty in France,” in Diego Papayannis, ed, *Causation in Mass Torts* (Cambridge: Cambridge University Press, forthcoming) at 7 in typescript, “[f]acts do not have to be established ‘on the balance of probabilities,’ or ‘beyond a reasonable doubt.’ First and second instance judges freely decide if evidence is enough to consider a fact as established. Their appreciation is a matter of ‘*intime conviction*’ and may not be challenged before the *Cour de cassation* or the *Conseil d’Etat*.”

⁷⁰ Broun et al., *supra* note 69 at 483.

⁷¹ See, e.g., David Kaye, “Do We Need a Calculus of Weight to Understand Proof Beyond a Reasonable Doubt?” in Peter Tillers & Eric D Green, eds, *Probability and Inference in the Law of Evidence: The Uses and Limits of Bayesianism* (Dordrecht, the Netherlands: Kluwer, 1988) at 129–45; Richard Lempert, “The New Evidence Scholarship: Analyzing the Process of Proof” at 61–102 in the same volume [Lempert].

combine the two: degrees of proof are to be construed as mathematical probabilities, and mathematical probabilities are in turn to be construed as subjective degrees of belief.⁷² Others, myself among them, take degrees of proof to be *epistemological likelihoods*,⁷³ i.e., degrees of warrant of a claim by evidence.

How legal degrees of proof are best understood is not itself an epistemological question. It is, rather, a matter of understanding, for example, what is going on when standards of proof are spelled out in jury instructions and in instructions to judges about the circumstances in which they may preempt or override a jury verdict; and also requires reflection on why we need such standards at all. To keep things manageable, here I will comment, very briefly, only on jury instructions.⁷⁴

Sometimes these instructions sound subjective, as if they referred simply to jurors' degrees of belief: Florida jury instructions in criminal cases, for example, contrast "an abiding conviction of guilt" with a conviction that "wavers and vacillates";⁷⁵ and federal jury instructions speak of "a settled conviction of the truth of the charge."⁷⁶ But, as you see

⁷² See e.g., Michael O Finkelstein and William B Fairley, "A Bayesian Approach to Identification Evidence" (1969–70) Har L Rev 83 no 3 at 489–517; David Schum, *Evidential Foundations of Probabilistic Reasoning* (New York: John Wiley and Sons, 1994); Jay Kadane & David Schum, *A Probabilistic Analysis of the Sacco and Vanzetti Evidence* (New York: Wiley and Sons, 1996). Both Finkelstein and Fairley's article and Kadane and Schum's book are criticized in detail in Haack, *Legal Probabilism*, *supra* note 2.

⁷³ In ordinary English, of course, the words, "probability" and "likelihood" mean essentially the same thing, but I have adopted "likelihood" specifically for the epistemological meaning.

⁷⁴ My treatment here will be very sketchy—just enough to get the epistemology in focus. In Haack, *Legal Probabilism*, *supra* note 2, I give a much fuller discussion of jury instructions, of the circumstances in which a judge may grant JMOL (Judgment as a Matter of Law, the term now used to include both directed verdicts and judicial rulings overturning a jury verdict), and of the rationale for setting standards of proof.

⁷⁵ *Florida Standard Jury Instructions in Criminal Cases* 7th ed (Tallahassee, FL: The Florida Bar/LexisNexis, 2009), § 3.7 [*Florida Standard Jury Instructions*]. ("Conviction," here, of course means "degree of belief, degree of confidence in the truth of a proposition").

