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LEGAL EPISTEMOLOGY AND LEGAL PROOF

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ABSTRACT: This article examines the relationship between legal epistemology and legal proof. On the one hand, there has been an explosion of recent scholarship applying philosophical ideas, concepts, and arguments from epistemology to the law of evidence and the process of proving facts in legal settings. On the other hand, there has been ongoing theoretical debates about the law itself, focusing on the best understanding of the evidentiary proof process and its component parts (including the law of evidence). These are distinct, but related, theoretical projects.

The article begins by presenting a picture of legal proof in the United States. The discussion focuses on details of the evidentiary proof process that have been relatively neglected in legal epistemology. These details include the explanatory structure of the proof process; the role of the parties in the adversarial system; and how courts evaluate the sufficiency of evidence. In light of the picture of legal proof presented, the article then examines legal epistemology by the philosopher Larry Laudan. A number of lessons emerge from this discussion for applying epistemology to evidence law and legal proof. Finally, the article applies these lessons to other issues in recent legal epistemology, including: statistical evidence; the "preponderance of the evidence" standard; epistemic safety; knowledge; and epistemic injustice.

* Scott K. Ginsburg Professor of Evidence Law, Georgetown University Law Center. This article is based on my plenary lecture at the 2nd Michele Taruffo Girona Evidence Week in June 2025. I was fortunate to meet Michele Taruffo at a conference in Girona in 2011 and to have engaged with him in print in a 2019 symposium. I was honored to give a lecture at the conference bearing his name. My thanks to Jordi Ferrer Beltran and Diego Dei Vecchi for inviting me to deliver the lecture and to the conference participants for many helpful comments and questions. My thanks also to Ron Allen, Meredith Render, and two anonymous referees for helpful comments on previous drafts. Both this article and my lecture are dedicated to the memory of Larry Laudan—whom I am grateful to have known and to have learned so much from.

KEYWORDS: Legal proof, standards of proof, sufficiency of evidence, probative value, legal epistemology, Larry Laudan, inference to the best explanation, error allocation, error reduction, statistical evidence, preponderance of evidence, safety, knowledge, epistemic injustice

1. INTRODUCTION

This article examines the relationship between legal epistemology and legal proof. On the one hand, there has been an explosion of recent scholarship applying philosophical ideas, concepts, and arguments from epistemology to the law of evidence and the process of proving facts in legal settings. On the other hand, there has been ongoing theoretical debates about the law itself, including the best understanding of the evidentiary proof process and its component parts (including the law of evidence). It is important to recognize these as distinct, but related, theoretical scholarly projects. By "legal epistemology," I mean the use of philosophical concepts and ideas from epistemology—for example, knowledge, justification, warrant, safety, sensitivity, and epistemic injustice—to illuminate aspects of legal evidence and proof. By "legal proof," I mean the formal process, regulated by the law of evidence, by which contested or disputed legal facts are considered to be "proven" for legal purposes.

The discussion will be broad in scope. I will try to sketch out some of the possibilities for, and some of the limitations on, using epistemology to understand the law. Work in legal epistemology by the philosopher Larry Laudan will be used as a detailed example to ground the analysis. Then, the discussion will apply lessons from the analysis of Laudan's scholarship to other recent work in legal epistemology. But first, the article will present a picture of legal proof and some of the possible ways in which epistemology may illuminate the evidentiary proof process.

Three caveats are necessary. First, the discussion is not meant to be a comprehensive overview of the ways in which epistemology can contribute to understanding legal proof. Rather, the article aims to present one particular vision in which "legal epistemology" is understood as continuous with "evidence theory" (or theoretical accounts of evidence law) more generally.[1] In this vision, epistemology brings an ad-

[1] This is a very loose reference to the philosopher W.V. Quine's notion of philosophy as "continuous with science" (Quine, 1969, p. 126). The only similarity to the Quinean project that I wish to emphasize is the following. In the vision presented, legal epistemologists are essentially in the same boat as evidence scholars generally in trying to make sense of the part of reality dealing with law's evidentiary proof practices—with the former focused on some of the more abstract aspects of that reality and brin-

ditional set of conceptual tools and ideas—alongside the tools from other academic disciplines—that may help us to better understand legal proof (and thus also perhaps to critique and improve it).

Second, the focus in this article is on ways in which epistemology may contribute to understanding law, not the other way around. A potentially apt methodological notion from the philosopher W.V. Quine is the idea of "reciprocal containment" (Quine, 1969, p. 83). Quine was referring to the relationship between epistemology and psychology in his image of "naturalized epistemology"—with epistemology containing and making use of psychology and other empirical information, and psychology simultaneously containing and studying aspects of epistemology. I am suggesting a similar kind of "reciprocal containment" between law and epistemology—with law making use of epistemology to the extent that it, like other tools, helps to illuminate law, and with epistemology studying law as an example of an important institutionalized epistemic context, among other social epistemic practices. A corollary of this relationship is that there may be reasons *internal* to philosophy for philosophers to discuss law and legal examples that do not necessarily shed much, if any, light on legal proof. But that is not the focus of this article. The focus is on what use (pragmatic or theoretical) epistemology may have for law.

Third, the discussion will focus on evidence and legal proof in the United States.[2] I am not a legal comparativist, and the discussion will not attempt to compare proof practices among different legal systems. Nevertheless, the article aims to reveal some general lessons through a sustained focus on legal proof in the United States. Indeed, as the article will emphasize, part of the challenge—and a potential limitation with applying epistemology to law—is the risk of mismodeling or misdescribing the complex practices, rules, and doctrine that make up legal proof in particular jurisdictions. To illustrate this, I will often use as examples standards of proof and the epistemic sufficiency of evidence in the United States.

The article proceeds as follows. Part 2 spells out a general picture of legal proof in the United States. Part 3 discusses the legal epistemology of Larry Laudan, with a particular focus on standards of proof. Part 4 applies the lessons from the analysis in Part 3 to recent work in legal epistemology. This Part discusses five examples: statistical evidence, the "preponderance of the evidence" standard, epistemic safety, knowledge, and epistemic injustice. Part 5 concludes with some general reflections on the relationship between legal epistemology and legal proof.

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ging to bear a set of philosophical tools and concepts. But, in the vision presented, there is no clear demarcation between the two enterprises (legal epistemology and evidence theory), nor does epistemology necessarily provide a privileged *a priori* foundation or vantage point by which to assess those practices.

[2] This is itself somewhat of an over-simplification, as there is some variation in the evidence law and proof practices among the different State jurisdictions in the United States. My focus will be on legal proof at the federal level and the constitutional issues that apply generally throughout the United States.

2. A PICTURE OF LEGAL PROOF

By "legal proof," I mean the formal process, regulated by the law of evidence, by which contested legal facts are "proven" (or not) for legal purposes.[3] The formal process of legal proof has many component parts. These include the practices of various actors as well as official rules and legal doctrines. These practices, rules, and doctrines vary across jurisdictions. In order to reduce some of this complexity and variance, I will start by introducing a simple picture of legal proof: *The presentation of evidence, on one hand, in light of a burden and standard of proof, on the other*. In this simple picture, a fact has been proven when the "probative value" (or strength or quality) of the evidence satisfies or surpasses the applicable standard of proof, and an alleged fact has not been proven when it falls short of the standard.[4]

In the United States, there are three common standards of proof: "preponderance of the evidence" (POE), "clear and convincing evidence" (CCE), and "beyond a reasonable doubt" (BARD).[5] Although the standards are employed with relatively vague, open-ended, and sometimes ambiguous language, they are intended to impose increasingly higher burdens on the party with the burden of proof. Among the three, BARD is the highest, POE is the lowest, and CCE is an intermediate standard.[6] As matter of legal doctrine, the standards apply to each of the *elements* of a crime, civil cause of action, or an affirmative defense. The basic policy idea behind the standards of proof is that the preponderance standard aims to treat the parties roughly equally with regard to the risk of error[7]—by favoring whichever side the evi-

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[3] There is a sense of the word "prove" that is factive. In other words, in this sense, something can be "proven" only if it is true—a false proposition cannot be "proven." To be clear, this is *not* the sense in which I am using "prove" in the context of legal proof. Rather, a disputed factual proposition is "proven" for legal purposes when a party has satisfied a *burden of proof*, and a fact is not "proven" when they fail to do so. When a party has satisfied a burden of proof, the fact is considered "proven" for subsequent legal purposes (*i.e.*, it is treated *as true* by the law for purposes of attaching legal consequences). But propositions "proven" within the process of legal proof might, in fact, be false.

[4] In the United States, "probative value" is an important concept for both admissibility and sufficiency of evidence. See Federal Rule of Evidence 403 (giving the trial judged discretion to exclude an item of evidence when its probative value is substantially outweighed by one or more "dangers" such as unfair prejudice, confusing the issues, misleading the jury, or efficiency considerations). Whether evidence is sufficient or not to meet a standard of proof depends on what a "reasonable jury" could conclude about the probative value of the evidence as a whole. See Pardo (2023a); Pardo (2013).

[5] Standards of proof specify the standard of *persuasion* for the party with the burden of proof on the elements of a civil cause of action, a crime, or an affirmative defense. See Colorado v. New Mexico, 467 U.S. 310, 315 (1984); Addington v. Texas, 441 U.S. 418, 423 (1979) ("the evolution of this area of law has produced across a continuum three standards or levels of proof for different types of cases.").

[6] *Ibid*.

[7] See E.M.D. Sales, Inc. v. Carrera, 604 U.S. 45, 50 (2025) ("the preponderance-of-the-evidence standard has remained the default standard of proof in American civil litigation. That default makes sense: The preponderance standard allows both parties in the mine-run civil case to share the risk of error in roughly equal fashion.")

dence appears to support—with higher standards such as CC and BARD attempting to skew the risk of error in a particular direction.[8] Thus, in the simple picture of legal proof: *the law asks a fact-finder (judge or jury) to decide, based on the admissible evidence, whether the disputed fact (a legal element) is proven to the applicable standard of proof (POE, CCE, or BARD).*

Epistemology may help to illuminate different aspects of this picture. It may reveal something about qualities of the evidence itself—for example, its relevance or probative value. Or it may illuminate aspects of the standards of proof and what they require. Or it may help illustrate how the evidence and the standard of proof fit together and the reasoning that connects them. In thinking about the different possible ways in which epistemology may apply to legal proof, a helpful distinction is one between *micro-level* and *macro-level* analysis of the proof process.[9] Micro-level analysis focuses on individual items of evidence and may be useful for answering questions about relevance, probative value, or the application of various admissibility rules. Macro-level analysis focuses on cases as a whole and may be useful for answering questions about burdens and standards of proof, the sufficiency of evidence, and the application of evidentiary presumptions.[10]

In the abstract, epistemology is potentially a source of illumination or understanding for legal proof for the simple reason that legal fact-finding could be epistemically better or worse. There are different kinds of decision-making errors that could be made in the legal proof process—examples include: errors in assessing the relevance or probative value of items of evidence; errors in concluding whether or not the evidence as a whole meets a standard of proof; and, ultimately, errors in whether the facts that have been "proven" (or not) for legal purposes, in fact, match or correspond with reality.[11] But moving from abstract possibilities to particular legal systems requires a detailed understanding of the legal reality. In other words, in order to understand how epistemic issues arise in law, it is important to fill in additional details to our simple picture, if the analysis is intended to shed light on or help us to understand the law.

As an example, I will focus on the issue of the sufficiency of evidence. In the United States, an important, recurring issue in both civil and criminal cases is whether the evidence is sufficient to support a contested factual finding.[12] In assessing the suffi-

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[8] See Cruzan v. Missouri Dep't of Health, 497 U.S. 261, 283 (1990) ("The more stringent the burden of proof a party must bear, the more that party bears the risk of an erroneous decision."); In re Winship, 397 U.S. 358, 371 (1970) (Harlan, J., concurring).

[9] See Pardo (2013, p. 562-69).

[10] There is some porousness in the distinction between the micro- and macro-levels. For example, an evidentiary presumption might apply to both individual items of evidence at the micro-level and also might affect the sufficiency of evidence at the macro-level.

[11] See note 3, *supra*.

[12] One exception is acquittal in a criminal case—which is not subject to sufficiency-of-evidence review in order to protect the jury's constitutional power to nullify (or to refuse to convict despite the evidence meeting the standard of proof).

ciency of evidence, as a matter of legal doctrine, courts in the United States generally ask whether a "reasonable" or "rational" jury could (or must), based on the evidence, find the disputed fact to the standard of proof.[13] For example, could a reasonable jury in a civil contract lawsuit find for the plaintiff by a POE? Or in a criminal case, could a reasonable jury find for the prosecution BARD? If a reasonable jury could not find for a party—and therefore must find for the opponent, given the evidence and the standard of proof—that will generally end the case.[14] Sufficiency assessments of the evidence by judges are critically important pre-trial, during trial, and post-trial. These rulings may decide whether a case gets to trial in the first place; whether a trial goes to a jury for decision; or whether a jury verdict is allowed to stand or is overturned as a matter of law.[15]

Decisions by judges on the sufficiency-of-evidence question are essentially *epistemic* determinations (as are fact-finding decisions at trial). Sometimes the evidence is strong enough, and sometimes not, given the applicable standard of proof. Importantly, sufficiency determinations are also decisions about whether a contested fact has been "proven" or not for legal purposes—and thus these determinations are an integral part of legal proof.[16]

In order to understand the epistemic sufficiency of evidence in the United States, it is also necessary to understand two related aspects that structure the proof process. These aspects are (1) the adversarial system, and (2) the fact that the proof process is structured around competing possible explanations of the disputed events and the evidence. In addition to relying on the parties to present (and object to) evidence, according to the "party presentation" and "master of the case" principles, parties provide explanations that purport to explain disputed events in light of the evidence.[17] The parties use evidence and arguments to support or challenge these explanations, and fact-finders evaluate and select among these explanations (although they are permitted, but not required, to construct their own explanations) (Pardo & Allen, 2008; Amaya, 2019). According to the "relative plausibility" account of legal proof that Ron Allen and I have defended: as a descriptive matter, we can best understand

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[13] See Jackson v. Virgina, 443 U.S. 307, 319 (1979); Reeves v. Sanderson, 530 U.S. 133, 149-53 (2000).

[14] See Federal Rule of Civil Procedure 56 (authorizing motions for summary judgment based on insufficient evidence); Federal Rule of Criminal Procedure 29 (authorizing motions for judgment of acquittal based on insufficient evidence).

[15] For example, a court may grant summary judgment to a party pre-trial, see Federal Rule of Civil Procedure 56; a court may grant a judgment as a matter of law to a party at the close of evidence (and thus not send the case to the jury), see ibid at Rule 50; or a court may grant a judgment as matter of law after a trial (despite a jury verdict to the contrary), see *ibid*.

[16] See note 3, *supra*.

[17] See United States v. Sineneng-Smith, 140 S. Ct. 1575, 1579 (2020) ("In our adversarial system of adjudication, we follow the principle of party presentation."); Greenlaw v. United States, 554 U.S. 237, 243 (2008) ("in both civil and criminal cases … we rely on the parties to frame the issues for decision and assign to courts the role of neutral arbiter of matters the parties present."). For further discussion of these principles, see Allen, Pardo, Lawrence & Smiciklas (2025, p. 283-92).

the standards of proof as providing explanatory thresholds or explanatory burdens within this process (Allen & Pardo, 2019a; Allen & Pardo, 2019b). The preponderance standard requires having the better or the best of the competing possible explanations. Higher standards impose higher explanatory thresholds—for example, a plausible defense explanation may raise a reasonable doubt even if it is not better than the prosecution's explanation.

Similar to fact-finding at trial, courts evaluate the sufficiency of evidence in light of explanatory considerations (Pardo, 2023a). For example, in a civil case under the preponderance standard, a court evaluates whether a "reasonable jury" could find the plaintiff's explanation better than the alternatives based on the evidence. In making sufficiency determinations, courts refer to explanatory relationships between the evidence and the explanations of the parties. These include (1) consistency and inconsistency between evidence and explanations; (2) the absence of evidence to support important parts of explanations; (3) counterfactual considerations; (4) fit with background knowledge; and (5) the absence of plausible alternatives (Pardo, 2023a, p. 453-54). The epistemic evaluation in sufficiency determinations falls in between two extremes. On one hand, it is not purely *objective* in the sense that courts are discovering objective conditional probabilities (i.e., the "objective" probability of the disputed fact, given the evidence). On the other hand, the process is not purely *subjective* either, in the sense that all decisions are considered to be "reasonable" or "rational" no matter how weak the evidence. The former is a type of epistemic fantasy and the latter is a type of epistemic nightmare. The reality of sufficiency review is an epistemic practice between these extremes.

For the discussion to follow, it is important to notice three important details about the picture of legal proof spelled out in this Part:

— First, the threshold for epistemic sufficiency is a *minimal* one.[18] Courts do not attempt to discern the optimal or maximally rational decision in light of the evidence. Courts ask whether a "reasonable" jury *could* find for the party with the burden of proof on that issue.[19]

— Second, in general the epistemic context is a *permissive* one. In cases that proceed to a jury verdict following a trial, either outcome is epistemically permissible (the evidence is "sufficient" to support either finding).[20]

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[18] See Allen, Pardo, Lawrence & Smiciklas (2025) for further discussion of how "minimal rationality" best explains the law of evidence in the United States.

[19] See note 13, *supra*.

[20] See notes 12-15, *supra*. Smith (2018, p. 1205-06) argues that there is something problematic about two courts reaching different verdicts based on similar evidence ("If two courts were presented with equivalent bodies of evidence against two individuals charged with equivalent crimes, could it really be acceptable for them to reach *different* verdicts … there seems to be something *viscerally* bad about such a turn of events"). But, within the United States, the permissibility of either verdict is what allows for the case to proceed to trial in the first place (or go to a jury following a trial). If only one verdict were permissible based on the evidence, then this would be a reason to end the case as a matter

— Third, the process is highly dependent on the adversarial system. The parties are responsible for producing evidence and for providing the competing explanations that will structure the proof process. Judges and juries can decide based on explanations not advanced by the parties (but they are not required to).

These are facts about legal proof in the United States and how it is structured. This Part spells them out in detail because, in my view, they have been neglected in recent epistemological discussions of legal proof—which have focused primarily on fact-finding at trial and in determining the epistemically correct outcome. Focusing solely on the latter issues, however, misses the broader context for when evidence is epistemically sufficient and, thus, when facts are "proven" for legal purposes. Epistemology may, of course, provide reasons to critique the features or practices that I have spelled out. And nothing in the analysis to follow assumes that the picture of legal proof presented, or any of its constituent features, cannot be put into question by epistemological analysis. But when epistemology is being used to try to illuminate or help us understand aspects of legal proof—or when normative or prescriptive epistemological analysis relies on assumptions about features of legal proof—there is a risk of mismodeling the object of inquiry by missing this broader context.

Parts 3 and 4 now turn from this picture of legal proof to legal epistemology. The article next discusses work by Larry Laudan and then turns to other examples in recent legal epistemology. The aim is to illustrate both positive ways in which epistemology can illuminate legal proof as well as some limitations on using epistemology to understand aspects of legal proof.

3. THE LEGAL EPISTEMOLOGY OF LARRY LAUDAN

After a distinguished career as a philosopher of science,[21] Larry Laudan later in his life turned to law and legal proof—with a particular focus on criminal law and standards of proof in the United States. Despite the implicit connections between evidence law, legal proof, and epistemology, when Laudan turned his attention to law, modern evidence scholarship had not made extensive use of modern work in epistemology. There were, of course, exceptions, going back at least to Jeremy Betham (1843) who wrote that, "the field of evidence is no other than the field of knowledge."[22] But in his 2006 book, *Truth, Error, and Criminal Law: An Essay in*

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of law. See notes 13-14, *supra*. The only reason for a criminal trial to proceed to a jury verdict in such a circumstance would be to preserve the jury's power to acquit even if the evidence appears to satisfy the standard of proof. If, on the other hand, the evidence is insufficient, and acquittal is the only permissible outcome, then the case should not proceed.

[21] For an excellent overview of Laudan's many contributions to the philosophy of science, see Psillos (2023).