⁷⁶ Kevin F O'Malley et al., *Federal Jury Practice and Instructions: Criminal* 6th ed (Eagan, MN: Thomson/West, 2008) [O'Malley et al, *Federal Jury Practice*]; (and supplement 2010), vol 1A, §12.10, 165 (citing *United States v Cleveland*, 106 F.3d 1056 at 1062–1063 (1st Cir 1997)).

when you read on, what is intended can't plausibly be taken to be *simply* fact-finders' subjective degrees of belief: the Florida instructions continue with the warning that "*it is to the evidence introduced at this trial, and to this alone,*"⁷⁷ that jurors must look for proof; and the federal instructions explain that the "settled conviction" they refer to must be the result of "*weighing and considering all the evidence.*"⁷⁸ Jurors' degree of "conviction," in other words, should correspond appropriately to the strength of the evidence.

And sometimes these instructions sound probabilistic: federal jury instructions on the standard of proof in ordinary civil cases, for example, speak of the claim's being "more probably true than not true,"⁷⁹ and in explaining "clear and convincing" speak in terms of the claim's being "highly probable."⁸⁰ But degrees of proof can't plausibly be taken to be simple mathematical probabilities, either—as, again, you see when you notice that jurors are told that they must be "*persuaded by the evidence*"⁸¹ that it is more probable than not, or highly probable, that the conclusion is true; which suggests what is intended is epistemic likelihood, degree of warrant of the claim by evidence, and not mathematical probability.

This brief analysis of jury instructions confirms that legal degrees of proof are best understood in epistemological terms. And if this is right, what we need to understand degrees of proof is an epistemological theory, an account of what makes evidence stronger or weaker, a claim more or less warranted. Only a gradational theory, obviously, will be helpful here: a significant point, given that many epistemologists assume, explicitly or implicitly, that warrant or justification is categorical (and even Alvin Goldman, whose project began with a gradational understanding, soon retreated to a categorical approach).⁸² Moreover, given the frequent

⁷⁷ Florida Standard Jury Instructions, *supra* note 75 at § 3.7.

⁷⁸ O'Malley et al., *supra* note 76 at 165, my italics.

⁷⁹ Kevin F O'Malley et al., *Federal Jury Practice and Instructions: Civil* 5th ed (Eagan, MN: West Group, 2000); (and supplement 2010) vol 3 at §101.41, 13.

⁸⁰ *Ibid* at §104.03, 143.

⁸¹ *Ibid* at §101.41, 53 and §104.03, 143 (my italics).

⁸² See, e.g., Goldman, *What Is Justified Belief?* *supra* note 33 at 10, which acknowledges that justification is a matter of degree; and then notice that—as I pointed out in Haack, *Evidence and Inquiry*, *supra* note 17 at 197—as soon as Goldman modifies his initial definition to take account of anticipated objections, he seems to have closed off the possibility of accommodating degrees of justification.

references in jury instructions to the need for jurors to take account of the fact that potentially relevant evidence is missing, the evidence presented lacking in some relevant respect,⁸³ only a theory that goes beyond the supportiveness and independent security of the evidence at hand to appeal, in addition, to how comprehensive it is can be adequate to the task: another significant point, given that many epistemologists go no further than requiring that all the evidence currently available to a person or group of people be taken into account. So the foundherentist theory seems a strong candidate.

To deny that degrees of proof are mathematical probabilities is emphatically not to deny that statistical evidence—the random-match probabilities that by now are a routine part of DNA testimony, for example, or the epidemiological evidence common in toxic-tort cases, etc.—plays a significant role in many cases. But how statistical evidence is best accommodated in a theory of legal proof has been the subject of long-running disputes in which Bayesian approaches of various stripes (objective and subjective) have been dominant. So you may be wondering whether my approach can handle such evidence satisfactorily.

First, just to be clear: we can't *identify* the statistical probability that a match between the defendant's DNA and DNA found at the crime scene isn't random with the degree of proof that the defendant is not guilty, nor the relative risk that a person who has been exposed to this substance will develop this disorder with the degree of proof that this exposure caused the plaintiff to develop this disorder.⁸⁴ More generally, we can't equate statistical probabilities presented as evidence in a case with degrees of proof.

One very striking illustration of this point is the now-famous English case of Raymond Easton. Strong DNA evidence linked Mr. Easton to the crime of which he was accused; but he was so handicapped by advanced Parkinson's disease that he was physically incapable of having committed it.⁸⁵ Another way to illustrate the point would be by reference to cases like

⁸³ For example, in the Sixth Circuit juries are instructed that a reasonable doubt "may arise from the evidence, the lack of evidence, or the nature of the evidence." O'Malley et al, *Federal Jury Practice*, *supra* note 76 at 174.

⁸⁴ As I argue in "Risky Business: Statistical Proof of Specific Causation," in Haack, *Evidence Matters*, *supra* note 2 at 264–93 [Haack, *Risky Business*].

⁸⁵ Genewatch UK, "The Police National Database: Balancing Crime Detection, Human Rights and Privacy," online: (2005) Genewatch UK

Sargent (1940)⁸⁶ and *Smith* (1945),⁸⁷ where there was evidence of a high statistical probability that a bus on a certain route belonged to a certain company, and the question was whether this evidence was sufficient to establish that it was this company that operated the bus that caused an accident on this route. In both *Sargent* and *Smith* the courts ruled—correctly, in my opinion—that statistical evidence alone was *not* sufficient; and in *Smith*, we get a hint of why it isn't, in the court's observation that "[w]hile the defendant had the sole franchise for operating a bus line on Main Street (. . .) this did not preclude private or chartered buses from using this street."⁸⁸

True, if the mathematical probability that a bus on this route was operated by company A is high, this *supports* the claim that it was a company-A bus that caused the accident—to what degree depending on how high the statistical probability is. (Why so? Because what the statistical evidence tells us is that almost all the licensed buses on this route are run by company A, and “Mrs. Smith was injured by a bus on Main Street; almost all the buses licensed to serve Main Street were company-A buses; Mrs. Smith was injured by a company-A bus” is quite a nicely integrated explanatory story). But on my approach this is not sufficient to warrant Mrs. Smith's claim against company A. The statistical evidence may itself be more or less *independently secure*—more so if, e.g., it is based on a careful search of good records of what franchises were issued, less so if, e.g., it is based merely on the word of someone or other who answered a phone at the Town Hall. Moreover, as the court in *Smith* realized, if this is all the evidence we have, it is sadly lacking in *comprehensiveness*: we don't know, for instance, whether “gypsy” buses, not licensed by the municipality, also ply this route, and if so, how often; nor whether company-B buses, licensed on a different route, sometimes take a short-cut down this

<http://www.genewatch.org/uploads/f03c6d66a9b35453573848c1c3d49e4/NationalDNADatabase.pdf>>. See Haack, *Legal Probabilism*, *supra* note 2 at 94 for my founderentist analysis of the evidence in this case.

⁸⁶ *Sargent v Mass Accident Co*, 29 NE2d 825 (Mass 1940).

⁸⁷ *Smith v Rapid Transit Inc*, 58 NE2d 754 (Mass 1945).

⁸⁸ *Ibid* at 755.

stretch of Main Street; nor whether company-A drivers were on strike the day of the accident; nor, . . . , etc.⁸⁹

The same argument goes, *mutatis mutandis*, for statistical DNA evidence, epidemiological evidence, etc. But of course I chose the old bus cases for a reason. The “blue bus hypothetical,” based on *Smith*,⁹⁰ was a recurrent theme in what was known as the “New Evidence Scholarship,”⁹¹ which focused, for a while, on the contrast between “fact-based” and “story-based” approaches to proof. And as it happens, this was where I first got drawn into legal epistemology: a colleague interested in this debate, taking the fact-based vs story-based distinction to be more or less equivalent to the epistemological dichotomy of foundationalism vs coherentism, wondered if my foundherentism mightn’t be a possible resolution.⁹²