[22] See also Twining (2019).

Legal Epistemology, Laudan was able to write, plausibly, that "[l]egal epistemology … scarcely exists as a recognized field of inquiry" (p. 2).[23]

Laudan set out to change this state of affairs. And he was largely successful in this endeavor. In my view, he was partly responsible for the explosion in scholarly work on legal epistemology in recent years.[24] In her biography on HLA Hart, Nicola Lacey (2004, p. 151) quotes Hart as describing his own work as, "sell[ing] just a little philosophy to the lawyers."[25] But, as John Mikhail (2007, p. 763-64) has argued, Hart's legacy also includes "selling law to the philosophers" and "thereby transforming the discipline of analytic philosophy itself."[26] We can say something similar about Larry Laudan and the field of legal epistemology: he both sold some epistemology to the evidence scholars, and he sold some evidence law to the philosophers. And the explosion of work in legal epistemology in the past couple of decades by both evidence scholars and by philosophers is a testament to his legacy. It is thus no longer true, as Laudan wrote in 2006, that "[l]egal epistemology scarcely exists as a recognized field of inquiry" (p. 2).[27]

The discussion in this Part will first mention some of Laudan's insights in legal epistemology. Then, it will focus on some limitations in his analysis for understanding legal proof, based on the picture of legal proof outlined in Part 2. (Part 4 will illustrate how the critique and similar limitations arise in other recent work in legal epistemology.)

Important insights from Laudan's work include the following:

— Laudan argued that legal standards of proof should focus less on the subjective state of mind of the fact-finder (such as doubt, belief, certainty) and should focus more on the features of the evidence that would justify or warrant someone

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[23] Laudan (2006, p. 2) viewed his work on law as "applied epistemology" or "the study of whether systems of investigation that purport to be seeking the truth are well engineered to lead to true beliefs about the world." For a different conception of legal epistemology—one that sees epistemic properties in possible tradeoffs with accuracy—see Enoch, Fisher, & Spectre (2021).

[24] Laudan was helped in this endeavor by several other philosophers, including: Alvin Goldman, Judith Thomson, Jonathan Cohen, Susan Haack, Brian Leiter, Fred Schauer, and Scott Brewer, among many others. But in my view Laudan's work was critical in spurring interest in legal epistemology. In addition to his scholarship, Laudan also helped to generate interest in legal epistemology by hosting conferences in Mexico City that brought together legal scholars and philosophers from around the world. I was fortunate to be able to participate in two of them (this is where I first met Larry in person).

[25] Lacey (2004, p. 155-78) describes the methodological shift toward analytic philosophy that Hart helped to bring about for legal theory.

[26] See also Mikhail (2007, p. 764) ("Drawing on his background as a lawyer, Hart imported a much-needed practical sensibility into [ordinary language philosophy] at a time that it risked becoming stale and complacent. He also exerted a powerful influence on his students and colleagues, including Austin, which has not always been fully appreciated.").

[27] See note 23, *supra*. See also Enoch, Fisher, & Spectre (2021, p. 85) ("Legal epistemology seems to be exploding. More and more philosophers seem to be taking an interest in the theory of evidence law, and to bring along with them to legal theory the freshest news from the abstract study of epistemology").

in holding a particular state of mind.[28] This analysis usefully drew attention to the epistemic dimensions of legal proof.[29]

— In theorizing about errors in legal proof, Laudan explained and illustrated an important distinction between: *probatory* and *material* errors (Laudan, 2006, p.12). A fact-finder might error in applying the standard of proof (for example, finding a defendant guilty BARD when the evidence does not warrant that conclusion) or a fact-finder might error by making a finding that does not match reality. The former is a *probatory* error and the latter is a *material* error. Laudan clarified that neither type of error implies the other (and that evidence theory often confuses the two).[30]

— Laudan clarified and illuminated the presumption of innocence (Laudan, 2016, p. 90-109). He argued, persuasively in my opinion, that the presumption is best understood as a *probatory* epistemic blank slate, and not as itself evidence or as a presumption about material innocence.

— Laudan's work (some co-authored with Ron Allen) usefully illustrated some of the costs associated with false acquittals in criminal cases as well as the conceptual limits of Blackstone ratios when justifying standards of proof.[31]

My critique will focus on two related aspects of Laudan's analysis of standards of proof in the United States (the legal system that was the primary focus of his legal epistemology). The first aspect concerns Laudan's attempt to isolate the policy justifications and goals for standards of proof. The second aspect concerns an assumption that standards of proof (or their outcomes) can be specified with precision. Each aspect is discussed in turn.

3.1. Error allocation and error reduction

Laudan's analysis of standards of proof attempted to reduce and isolate features of the law that cannot be reduced and separated from the proof process as a whole. To this end, Laudan argued in favor of two related claims (1) that the sole function of standards of proof should be to allocate or distribute fact-finding errors between the parties, and (2) that no other rules or practices should serve this function.[32]

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[28] See Laudan (2006, p. 31) ("The most earnest jury, packed with twelve people desirous of doing the right thing and eager to see that justice is done, are left dangling with respect to how powerful a case is required before they are entitled to affirm that they believe the guilt of the defendant beyond a reasonable doubt").

[29] Standards of proof have both psychological and epistemological aspects—the former concerns if and when the fact-finder is persuaded that the standard is met; the latter concerns if and when the fact-finder ought to be persuaded.

[30] *Ibid*. In other words, there can be a probatory error without a material error, and there can be a material error without a probatory error.

[31] See Laudan (2016); Allen & Laudan (2008).

[32] This was a consistent theme is his analysis. See Laudan (2006, p. 76); Laudan (2015, p. 4); Laudan (2016, p. 110-37).

In defending the first claim, Laudan asserted that: "the standard of proof is not … an error *reducing* device" and that it functions solely to "shift the errors that do occur in a direction that reflects their respective costs" (Laudan, 2015, p. 4 [emphasis added]).[33] As a conceptual or analytical matter, this is incorrect. In addition to *allocating* the risk of error, standards of proof may also affect the total number of errors a system creates. For example, the preponderance standard is thought, under certain conditions, to *reduce* total errors.[34] Therefore, raising a standard of proof above the preponderance standard may, as a consequence, produce more overall errors.[35] In addition to error allocation, error reduction is thus also an important policy goal when considering standards of proof.[36]

In defending the second claim, Laudan argued that all error *allocation* should be funneled into the standard of proof. Therefore, he argued, all other evidence rules or practices that had some asymmetric affect (*i.e.*, systemically favoring one side or the other) should be eliminated. He referred to rules and practices having this effect as "burden enhancers" and "burden reducers" and called for their elimination from the process of proof.[37] This is an interesting and illuminating philosophical exercise, but it is a kind of epistemic fantasy.[38] It would be virtually impossible to eliminate every possible rule or practice that might systematically help one side more than the other. And in the United States, which was Laudan's primary focus, this is a non-starter because many of the burden-enhancing rules and practices are constitutional rights for criminal defendants under the Fourth, Fifth, and Sixth Amendments of the United States Constitution. There is an elegance to Laudan's analysis on this issue, but it is more realistic—and more helpful from an evidence-scholar perspective—to focus on the risk of error in the system as whole, with standards of proof as one component.[39] This is because of the second aspect of the analysis discussed below.

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[33] Laudan argued that other rules (such as admissibility rules) should focus on the goal of error reduction. Ibid.

[34] See United States v. Fatico, 458 F.3d 388, 403 (E.D.N.Y. 1978) (Weinstein, J.) ("As a general rule, a 'preponderance of the evidence' standard is relied upon in civil suits where the law seeks … to minimize the probability of error"); see also Cheng & Pardo (2015).

[35] This follows from the fact that some factual findings will be more likely true, given the evidence, but will be taken to be false (or not "proven") by the law.

[36] This is why the United States Supreme Court has adopted the POE standard for the application of admissibility rules in the *Federal Rules of Evidence*, in both civil and criminal cases. See Bourjaily v. United States 483 U.S. 171 (1987); Huddleston v. United States, 485 U.S. 681 (1988). See also Pardo (2023b)

[37] For a detailed list and discussion of "burden enhancers" and "burden reducers," see Laudan (2016, p. 110-37).

[38] In some ways, the project is similar to objective probabilistic accounts of legal proof in that the conditions for its implementation seem to be impossible to realize in practice. See Pardo (2023a, p. 444-46).

[39] Note that there is no analytical reason why error allocation must be located in one rule (the standard of proof) as opposed to two, three, ten, or a hundred rules. See Pardo (2007, p. 372). Laudan assumed this reduction because, in his view, it would be easier as a practical matter to calculate and implement. See Laudan (2015). But, for the reasons discussed above and in the next section, the reduction

3.2. The illusion of precision and the explanatory structure of proof

Laudan's analysis assumed a kind of precision for standards of proof that (1) appears illusory at best and (2) ignores the explanatory structure of proof.[40] Laudan critiqued the BARD standard for its imprecision and its vague language (as well as its non-epistemic focus).[41] In its place, Laudan (2016, p. 18-45) never settled on a specific verbal formulation, but he argued that the standard should be informed by the various frequencies and harms associated with both false convictions and false acquittals (including potential increases in violent crime). His analysis on this issue assumed that a precise criminal standard of proof could be constructed that would produce the desired ratio of errors (Laudan, 2016, p.80). Accordingly, he then used this analysis to argue that the BARD standard in the United States is too high and that the standard of proof in criminal cases should be lowered.[42]

Laudan's analysis on this issue is inconsistent with features of legal proof discussed in Part 2. In particular, the analysis is inconsistent with the judge-jury relationship in the United States and with the role of standards of proof in evaluating sufficiency of evidence. As discussed in Part 2, the context for sufficiency-of-evidence review involves a minimal standard of epistemic permissibility, within an adversarial system.

One might argue that these inconsistencies are not a problem. They are not a problem, so the response might go, because Laudan was attempting to *change* law's epistemic practices not *explain* them. Not exactly, in my view. What the potential response misses is that Laudan was attempting to change specific rules and aspects of legal proof—while leaving basic structural features of legal proof in place, including the jury trial and the judge-jury relationship.[43] Here is the central problem with this approach: a standard of proof can either be implemented with precision or not—which for Laudan meant implemented based on the *epistemic features of the evidence*, not subjective beliefs or credences—to produce a desired ratio of errors (for example,

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seems to reimpose similar kinds of impossible conditions that it was meant to avoid. Moreover, even with the same standard of proof, the number and types of errors will vary from jurisdiction to jurisdiction. See Allen & Elliott-Smith (forthcoming).

[40] On the latter, see the discussion in Part 2.

[41] See note 28, *supra*.

[42] Laudan (2016, p. 101-105) argued that the BARD standard was responsible for too many false acquittals and generally made it too difficult to convict defendants who had committed violent crimes (who would then go on to commit additional violent crimes). Other scholars have critiqued Laudan on this issue. Gardiner (2017) critiques Laudan's use of empirical information on crime statistics. Dei Vecchi (2020) points to an internal tension between Laudan's claim that the BARD standard is vague, arbitrary, subjective, on one hand, and his claim that BARD is the cause of false acquittals based on a rational assessment of the strength of the evidence, on the other hand.

[43] Laudan was not analyzing legal epistemology in the abstract. The primary focus of his work in legal epistemology was on the United States legal system, with a particular focus on the proof process in criminal cases.

eight false acquittals for every false conviction, or whatever).[44] If a judge can determine with precision whether the evidence meets the standard of proof (for example, an objective probability threshold), then there is really nothing left for a jury to do. The judge should just apply the standard and produce the desired result.[45] But if, on the other hand, a judge cannot determine with precision whether a standard of proof is satisfied in a given case (which seems more plausible), then we are back to something like the current proof structure for evaluating the sufficiency of evidence: a minimal threshold in a context of epistemic permissibility (in which either outcome is permitted) that is dependent on the adversarial system (see Part 2). But if this is so, then it is unclear how the legal system could ever produce a precise ratio of errors, even with a precise standard of proof.

Relatedly, Laudan's analysis also failed to appreciate the *explanatory* structure of the proof process (outlined in Part 2). Laudan was familiar with what is termed "inference to the best explanation" (IBE) in the philosophy of science, its basic features, as well as its critiques and limitations in that context (Laudan, 1981). Laudan appeared to assume—mistakenly in my view—that the inferential reasoning process would operate similarly in both contexts (law and science). Therefore, he critiqued the possibility that inference to the best explanation could shed light on legal proof in criminal cases (Laudan, 2007). This is because, for example, something might be the best explanation but not proven BARD, or not the best explanation but enough to raise a reasonable doubt.

What Laudan's critique misses, however, is that the law can use and adapt similar ideas and concepts in ways that do not necessarily match their features in philosophy or science. In the United States, the explanatory thresholds for standards of proof, both during trial and in sufficiency-of-evidence review, do not necessarily match the explanatory thresholds in other contexts (Pardo & Allen, 2008; Allen & Pardo 2019a; Pardo 2023a). In particular, for higher standards of proof such as BARD, the explanations must be stronger than being the best one, or better than the alternatives. Correspondingly, a defense explanation may raise a reasonable doubt even if not the "best" one, so long as it is good enough to be plausible. This example illustrates how features of a concept or idea that might present challenges or worries in other philosophical contexts (such as the philosophy of science) may not be problems when applied to the law.[46] The example also illustrates how philosophical concepts and ideas might provide useful tools for illuminating or making explicit epistemic aspects of the law—even when they do not contain all the necessary features, or match the

[44] See Laudan (2006, p. 53) ("The principal question is not whether the jurors, individually and collectively, are convinced by the prosecution. The issue is whether the evidence they have seen and heard *should be* convincing in terms of the level of support it offers the prosecution's hypothesis").

[45] The only possible reason to have a jury trial might be to preserve the jury's power in the United States to nullify or acquit despite the evidence satisfying the standard of proof.

[46] For a discussion of how objections to IBE in the philosophy of science do not apply to law, see Pardo & Allen (2008, p. 243-45).

same uses, as in other philosophical contexts. To know whether they prove to be a useful tool one has to look closely at the details of particular legal systems.

From the discussion in this Part, three specific lessons emerge—as well a fourth, meta-lesson—for how epistemology may shed light on legal proof or how it may fail to do so. One lesson is the danger in trying to *reduce* or *isolate* features of legal proof that cannot be reduced or isolated (such as allocating the risk of error) from the system as a whole. The second lesson is the *illusion of precision*: the illusion is to think that some complex feature, rule, or practice (such as a standard of proof) can be given sharp boundaries when it cannot.[47] The third lesson is that a potential *mismatch* between philosophical concepts and how they arise in law is not necessarily a problem for law.[48] The fourth, which is a meta-lesson, is the risk of *mismodeling* or *misdescribing* the legal phenomena that are the object of epistemological inquiry.

The next Part discusses how these lessons apply to recent work in legal epistemology. Again, the discussion is from the perspective of an evidence scholar, exploring both (1) where legal epistemology illuminates or helps us understand something about legal proof, and (2) where, because of the lessons discussed above, epistemological discussions may go awry.

4. CONTEMPORARY LEGAL EPISTEMOLOGY

The lessons that emerged in the discussion of Laudan's scholarship also apply, in different ways and to various degrees, to current issues in the literature on legal epistemology. This Part discusses five examples: (1) statistical evidence, (2) the "preponderance of the evidence" standard, (3) epistemic safety, (4) knowledge, and (5) epistemic injustice.

4.1. Statistical evidence

The first example concerns vast (and rapidly growing) literature by philosophers concerning statistical evidence. Much of this literature is framed around solving or explaining the so-called "puzzle" or "paradox" that arises in well-known hypothetical cases or vignettes involving statistical evidence as well as explaining how, if at all, statistical evidence differs from non-statistical evidence.[49] Perhaps the most famous is the Blue Bus hypothetical in which the Blue Bus Company owns 70 percent of the

[47] The illusion of precision also applies to probabilistic accounts of standards of proof. See Pardo (2023a, p. 444-49).

[48] In other words, it is not a problem for law simply because the explanatory reasoning process in legal cases does not match the IBE process in epistemology or in the philosophy of science.

[49] One sign of the growth in the field of legal epistemology is that the number of recent articles on this topic is now too large to list them all. For overviews of the examples and issues, see Ross (2020); Gardiner (2019a); Pardo (2019).

buses in town, and there is no other evidence in a civil case other than a common assumption that a bus was responsible for an accident.[50] The "puzzle" or "paradox" is supposed to arise from the fact that the statistic (70 percent) appears to surpass the standard of proof (where the "preponderance of the evidence" standard is assumed to mean greater than 50 percent). Yet the intuition of most people is that the evidence is not *sufficient* to support liability (Wells, 1992, p. 740). The issue is typically further complicated with the assumption that an eyewitness testifying that a Blue Bus is responsible for the accident *is* sufficient to support liability, even when it is stipulated that the witness is 70 percent likely to be accurate. Much ink has been spilled trying to explain or explain away these hypotheticals.[51]

As philosophically interesting as this literature is, it does not, in my view, shed much light on legal proof (at least not in the United States). One reason, as Ron Allen and Christopher Smiciklas (2022) have shown, is that there is no general distinction between statistical and non-statistical evidence in United States case law. Therefore, the objects being explained or analyzed in the literature—which are typically intuitions about the hypothetical vignettes—do not actually map onto legal reality.[52]

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[50] Other prominent examples include Gatecrashers (Cohen, 1977, p. 75) and Prisoners in the Yard (Nesson, 1979, p. 1192-93).

[51] I confess to being guilty of this as well. See, e.g., Allen & Pardo (2007); Pardo & Allen (2008); Pardo (2018); Pardo (2019).

[52] A clear example of this is Enoch & Spectre (2019) in response to Pardo (2018). Pardo (2018) provided a United States Supreme Court case as a counter-example to the authors' previous claims about sensitivity and statistical evidence. In that case (Tyson Foods, Inc. v. Bouaphakeo, 136 S. Ct. 1036 (2016)), the Court (1) rejected any general distinction between statistical and individualized evidence, and (2) concluded that the plaintiffs' statistical-average evidence was sufficient to establish a liability claim for individual plaintiffs in the reference class. In response, Enoch & Spectre (2019, p. 183-84) explain that their account was not meant to apply to "statistical evidence" generally, but rather only to the "underlying intuitive concerns" in cases such as "Blue Bus and the phenomenon it is an example of. This is the phenomenon sometimes called base-rate evidence, sometimes market-share evidence, or sometimes naked statistical evidence." (p. 183-84). They attempt to distinguish *Tyson Foods* as a case "where statistics were admitted in order to prove something about the circumstances," whereas examples like Blue Bus involve "direct base-rate data for guilt or liability" (p. 183). This is an odd response for two reasons. First, qualifying the limited scope of their sensitivity account (i.e., that they are only explaining intuitions about hypotheticals such as Blue Bus and not actual features of the law) seems to be inconsistent with the less qualified, more general, issue that they purported to be addressing. See Enoch, Spectre & Fisher (2012, p. 199) ("The distinction between statistical and individual evidence is a general one, and it seems to call for a general solution."). Second, and more importantly, *Tyson Foods* was not a case in which statistics were used merely "to prove something about the circumstances." Rather, the case does seem to involve similar "underlying intuitive concerns" as in the hypothetical cases—in that a group statistical average was used to prove the central disputed factual issue in the case by applying that average to individuals within the reference class in order to establish civil liability. How this situation differs from hypotheticals such as Blue Bus is unclear (as Enoch and Spectre do not define the "statistical evidence" they are addressing beyond the above descriptions). But the *Tyson Foods* discussion does make clear that the target of their analysis is intuitions about the unrealistic hypothetical vignettes and not features of legal proof. See also Allen (2022) ("if real courts are not behaving consistently with the intuitions … it is a complete mystery what the point of the intuitions

But even taking the hypotheticals at face value, there is no general "puzzle" or "problem" in need of explanation if my starting picture of legal proof (see Part 2) is correct. Moreover, that picture of legal proof helps us to diagnose *why* there is no puzzle or paradox. There is thought to be a puzzle or paradox because of the combination of two premises (1) that the ownership statistic (70 percent) is the "probative value" of the evidence, and (2) that the standard of proof is a probabilistic threshold (50 percent) (Pardo, 2019, p. 255). But if neither premise is true, then there is no problem or paradox. And neither premise is true in the picture presented. In that picture, the standard of proof imposes an explanatory threshold and depends on the competing explanations, and probative value is determined by how well the evidence supports or challenges the explanations. Instead of "puzzles" or "paradoxes," the hypotheticals are merely unspecified cases, without enough information to decide one way or the other. This might explain why, despite all the ink that has been spilled, there is no consensus on a particular solution to the cases.