After a decade or so of work, I now see that my colleague was on the right track—though wrong on some of the details. Though neither was perfectly clear, the evidence scholars’ and the epistemologists’ distinctions were more different from each other than he may have realized. For one thing, “fact-based” seems to have referred to the various Bayesian approaches; for another, the “story-based” party, as represented by Prof Allen,⁹³ proposed not only a distinctive narrative conception of proof, but also the revisionary idea that what should matter is the comparative merits of plaintiffs’ and defendants’ explanatory stories. This would amount to a significant shift in the burden of (civil) proof, since as things stand now the

⁸⁹ For a detailed foundherentist analysis of another famous “naked statistical evidence” case, *People v Collins*, see Haack, *Legal Probabilism*, *supra* note 2, at 92–94.

⁹⁰ Charles Nesson, “The Evidence or the Event? On Judicial Proof and the Acceptability of Verdicts” (1984–5) 98 no 7 Harv L Rev at 1357–92, 1357 ff.

⁹¹ According to Lempert, *supra* note 71 at 61, before the Federal Rules of Evidence were ratified in 1975, evidence scholarship in the US was pretty much moribund; but in the wake of the FRE there was first a wave of discussions of details of the Rules, and then a new interest in evaluative questions about proof, self-described as the “New Evidence Scholarship.”

⁹² For a fuller version of the story, see Carmen Vázquez, “Entrevista a Susan Haack,” *Doxa*, 36 (2013) at 573–86.

⁹³ Ronald J Allen, “A Reconceptualization of Civil Trials” (1986) 66 BUL Rev at 401–437. Allen’s proposal was restricted to civil cases; however, a recent paper by Michael Pardo proposes the same comparative approach to criminal proof, an even more radical kind of revisionism. Michael Pardo, “Estándares de prueba y teoría de prueba,” in Carmen Vázquez, ed, *Estándares de prueba y prueba científica: ensayos de epistemología jurídica* (Barcelona: Marcial Pons, 2013) at 99–118.

defendant doesn't need to *have* an alternative explanatory story, but will prevail so long as the plaintiff's story doesn't meet the standard of proof. But in a larger sense my colleague was right: as he suspected, (i) my approach falls *neither* into the "fact-based" (Bayesian, probabilistic, atomistic), *nor* into the "story-based" (narrative, revisionary, more holistic) category; and (ii) it can provide a better understanding of degrees proof than either.

Moreover, as I showed in a 2008 paper,⁹⁴ my understanding of the key differences between real inquiry and pseudo-inquiry, and of the continuum of intermediate possibilities found in real life, suggests what is right about Judge Kozinski's argument that "litigation-driven" science is inherently less likely to be reliable than science conducted independently of litigation:⁹⁵ the desire to reach a predetermined conclusion (e.g., a pharmaceutical company's desire to reach the conclusion that its drug is harmless, or a plaintiff's desire to reach the conclusion that it was this drug that caused his child's birth defects, etc.) is, indeed, quite likely to threaten the honesty and thoroughness serious inquiry requires. However, the same applies to marketing-driven science, to university science funded by drug companies or other commercial outfits, *and* to the forensic sciences—for which Judge Kozinski expressly makes an exception.⁹⁶

And, as I argued in "Epistemology Legalized,"⁹⁷ my account of inquiry, pseudo-inquiry, etc., also suggests both what's right about Peirce's critique of adversarial procedures, and what's wrong. What's true is that an adversarial process would be far from ideal as a way to go about figuring out, say, the truth of some scientific question. But what a legal fact-finder is asked to determine is *not* whether the defendant did it, but whether this proposition has been established to the required degree of proof by the evidence presented; and—unlike scientific inquiry, which takes the time it

⁹⁴ Susan Haack, "What's Wrong with Litigation-Driven Science? An Essay in Legal Epistemology" (2008) in Haack, *Evidence Matters*, *supra* note 2 at 180–207.

⁹⁵ *Daubert v Merrell Dow Pharm Inc*, 43 F.3d 1311, 1317 (9th Cir1995) [*Daubert IV*].