The literature in legal epistemology on statistical evidence exhibits several of the limitations discussed in Part 3 and, thus, the lessons that emerged in that discussion also apply to much of the literature on statistical evidence. First, it is overly reductive in trying capture something essential about statistical evidence (and in assuming that the category can be meaningfully separated from other kinds of evidence). Second, it relies on an illusion of precision (i.e., that probative value and the standard of proof can be sharpy defined). Third, it often misses the explanatory structure of proof (and thus mismodels details regarding probative value and standards of proof). The discussions may be valuable philosophically for several reasons internal to epistemology,[53] but they do not illuminate much about evidence law and legal proof.

Putting aside the specific issue of statistical evidence, the literature on legal epistemology has generated a number of other interesting and potentially illuminating ideas about standards of proof and features of legal evidence. I turn to some of these in the examples to follow.

4.2. The "preponderance of the evidence" standard

The second example concerns philosophical accounts of the "preponderance of the evidence" (POE) standard. The literature on legal epistemology has devoted con-

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might be … both market-share and base-rate evidence are potentially admissible evidence … in every jurisdiction in the United States; thus, precisely what is being distinguished from what and why is somewhat opaque."). The idea that there is something called "naked" statistical evidence is an unfortunate distraction in the literature. There is no such thing, and the idea has caused additional confusion. See Pardo (2019, p. 262 n.128)

[53] For example, similarities and differences between the legal hypotheticals and the "lottery" hypotheticals in epistemology may reveal additional issues that are relevant to philosophy. See also Buchak (2014); Moss (2018).

siderable attention to the topic of legal standards of proof; however, much of this literature mismodels the object of inquiry by missing several of the features outlined above in Part 2. These features include (1) the explanatory structure of the proof process; (2) the manner and context in which courts assess the sufficiency of evidence; and (3) the role of the parties in supplying contrasting explanations.

Two notable exceptions in the epistemological literature—by philosophers Sarah Moss (2023) and Georgi Gardiner (2019b), respectively—illuminate, in different ways, aspects of legal proof. They also come closer than several other philosophical accounts to accurately describing the POE standard within the context of legal proof.[54] Each account adapts a "relevant alternatives" framework from epistemology—which connects with the fact that legal proof is *comparative* in the sense that it depends on comparing alternative possible explanations of the disputed events.[55] Both accounts, however, also fail to accurately capture some of the important underlying legal details.

The preponderance standard in theory is meant to treat the parties roughly equally with regard to the risk of error.[56] It purports to do this by favoring whichever side the evidence better supports.[57] In practice, legal fact-finders choose the better of the competing explanations advanced by the parties (Pardo & Allen, 2008; Allen & Pardo, 2019a). Fact-finders may (but are not obligated to) consider alternatives not advanced by the parties. And courts review the sufficiency of evidence by evaluating whether a reasonable jury could find a party's explanation better than the alternative(s) that are or were advanced (Pardo 2023a).

According to Moss's (2023) account of legal proof: a fact is proven under the preponderance standard when the fact-finder has *knowledge* that the disputed fact has a probability greater than 0.5 (p. 199). In other words, the jury must *know* that "the defendant is *probably* liable" (Moss, 2023.).[58] This account diverges from the pre-

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[54] In the philosophical literature, the POE standard is typically assumed to mean a greater than 0.5 probability (without necessarily specifying the type of probability at issue). For problems with this assumption, see Pardo (2023a); Allen & Pardo (2019a). As discussed above, this assumption helps to create the appearance of a "paradox" for statistical evidence. Importantly, jury instructions on the POE standard vary considerably among jurisdictions, and they generally do not use "0.5" or "50 percent" language. Leubsdorf (2015) surveys different instructions, some of which are consistent with, and some of which are inconsistent with, "0.5" or "50 percent" language.

[55] Along with fitting the explanatory structure of legal proof (discussed in Part 2), the "relevant alternatives" framework provides additional epistemic support for explanationist accounts of legal proof, to the extent the former is itself epistemically justified. Moss's account also usefully illustrates possible connections between knowledge and legal proof. For a philosophical account of the BARD standard that fits with aspects of the explanatory structure of legal proof, see Lackey (2021).

[56] See E.M.D. Sales, Inc. v. Carrera, 604 U.S. 45, 50 (2025) ("the preponderance-of-the-evidence standard has remained the default standard of proof in American civil litigation. That default makes sense: The preponderance standard allows both parties in the mine-run civil case to share the risk of error in roughly equal fashion.").

[57] See Pardo (2023a).

[58] See Moss (2023, p. 199) ("Here is the thesis I want to defend: proof of liability by a preponderance of the evidence requires that the factfinder know that the defendant is *probably* liable"). See also

ponderance standard, however, both practically and theoretically. As a practical matter, the account does not match what fact-finders or courts do on a regular basis. The law may consider a fact proven by a preponderance of the evidence, and the evidence may be held to be sufficient, in the absence of such knowledge.[59] And, theoretically, such an account fails to treat the parties equally with regard to risk of error.[60] Moss's account, in other words, places too much risk on the party with the burden of proof: a fact-finder could find a party's explanation is better (and thus more likely), and a judge could think this finding is reasonable—which, as discussed in Part 2, is all that is necessary—and yet the party would still lose under the Moss account whenever the fact-finder does not *know* that the probability is greater than 0.5.[61]

Gardiner's (2019b) account does not require probabilistic knowledge or quantify the preponderance standard. Instead, it requires that the party with the burden produce sufficient evidence "to rule out preponderant error possibilities" (p. 298). The alternative explanations that must be ruled out are the ones that are (1) "most significant" or "most predominant"; (2) the "most usual ways claims such as the one being made are false;" (3) "the ones a judge would most expect to see;" and (4) those "a virtuous inquirer would think most important and that seem most weighty as potential doubts" (p. 301).

Similar to Moss's account (2023), Gardiner's account requires too much of parties with the burden of proof, and, consequently, places too much of the risk of error

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ibid. at 200 ("the defendant is proven liable by this standard only if the judge or jury has greater than .5 credence that he is

liable. The knowledge account adds an objective element to this condition: the defendant is proven liable by a preponderance of the evidence if and only if this probabilistic belief constitutes knowledge."). One conceptual advantage to Moss's account of the preponderance standard is that it preserves a role for *knowledge* while allowing for the possibility for false positive verdicts. In other words, knowing that a defendant is *probably liable* is consistent with the defendant not, in fact, being liable. See note 3, *supra*. Building a knowledge requirement into the BARD standard raises additional conceptual issues, as Moss discusses (see p. 204-09).

[59] For examples, see Pardo (2023a). The preponderance standard also applies to *admissibility-of-evidence* decisions in addition to the elements of civil causes of action. See *supra* note 38. Courts routinely apply the *Federal Rules of Evidence* (for example, finding that a hearsay exception is satisfied or that a prior act can be admitted for a non-character purpose) in the absence of such probabilistic knowledge.

[60] See note 60, *supra*.

[61] Under this account, the allocation of the risk of error would be a problem for more than civil plaintiffs. The POE standard also applies to some affirmative defenses that criminal defendants must prove. Thus, criminal defendants would fail under this account despite offering a more persuasive case than the prosecution on the issue. And the preponderance standard governs disputes about the *admissibility* of evidence for all parties in both civil and criminal cases. See notes 38 and 63, *supra*. In most instances, judges and juries do not have knowledge of the probability of the disputed fact, conditioned on the evidence. For reasons discussed below (see Part 4.4), I share with Moss's account an affinity for *knowledge* as potentially illuminating aspects of legal proof. See also Pardo (2018); Pardo (2010); Pardo (2005). However, in my view, knowledge (or something like knowledge) helps to illuminate a goal or aim of legal proof—as opposed to *knowledge being a requirement of standards of proof* (as it appears to be under Moss's account).

on that party. It does so because it requires that for a fact to be proven by a preponderance of the evidence, the fact-finder is obligated to "rule out" alternative possible explanations beyond those advanced by the parties. First, in United States, under the "party presentation" and "master of the case" principles, courts and fact-finders are not required to consider alternative explanations and arguments not advanced by the parties.[62] And second, when there is a choice to be made between plausible alternatives advanced by the parties, there is no necessary requirement that the alternative be "ruled out" (only that one explanation is found, comparatively, to be more plausible).[63]

There may be normative reasons why the law ought to adopt one of these two proposed epistemic standards, but they each fail as a *descriptive* or *explanatory* account of the preponderance standard (at least as it is deployed in the United States). The accounts capture some, but not all, of the explanatory structure of legal proof.[64] And they miss details about the adversarial principles that structure legal proof in the United States. They also each allocate the risk of error in a manner that deviates from the standard's underlying policy goal.

4.3. Epistemic safety

The third example involves the use of epistemic safety (and the related but distinct notion of sensitivity) as a tool to explain features of legal evidence. Much of this literature has focused on debates about statistical evidence. For the reasons discussed in Part 4.1, the analysis below puts the specific issues regarding statistical evidence to the side and focuses on a more general issue. To what extent can safety or sensitivity help to explain micro-level features of legal evidence such as probative value?[65] In answering this question, two of the lessons discussed in Part 3 will be important to keep in mind. First, a concept or idea need not fully match its features and uses in

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[62] Fact-finders are often *permitted* to consider alternative explanations not advanced by the parties (unless, for example, a legal rule or instruction precludes consideration of an alternative). But fact-finders are not required or obligated to do so. See note 17, *supra*. See also Clark v. Sweeney, 607 U.S. __ (2025) ("In our adversarial system, we follow the principle of party presentation... To put it plainly, courts call 'balls and strikes'; they don't get a turn at bat.") (internal citations omitted).

[63] See Part 2. Indeed, rather than elucidating the POE standard, a need to "rule out" alternatives (or do more than provide the better explanation) implicitly raises the standard of proof from POE to a higher standard of proof such as "clear and convincing evidence." For a detailed illustration of how this works in the context of a recent United States Supreme Court opinion on racial gerrymandering, see Pardo (forthcoming).

[64] In this respect, they come closer than other philosophical accounts in illuminating legal standards of proof. See also Lackey (2021).

[65] See note 4, *supra*. A third influential modal account, see Smith (2018), based on normalcy conditions (or the set of possible worlds that fact-finders would normally expect to see) is generally outside the scope of the discussion. I note, however, that the normalcy account potentially mismodels legal proof (based on the picture presented in Part 2) to the extent it is inconsistent with (1) the minimal threshold for evaluating sufficiency of evidence, and (2) reliance on the parties to construct the set of relevant contrasting explanations. See also note 20, *supra*.

philosophy in order to potentially illuminate legal proof. Second, a philosophical concept or idea may help to explain an aspect of legal proof even when that aspect (e.g., a standard of proof or probative value) cannot be fully reduced or explained in terms of that concept or idea.

In epistemology, safety and sensitivity are typically used to analyze *true* beliefs—starting with a true belief and asking whether the belief would continue to be held in various counterfactual scenarios (or possible worlds). Sensitivity concerns the closest possible worlds in which something is false, and explores whether an epistemic agent would still believe it to be true. Safety concerns how easily the belief could be false.

As with the discussion of Laudan and "inference to the best explanation," applications of safety and sensitivity to legal proof will not match the uses and features of these concepts in other philosophical contexts. In legal settings, we typically do not know whether a legal verdict or some item of evidence (e.g., a witness identification) is true or false. But we can ask, *assuming it were true*, would some evidence, or an inference from that evidence, be safe or sensitive?[66]

A second important difference between legal proof and other uses in epistemology concerns how the relevant possibilities are determined and measured. In philosophy, the possible worlds that count as "close" or "closest" can be tricky and contested. But in legal proof, the most important possibilities at issue are the alternative explanations advanced by the parties, even if they would not necessarily count as the "closest" worlds in philosophical analyses.

With these two differences in mind, I have argued that something like epistemic safety—even if it is not isomorphic with safety in epistemology—affects the probative value of evidence (Pardo, 2018). Consider an example. Suppose that we have an eyewitness to a crime who identifies a suspect's photo as the perpetrator. But suppose further that the eyewitness would identify any photo placed before him as the perpetrator. The identification has low probative value as evidence (even if the identification was correct in this instance).[67] In part, this is because the evidence and

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[66] Of course, one is free to object that what is being discussed is not really "safety" or not really "sensitivity," just as (in Part 3) one is free to object that the process is not really "inference to the best explanation." From the perspective of understanding law (although perhaps not from the perspective of philosophy), the response should be: *so what?* What matters, from the perspective of law, is whether the idea being discussed reveals something about an aspect of legal proof, regardless of whether it diverges from its features or uses elsewhere. Although, for the sake of clarity, it will often be preferable to qualify uses of the terms (e.g., "something like safety") and point out relevant differences.

[67] Epistemic safety is distinct from the "likelihood ratio" (a common measure that purports to capture aspects of probative value). The likelihood ratio compares the probability of the evidence given one hypothesis (e.g., the defendant's guilt) with the probability of the evidence given the negation of that hypothesis (e.g., the defendant's innocence). For differences between probability and epistemic safety, see Pritchard (2015). One important difference is that some possibilities with low probabilities of occurring may nevertheless be unsafe (i.e., could easily be true). For limitations with the "likelihood ratio" as a general theory or definition of probative value, see Allen & Pardo (2023); Allen & Pardo (2007). This is not to suggest that "likelihood ratios" or other probabilistic measures do not also illuminate aspects of

inferences from it are unsafe—the evidence and the inferences a fact-finder draws from it could have so easily been false. As the philosopher John Greco (2012, p. 193) explains: epistemic "safety *just is* reliability throughout a space of close counterfactual situations". And something like "reliability throughout a space of close counterfactual situations" is a potentially important consideration when assessing the strength or quality of legal evidence in distinguishing between contrasting explanations. [68] This is an especially important consideration in the context of legal proof when the parties are arguing about which possibility is the true one.

By contrast, epistemic sensitivity does not have much of an effect on the probative value of legal evidence. This is because the "closest" possible world in which the evidence, or an inference from the evidence, is false, *may not be a close world* (Pardo 2018, p. 65). When this is the case, the evidence may have high probative value even though it is insensitive. To continue with the eyewitness example, suppose instead that the only circumstance in which the eyewitness would have made a false identification is if there were an elaborate disguise to make someone else look like the true perpetrator (otherwise, the witness would not have made a false identification). Even if the witness *would* make a false identification in that far-fetched scenario, this would not lower the probative value of the evidence (unless perhaps this is the contrasting explanation advanced by the opposing party, with evidence to support). And, indeed, one reason why the evidence retains its high probative value is because the evidence, and inferences from it, are safe. The evidence and inferences could not easily be false. [69]

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probative value. Both safety and probability affect probative value (along with other contextual factors such as a party's need for the evidence; the evidentiary alternatives; and the competing explanations of the parties; as well as the general reliability of the evidence).

[68] In a critique of Pardo (2018), Enoch and Spectre (2019, p. 187) argue that invoking this property (possessed by safety but not sensitivity) "begs the question" absent an argument that this is "an important desideratum, legally and epistemically." But, as explained in Pardo (2018, p. 71-74), this is an important desideratum in the context of legal proof precisely because it affects the probative value of evidence. In the context of legal proof—which is comparative and focused on a small subset of contrasting explanations (see Part 2)—reliability in close possibilities is *one thing* that affects probative value. Enoch and Spectre's critique misses this connection: "Pardo often accuses Sensitivity of being a poor guide to *probative value*, but it is unclear what he means by that phrase (p. 188)." "Probative value" was not used idiosyncratically—it was used in accord with its uses throughout evidence law in the United States, as was explained throughout. See, e.g., Pardo (2018, p. 53, 57, 71-72). They continue: "Sometimes it seems that he just takes high probative value to be the property of good evidence. If so, accusing Sensitivity of having poor probative value is of course a serious accusation, but it needs substantiating" (p. 188). As explained in the text above (and in Pardo, 2018, p. 75), sensitivity often has little effect on probative value *precisely because* it lacks the property that safety possesses (reliability in close possible scenarios). In misunderstanding the relationships between safety, sensitivity, and probative value, their critique does not address the thesis of Pardo (2018) that safety has a greater effect than sensitivity on the probative value of legal evidence (and thus plays a great role throughout evidence law). To be fair, Enoch and Spectre were focused on a different theoretical project (i.e., explaining intuitions about hypothetical vignettes involving some subset of "statistical evidence"). See note 52, *supra*.

[69] See Pardo (2018, p. 75) ("Sensitivity does not track the reliability of evidence, or the risk of drawing erroneous inferences, in close possible worlds. Safety, however, does track these features and

In this example, something like safety helps to illuminate an aspect of probative value. And it does so even though the application does not match some of the features and uses of safety in epistemology. In this sense, the use of safety in the context of legal proof is similar to the discussion of "inference to the best explanation" in Part 3. As in that discussion, a concept or idea may diverge from its other philosophical uses while fitting with a feature of legal proof. Moreover, safety might illuminate an aspect of probative value *even though there is more to probative value than safety*.[70] In other words, the concept might illuminate one aspect of legal proof without capturing all there is to probative value. To assume otherwise is to adopt too reductive of an approach[71]—similar to Laudan and standards of proof—when applying epistemology to legal proof.

thus has a greater effect on the probative value of evidence."). Epistemic sensitivity (or something like it), however, directs our attention to other potentially important features of evidence (such as whether the evidence would exist in the close possible scenarios in which the disputed fact was false). Sensitivity may, for that reason, produce some incentive effects (see Enoch, Fisher & Spectre, 2012). But for a critique of the incentive-effect arguments for sensitivity, see Allen (2022, p. 268-71).

[70] See Pardo (2018, p. 71) ("Safe evidence may have low probative value for other reasons. For example, where there are not close possibilities in which the findings are false, then evidence of otherwise poor quality will be safe. In addition, safe evidence may have low probative value because it is cumulative of other evidence"). Moreover, other modal properties (for example, "normic support" in Smith (2018)) may also affect probative value.

[71] For an example of such a reductive approach, see Johnson King (2022). Johnson King critiques Pardo (2018) but the critique misinterprets the arguments in Pardo (2018) in two important ways. The critique mistakenly assumes that safety was put forward as both (1) a *general* account of probative value, and (2) a *necessary* requirement for admissibility. Neither assumption is true. Based on these mistaken assumptions, Johnson King argues that examples of (1) problematic but safe evidence, and (2) admissible but unsafe evidence, provide counter-examples to the arguments in Pardo (2018). Because of the mistaken assumptions, neither point is correct. On the first point, see the quote in note 70, *supra*. Thus, examples of safe but otherwise problematic legal evidence are not counter-examples to the thesis (and indeed were already acknowledged). On the second point, see Pardo (2018, p. 53) ("To be clear, I do not claim that safety provides a complete account of legal evidence or all aspects of the law of evidence. Rather, I argue for the more modest claim that safety is an important consideration for legal evidence and that it plays a greater explanatory role than sensitivity.") and *ibid*. (p. 72) ("This is not to suggest that safety provides an overarching theory of admissibility.") Thus, pointing to examples of admissible evidence that are unsafe likewise does not challenge the thesis. Johnson King's reductive approach also seems to assume that applications of philosophical concepts to law must match their uses in other philosophical contexts in order to illuminate law. See Johnson King (2022, p. 10-14) (arguing that the factivity of safety and sensitivity makes them inappropriate for explaining legal evidence). See note 66, *supra*. Johnson King's analysis also mismodels the legal structure for sufficiency of evidence (what the analysis terms "adequacy" and "inadequacy," see p. 18-21); this structure, as explained above, is (1) permissive, (2) comparative, and (3) can be met with statistical evidence. See Part 2 and, e.g., note 52, *supra*.