⁹⁶ *Ibid* at 1317, n 5. See also Susan Haack, "Técnicas forenses, ciencia impulsada por litígios y el problema de los incentivos perversos: Lecciones a partir de la saga *Ramírez*" in Mónica María Bustamente Rúa, ed, *Derecho probatorio contemporáneo: Prueba científica y técnicas forenses* (Medellín, Colombia: Universidad de Medellín, 2012) at 333–40.

⁹⁷ Haack, *Epistemology Legalized*, *supra* note 20 at 51–55.

takes—legal decisions are made under significant constraints of time and resources and in light of competing desiderata and interests. Arguably, given those constraints and desiderata, an adversarial process that gives each side a strong incentive to seek out favorable evidence and to undermine, or find some different explanation for, apparently unfavorable evidence can be a good-enough way of arriving at factually sound verdicts given these exigencies. As I point out, however, this argument only works given certain assumptions, e.g., about how accurately plea-bargaining decisions reflect the likely upshot at trial—a matter which has subsequently been addressed by the US Supreme Court,⁹⁸ and has by now been the subject of a little empirical research,⁹⁹ and on the assumption that the two sides have roughly equal resources—which is rarely true in practice. Similarly, while it's true, as Bentham realized,¹⁰⁰ that comprehensiveness of evidence is an epistemological desideratum, it doesn't follow that exclusionary rules of evidence are simply epistemologically indefensible. For, again, it is arguable that, in the legal context, excluding certain kinds of evidence (e.g., the unnecessarily repetitive) may also be part of a good-enough way of arriving at factually sound verdicts¹⁰¹—though this obviously doesn't justify any particular exclusionary rule or set of such rules, which would each have to be argued on its merits.¹⁰²

V. LOOKING FORWARD TO NEW PROJECTS

I hope this sketch has been enough to show you something of how my epistemological theory can contribute to our understanding of evidentiary issues in the law. I don't expect, however, to run out of work any time soon; for there are numerous juicy problems in legal epistemology to which, as yet, I have no very satisfactory solutions.

⁹⁸ *Lafler v Cooper*, (2012) 132 S Ct 1376 (granting a new trial because ineffective assistance of counsel resulted in rejection of a plea offer, and the defendant was convicted at trial and received a more severe sentence than he would have served had he accepted the plea bargain).

⁹⁹ Lucian E Dervan & Vanessa A Edkins, "The Innocent Defendant's Dilemma: An Innovative Empirical Study of Plea Bargaining's Innocence Problem" (2013) 103, no1 J Crim L & Criminology 1 at 1–47.

¹⁰⁰ Bentham, *supra* note 23, vol 1, ch IX, X.

¹⁰¹ Haack, *Epistemology Legalized*, *supra* note 20 at 56–61.

¹⁰² Haack, *Risky Business*, *supra* note 84.

- **Testimony:** A very brief discussion in *Evidence and Inquiry*¹⁰³ acknowledged that much of what a person believes is the result of testimonial evidence, i.e., of the person's reading or hearing what someone else says or writes—combined with his belief that the someone else in question is well-informed, and has no incentive to deceit or concealment on the matter in question. Of course, I added, if he doesn't understand the other person's language, his reading what they write or hearing what they say won't contribute to his belief. The more sustained discussion of shared evidence in *Defending Science* suggested how to understand the degree of warrant of a claim for a group of people: start with the degree of warrant of that claim for a hypothetical individual whose evidence is the joint evidence of all the members of the group; but include the disjunctions (rather than the conjunctions) of disputed reasons; and then discount the degree of warrant by some measure of (i) the degree to which each member is justified in believing that the others are competent and honest and (ii) the degree of efficiency of communication within the group.¹⁰⁴ What light, I wonder, might all this shed on questions about the reliability of testimony that arise in legal contexts?
- **Expert Testimony:** Some of the special epistemological problems with evaluating the worth of expert testimony arise from the fact that much scientific and technical work requires its own distinctive, specialized vocabulary, comprehensible only to those who are familiar with its theoretical or technical context—a thought that extends the idea expressed above, that in general we can learn from others' testimony only if we understand it. But other special epistemological problems with evaluating the worth of scientific testimony arise, probably, from the difficulty of recognizing, if you are unfamiliar with a scientific field, what is relevant to what. Are there, I wonder, instances where misjudgments of relevance have been legally crucial? And how exactly do these ideas interlock with Learned Hand's observation, long ago, that there is a paradox at the heart of expert testimony: that this is "setting the jury to decide, where experts disagree"¹⁰⁵—when it is precisely because they have knowledge not possessed by the average juror that we need experts in the first place?

¹⁰³ Haack, *Evidence and Inquiry*, *supra* note 17 at 124.

¹⁰⁴ Haack, *Defending Science*, *supra* note 54 at 69–71.

¹⁰⁵ Hand, *supra* note 38 at 54.

- **The Misleading and the Unreliable:** FRE 403 (b) says that testimony is inadmissible if it would waste time or confuse or mislead the finder of fact. *Daubert* says that expert testimony is inadmissible if it is (irrelevant and/or) unreliable. At first blush, one might think the *Daubert* Court was trying to get at what makes expert testimony misleading; but on reflection it is clear that being misleading and being unreliable are *different* flaws. For one thing, evidence is not misleading in and of itself, but only in the context of other evidence;¹⁰⁶ whereas “unreliable” doesn’t have this contextual character. It would be helpful, I think, to articulate when, and why, even reliable testimony might, nevertheless, be misleading.
- **“Weight of Evidence Methodology”:** In a recent US case, *Milward v Acuity Special Products*,¹⁰⁷ where a federal appeals court revisits the issue of the weight of combined evidence, we find several different understandings of “weight of evidence methodology”: (i) as suggested by Dr. Smith (the proffered plaintiff’s expert toxicological witness, the admissibility of whose evidence was at issue), who said he was using the methodology proposed by Austin Bradford Hill;¹⁰⁸ (ii) as suggested by a self-described expert on scientific method; and (iii) as suggested by the court’s own reasoning. Do any of these different understandings, I wonder, shed real light on the issue, and if so, which, and how?
- **International Daubert:** Since the US Supreme Court made its ruling on the standard of admissibility of expert scientific testimony, not only has *Daubert* been adopted by many states in the US, but its influence has also been felt in other jurisdictions: in Canada,¹⁰⁹ for example, and in England and Wales;¹¹⁰ and in some civil-law countries, including

¹⁰⁶ As I argued in “‘Know’ is Just a Four-Letter Word,” *supra* note 31 at 321–24.

¹⁰⁷ *Milward*, *supra* note 41.

¹⁰⁸ *Ibid* at 17. See Austin Bradford Hill, “The Environment and Disease: Association or Causation?” (1965) 58 *Proceedings of the Royal Society of Medicine* at 295–300; and, for a detailed discussion of Hill’s contribution, Haack, “Correlation and Causation: the ‘Bradford Hill Criteria’ in Epidemiological, Epistemological, and Legal Context,” in Susan Haack, *Evidence Matters: Science, Proof and Truth in the Law* (New York: Cambridge University Press, 2014) at 239–263.

¹⁰⁹ *R v J (J-L)*, [2000] 2 SCR 600 interpreted *R v Mohan*, [1994] 2 SCR 9 as requiring that novel scientific testimony meet a threshold reliability requirement, and listed indicia of reliability almost identical to the *Daubert* factors.