4.4. Knowledge

The fourth example concerns the concept of knowledge itself. Similar to epistemic safety and IBE, aspects of legal proof may share some features with knowledge (as it is understood in epistemology) while lacking other features of the concept. Despite this mismatch, knowledge may help to illuminate aspects of legal proof.

The traditional conception of knowledge as (1) justified, (2) true, (3) belief has analogs when applied to legal verdicts (Pardo, 2010, p. 38-42). First, legal verdicts have truth or factual accuracy as a central goal or aim. Second, legal verdicts require some level of epistemic justification (Ho, 2008, 89-99). But this level need not necessarily be the same level as required for knowledge (Redmayne, 2008).[72] Third, legal verdicts involve some level of epistemic commitment by the fact-finder. But this commitment need not necessarily be a belief—it may instead involve some type of acceptance or acceptability threshold (see Ferrer Beltran, 2006).

In epistemology, it is generally accepted that these three conditions may not be *sufficient* for knowledge. As famously shown by Edmund Gettier (1963), they will not be sufficient if there is an accidental (or coincidental) gap between the justifying evidence, on one hand, and the truth of the belief, on the other hand. In these situations, someone arrives at a true conclusion by accident or coincidence, despite having what appears to be justifying evidence for that belief. I have argued that a similar gap or accidental connection may also undermine legal verdicts (Pardo 2010; Pardo 2011). For example, consider a criminal defendant, framed by the police with falsified evidence (for example, planted cocaine), who is then convicted based on this falsified evidence (for example, for possession of cocaine). But suppose also that this defendant happens to be guilty of that crime (i.e., the defendant did happen to knowingly possess undiscovered cocaine at the time of the arrest). The verdict is true, and there was sufficient evidence to support or justify it at trial, but the verdict is still problematic or defective.[73] Drawing out the similarities between knowledge

[72] For discussions, see Ho (2008, p. 89-99); Redmayne (2008).

[73] The example assumes that the falsified nature of the evidence was not apparent at the time of trial. In a recent article, Ho (2025, p. 12-13) challenges the conclusion that the verdict in the example was true ("*Pace* Pardo, the verdict is false in *Framed Defendant*. The defendant was not in illegal possession of the drugs that were allegedly found in his car. He was unaware of their existence until they were revealed by the police officers."). According to Ho, the fact-finder must find the defendant "guilty of the particularized instance of the type of the offence cited in the charge and as alleged by the prosecution." He suggests an analogy: "Take an even more far-fetched scenario: I am charged with the murder of A. I didn't do it. The police set me up. If I am convicted, the verdict is false. We do not consider the verdict true because, 'by luck' and unbeknownst to the judge, I happened to have murdered B. My conviction is for the murder of A and not B." This critique, however, misinterprets the nature of legal verdicts (in the United States), and the analogy does not work. The propositions that the fact-finder (jury or judge) are asked to find BARD are the *elements* of the crime. In drug-possession cases, the element refers to a *type of substance* (not, as Ho argues, the "particularized instance" of it). See, e.g., United States Courts

and legal proof makes explicit this aspect of legal proof that might otherwise go unnoticed. Successful legal verdicts require not only sufficient evidence and truth; they also require an appropriate connection between the evidence and truth.[74]

In drawing attention to this largely unnoticed issue, epistemology helps to shed light on legal proof. Notice, this insight applies even if successful verdicts do not constitute knowledge for other reasons (for example, having to do with justification or belief).[75] Thus, knowledge provides another example—as with inference to the best explanation—in which a philosophical concept may illuminate an aspect of legal proof, even when it does not match its features or uses elsewhere in philosophy.

4.5. Epistemic Injustice

A growing body of recent scholarship has applied philosophical work on epistemic injustice to legal proof (Tuerkheimer, 2017; Epstein & Goodman, 2019; Gonzales

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for the Ninth Circuit, Manual of Modern Criminal Jury Instructions (2010) (listing the first element as "First, the defendant knowingly possessed [*specify controlled substance*]."); see also *ibid*., Comment ("The defendant does not need to know what the controlled substance is so long as the defendant knows that he or she has possession of such a substance... See also United States v. Soto-Zuniga, 837 F.3d 992, 1004-05 (9th Cir. 2016) (knowledge of type and quantity of drugs not element of offense)"). Therefore, in the example, the jury will be asked to the decide whether "the defendant knowingly possessed cocaine." This proposition, *pace* Ho, is true in the example (i.e., the defendant did knowingly possess cocaine at the time of arrest). Nor does Ho's analogy ("murder of A and not B") work as a *reductio* or a counter-example because murder is person specific. See *ibid*. (listing the first element for "murder—second degree" as "First, the defendant unlawfully killed [*name of victim*]"). Thus, in Ho's example, this proposition *is* false.

[74] For example, in cases of newly discovered evidence or in cases with defective trial evidence, it is not enough for the prosecution to point to other (not admitted) evidence showing that the verdict was true (or likely to be true BARD). Rather, the justifying evidence must have been internal to the proof process at trial. Ho (2025, p. 13) suggests that in such circumstances (i.e., accidentally true outcomes) the law should "breathe a sigh of relief... Luckily, all turned out well." Ho argues that if newly discovered evidence shows the original verdict was both not justified and "we think the verdict may well be false," then the defendant may be entitled to some "legal recourse … perhaps even a retrial." But the law (in the United States) goes further than this. On appeal, if the evidence is insufficient to support the conviction, then the question of whether the verdict is thought to be true or false is irrelevant—the verdict is constitutionally defective and will be overturned. See Jackson v. Virginia, 443 U.S. 307 (1979). If newly discovered evidence later shows that what appeared to be sufficient trial evidence was defective, then the defendant is entitled to a retrial, even if other evidence external to the trial shows the original verdict was true. See Pennsylvania v. Reese, 663 A.2d 206 (1995).

[75] See Pardo (2010, p. 54-55) (discussing other ways in which successful verdicts may fail to qualify as knowledge). See also note 61, *supra*. Nor does the above analysis depend on any proposed "solution" to the Gettier problem. Moreover, although the analysis is framed in terms of the traditional JTB conception of knowledge, the analysis also applies to "knowledge first" approaches in epistemology (in which knowledge is taken to be a basic or fundamental mental state used to explain other epistemic concepts such as justification, rather than knowledge itself being composed of other more basic epistemic properties), see Williamson (2000). For other possible connections between knowledge and legal proof, see Moss (2023); Mueller (2024).

Rose, 2021; Picinali, 2024). This work provides another useful example of the ways in which ideas from epistemology can illuminate overlooked and underexplored aspects of legal evidence and proof.[76] In this final example, I discuss some of the positive ways in which a focus on epistemic injustice contributes to understanding legal proof and illustrate how some of the lessons discussed in the previous sections apply in this context.

Much of this scholarship builds on the pioneering work of Miranda Fricker (2007) and focuses on the specific category of epistemic injustice known as "testimonial" injustice.[77] Within the literature, central examples of testimonial injustice involve situations in which a witness is (1) assigned a level of credibility that is lower than is warranted by the evidence (i.e., a "credibility deficit"), and (2) this credibility deficit is due to identity-based prejudices, stereotypes, or assumptions (for example, based on race or gender).[78] The "primary harm" of epistemic injustice is that the agent is "wronged in one's capacity as a knower … a capacity essential to human value" (p. 44). Fricker (2007) refers to this primary harm as an "intrinsic injustice,"[79] but also discusses other practical consequences and epistemic harms that may also follow from this primary harm.[80] Scholars have also expanded on this category by illustrating how, in the context of legal evidence and proof, credibility "excesses" may also lead to cases of epistemic injustice (Lackey, 2023; Gonzales Rose, 2024). The feature of legal proof that makes the latter a genuine concern—perhaps more so than in other social contexts—is that legal proof is *comparative* (see Part 2) and of-

[76] Epistemic injustice also provides a potential counter-example to the claim by Enoch, Fisher & Spectre (2021, p. 92-3) that, as a normative matter, the law should not sacrifice *any* amount of accuracy to secure an epistemic property. In other words, some readers may have the intuition that it may be worth sacrificing a very *small* amount of overall accuracy if it means removing *large* amounts of epistemic injustices from a legal system. The issue is likely a contested one, in which the underlying details will matter significantly.

[77] A distinct but related type of epistemic injustice is "hermeneutical injustice," which involves "the injustice of having some significant area of one's social experience obscured from collective understanding owing to hermeneutical marginalization." Fricker (2007, p. 158). In the context of legal proof, the two types of epistemic injustices may interact in complex ways (for example, hermeneutical injustices may interact with legal evidence to produce testimonial injustices). The discussion in this section focuses on relatively simple cases of testimonial injustice.

[78] Fricker distinguishes "identity based" epistemic injustices from "innocent errors" in assessing credibility evidence (p. 21). See also *ibid.* ("The conception of identity in question concerns the most important part of an individual's social identity (racial, political, sexual, religious), where the affiliation tends, in our culture at least, to be experienced by the individual as essential to who she or he really is."). For a discussion of types of epistemic injustice beyond those that arise from identity prejudices, see Lackey (2023).

[79] ("The form that this injustice takes specifically in cases of testimonial injustice is that the subject is wronged in her capacity as a giver of knowledge. The capacity to give knowledge to others is one side of the many-sided capacity so significant in human beings: namely, the capacity for reason. We are long familiar with the idea … that our rationality is what lends humanity its distinctive value. No wonder, then, that being insulted, undermined, or otherwise wronged in one's capacity as a giver of knowledge is something that can cut deep." Fricker (2007, p. 44).

[80] See Fricker (2007, p. 46-48).

ten zero-sum.[81] In other words, *overvaluing* evidence in one direction will affect the *opponent* of the evidence (similar to the ways in which *undervaluing* evidence harms the *proponent* of the evidence).

Two of the lessons discussed in the preceding sections apply to epistemic injustice in the context of legal evidence and proof. First, in ways that parallel the discussion of knowledge and legal proof (see Part 4.4), the category of testimonial injustice is, in fact, broader than scholars have typically assumed. Second, in ways that parallel the discussion of Laudan and standards of proof (see Part 3), the relationship between instances of epistemic injustice and the accuracy of case outcome is sometimes more uncertain and complex than is typically assumed. Each point is discussed in turn.