¹¹⁰ Law Commission Report No. 325 on Expert Evidence in Criminal Proceedings, Feb. 21, 2011, urged that there be a “statutory reliability test,” providing that experts’ testimony is admissible only if it is “sufficiently reliable to be admitted,” and that trial

Italy,¹¹¹ Mexico,¹¹² and Colombia.¹¹³ Each time, however, it seems to have been modified, subtly or not-so-subtly. The Colombian version, for example, replaces Justice Blackmun’s quasi-Popperian references to “testability” by distinctly un-Popperian talk of “verification”; and the Law Commission for England and Wales proposes requiring that admissible expert evidence be not (as *Daubert* says) “reliable,” but “reliable enough”—thus acknowledging, as *Daubert* did not, that reliability comes in degrees: insofar, an advance, but unfortunately also risking making the reliability requirement essentially vacuous. So there are interesting questions about which, if any, of these is epistemologically better, and which, and why.

Obviously, this list is by no means exhaustive; there are plenty of other legal-epistemological questions to which sound answers would be welcome. How, for example, should we think about physical evidence? (I’m not sure, exactly; but it strikes me that such evidence doesn’t stand mute in court, but plays its role by way of attorneys’ descriptions of relevant features—“look how neatly the head of this spanner matches the crack in the victim’s skull,” “see how utterly dissimilar this signature is from this other one, which we know is really X’s,” and so forth). Or, again: can we say anything about whether, in general, a group of people, such as a jury, is likely to be better at assessing the weight of evidence than a single person,

judges be provided with “a single list of generic factors to help them apply the reliability test.” Note added in proof: in 2013 the government declined to implement the proposal, observing that “application of the text would involve additional pre-trial hearings, with the concomitant additional costs, but without sufficient reliably predictable savings to compensate for these costs.” Ministry of Justice (England and Wales), 2013. “The Government’s response to the Law Commission report, ‘Expert evidence in criminal proceedings in England and Wales’” (November 21, 2013).

¹¹¹ Cass. Pen., sez. IV, 13 Dicembre 2010, n. 43786 (acknowledging and amplifying ideas from *Daubert*).

¹¹² Conocimientos Científicos. Características que deben tener para que pueden ser tomados en cuenta por el juzgador al momento de emitir su fallo, Suprema Corte de Justicia [SCJN] [Supreme Court], *Semanario Judicial de la Federación y Su Gaceta*, Novena Época, tomo XXV, Marzo de 2007, Tesis Aislada 1a. CLXXXVII/2006, Página 258 (Mex.) (arguing that admissible scientific testimony must be both relevant and reliable (“fidedigna”), and listing indicia of reliability strongly reminiscent of the *Daubert* factors).

¹¹³ Article 422 of the Código de Procedimiento Penal lists indicia of reliability strongly reminiscent of the *Daubert* factors, satisfaction of at least one of which is required for the admissibility of new scientific evidence and scientific publications. Código de Procedimiento Penal [CPP] art 422.

such as a judge? (I am tempted to say no, that it depends on the particular jury and the particular judge; but it should be possible to say more about when a group might do better, and when not). Or, again: can I shed any light on what it means to describe a jury as “impartial”? And so on.

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The emphasis here has been on the usefulness of epistemology to the law; but I certainly don't mean to suggest that the law can't also be useful to epistemology. On the contrary: thinking about real-life evidentiary issues can be extremely helpful to an epistemologist—not least because philosophy so often confines itself to an unsatisfying diet of simplified, made-up examples, while the law provides ample illustration of just how complicated, ambiguous, tangled, and confusing real-life evidence can be. The “niche” epistemology fashionable today puts me in mind of John Locke's shrewd observation about “those who readily and sincerely follow reason, but (. . .) have not a full view.” Such people “have a pretty traffic with known correspondents in some little creek,” he comments, “but will not venture into the great ocean of knowledge.”¹¹⁴ A more robust two-way traffic between legal practice and epistemological theory, I believe, could benefit both parties.

¹¹⁴ John Locke, *The Conduct of the Understanding*, in *Posthumous Works of Mr. John Locke* (London: A & J Churchill, 1706) at 1–137, 9–10.