First, when is there testimonial injustice in the context of legal proof? The paradigm case is a credibility "deficit" because of an identity-based prejudice. Because of an identity-based prejudice, stereotype, or assumption a fact-finder ascribes a level of credibility to a witness that is lower than what is rationally warranted by the evidence. Scholars have expanded this category by illustrating how credibility "excesses" can also produce testimonial injustices (Lackey, 2023; Gonzales Rose, 2024).[82] Credibility deficits and excesses both assume that a fact-finder has ascribed a level of credibility to a witness that *deviates from the level that is rationally warranted by the evidence* (Fricker, 2007).[83] In other words, the very idea of a credibility *deficit* or *excess* depends, as a necessary feature, on the assumption that there is some "correct" level of credibility that is epistemically warranted or justified by the evidence.[84] Suppose that we have a witness to a crime and that the epistemically warranted level of credibility for this witness is level *X*.[85] Suppose a fact-finder ascribes a level of *X* credibility to the witness (and thus

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[81] For a discussion of this aspect, see Gonzales Rose (2024).

[82] Lackey (2023) also expands the category beyond *identity-based* epistemic injustices.

[83] Fricker is clear that the norm at work is for the hearer (in the context of legal proof, the fact-finder) to match credibility to what is indicated by the evidence. Fricker (2007, p. 19) ("credibility is a concept that wears its proper distribution on its sleeve... the hearer's obligation is obvious: she must match the credibility she attributes to her interlocuter to the evidence that he is offering the truth.").

[84] This is an important, but sometimes overlooked, point. As Fricker has explained: credibility assessments are not just about social *power* (*i.e.*, who appears and does not appear to be credible)—they are also about what is *true* as a matter of fact, and what is *rationally warranted* based on the evidence. Indeed, Fricker (1998) argues that the very ideas of epistemic *discrimination* and epistemic *injustice* presuppose that there is a fact of the matter about credibility that the hearer or fact-finder gets wrong. (See ibid., p. 175) ("The possibility of identifying a given set of working-indicator-properties as *discriminatory* depends on being able to say that they manifest the norm of credibility so as to attribute rational authority where it should not, and/ or withhold it where it should not. If rational authority were the same as the power to appear rationally authoritative, *then there could be no genuine notion of discrimination*, and the political perspective in epistemology would have been lost before it was won." [emphasis added]). See also Picinali (2024, p. 26) ("Of course, if testimonial injustice occurs, the level of credibility assigned to the testimony is by definition inaccurate, in that it is lower than is warranted by the evidence.").

[85] See Gonzales Rose (2024, p. 181-82) (using quantified examples to illustrate how credibility shifts may occur during a trial).

accordingly relies or does not rely on the testimony).[86] But, suppose the fact-finder ascribed level *X* credibility based on identity-based stereotypes or prejudices and not based on a rational assessment of the evidence. In this example, there is no credibility *deficit* (or *excess*), but there is a testimonial injustice. The "primary harm" of testimonial injustice has occurred—the witness has been wronged in their capacity as a knower, for an identity-based reason.[87] The fact-finder ascribed the "correct" amount of credibility but did so for identity-based, discriminatory reasons. This is so even though the fact-finder landed on the "correct" amount coincidentally or by accident.[88] Thus, the category of testimonial injustice is broader than typically assumed in that it may occur even in the absence of a credibility deficit or excess.

This conclusion parallels the knowledge discussion in the previous section. There, we saw that, at the *macro-level*, a coincidental or accidental connection between the evidence and the truth could undermine a legal verdict. This might occur when the fact-finder reaches a verdict, based on misleading evidence, that coincidentally turns out to be true. Here, at the *micro-level*, a similar coincidental or accidental connection between credibility assessments and credibility evidence can result in an epistemic injustice.

Second, what is the relationship between instances of testimonial injustice and the accuracy of case outcomes? Again, the primary harm in testimonial injustice is to the witness *qua* knower.[89] Scholars have also emphasized, however, the significant practical consequences that may follow from testimonial injustice in the legal context (Tuerkheimer, 2017; Lackey, 2023; Gonzales Rose, 2024). For example, acts of testimonial injustice may cause jurors to incorrectly assess the probative value of testimony and thus draw mistaken inferences, leading potentially to fact-finding errors.[90] The most straightforward examples of testimonial injustice involve parties and victims—for example, criminal defendants whose testimony is not believed because of testimonial injustice or the victims of crime not believed because of testimonial injustice. In ways that parallel the discussion of Laudan and standards of proof (see Part 3), however, the consequences that instances of testimonial injustice have on the accuracy of case outcomes often cannot be isolated or separated from the sys-

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[86] Note that even properly assessing credibility evidence may lead to fact-finding errors. A witness may be speaking truthfully and accurately even if a rationally warranted assessment of the credibility evidence indicates that they should not be believed, and vice versa.

[87] See notes 78, 79, and 80, *supra*, and accompanying text.

[88] Picinali (2024, p. 26) discusses how testimonial injustices that involve credibility deficits may lead to conclusions that are "serendipitously accurate" because they are part of "overall assessments" that are corrected by other evidence in the case. My point in the text is broader—there can be a testimonial injustice without any credibility deficit (or excess) to begin with.

[89] See notes 79 and 80, *supra*, and accompanying text.

[90] Note that fact-finding errors may occur even when fact-finders properly assess credibility evidence. See note 90 *supra*. Moreover, the credibility evidence that is available, even if properly assessed, may not be very probative of the witness's credibility. And fact-finders may fail to properly assess credibility evidence for reasons other than testimonial injustice ("innocent errors," see Fricker, 2007, p. 21).

tem as a whole.[91] This means that the practical consequences of epistemic injustice in particular cases, or in kinds of cases, can present complex and often uncertain empirical questions.[92] In some cases, genuine acts of testimonial injustice may correct or cancel out other injustices.[93] For an extreme example, if we assume an innocent criminal defendant on trial, then testimonial injustice toward a prosecution witness (a credibility "deficit") or testimonial injustice in the form of a credibility "excess" given to a defense expert witness, may, in fact, push the jury toward a factually correct result.[94] As with standards of proof, philosophical analysis and applications can illuminate or draw our attention to overlooked possibilities and draw out analytical implications. But it is too reductive to assume—as with standards of proof taken in isolation—that practical effects on the accuracy of case outcomes will follow from the analysis.[95] How issues of epistemic injustice arise in particular cases and in particular legal systems—and thus how the legal system should respond—requires a detailed understanding of how they interact with the system as whole.

5. CONCLUSION

This article presented a complicated picture of the relationship between legal epistemology and legal proof. The picture was presented from the perspective of an evidence scholar, asking how legal epistemology might help us better understand legal evidence and proof. From this perspective, a number of general lessons emerged.

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[91] See, *e.g.*, Tuerkheimer (2017) (explaining how epistemic injustice interacts systemically with crime rates, crime-reporting rates, false-allegation rates, and police and prosecution behavior to affect the cases that go trial).

[92] This assumes that one has a case of testimonial injustice in the first place. For some of the empirical difficulties in establishing individual instances of testimonial injustice, see Arcila-Valenzuela & Paez (2024). Discussions of testimonial injustice typically illustrate the phenomena by assuming the acts of injustice affect the parties or victims in a straightforward manner. See, e.g., Gonzales Rose (2024, p. 180) ("Let us suppose the defendant is Black and the police officer is White"). Testimonial injustice, however, may also occur in more complex relationships between parties and witnesses. For example, in Pena-Rodriguez v. Colorado, 137 S. Ct. 855 (2017), the United States Supreme Court held that the use of racial stereotypes or animus to convict a defendant may violate the defendant's constitutional right to a fair trial. The case largely focused on comments made by a juror about the defendant. However, a less-discussed aspect of the case is that the juror also made similar statements about the defendant's alibi witness (including falsely stating the witness was "an illegal" and thus not credible). This act of testimonial injustice would have existed even if the juror had not made statements about the defendant, and even if the defendant had been a different race. See also Roberts (2023, p. 645-46).

[93] They may also compound. See, *e.g.*, Lackey (2023) (explaining how the same criminal defendant may be given a credibility excess and a credibility deficit at different stages of the criminal process).

[94] What is true in this one case may also occur systematically, depending on the base rates of true and false claims; the quality of the evidence (both credibility and non-credibility evidence); and whether the fact-finder properly assesses the admissible evidence; among other factors. The point is that the relationship between testimonial injustice and accuracy depends on complex empirical issues that cannot be isolated from the system as whole. See also Allen & Elliott-Smith (forthcoming).

[95] See Part 3.

One lesson is the danger in trying to reduce or isolate features of legal proof that cannot be reduced or isolated. We saw this lesson in the discussion of Laudan on standards of proof and the risk of error, as well as in the discussions of statistical evidence, safety, and epistemic injustice. A second lesson is the illusion of precision—which arises when thinking that a legal feature, rule, or practice can be given sharp boundaries when it cannot. We saw this lesson in the discussions of standards of proof and probative value throughout the article, and in particular in the discussion of statistical evidence. The third lesson is that a potential mismatch between how philosophical concepts are defined and used in philosophy, on one hand, and how they arise in law, on the other hand, may not necessarily be a problem for law. We saw this lesson in the discussions of inference to the best explanation, safety, sensitivity, and knowledge. The analysis also drew attention to a fourth, meta-lesson: the risks of mismodeling or misdescribing the legal phenomena that are the objects of epistemological inquiry. We saw this in the discussions of standards of proof throughout the article—including Laudan on the BARD standard and more recent attempts by philosophers to explain the POE standard—as well as the discussions of statistical evidence, safety, and knowledge.

The vision of legal epistemology presented in this article is not one of simply applying or deducing consequences or implications from a favored philosophical theory or concept.[96] Rather, it requires a close attention to the epistemic details of

[96] I thus share with Enoch, Fisher, & Spectre (2021, p. 85) an objection to doing legal epistemology "just by doing epistemology" ("What we focus on in this paper—and what we say is deeply mistaken—is the attempt, roughly, to do legal epistemology just by doing epistemology, or to treat epistemological considerations (say, about the nature of knowledge or evidence) as decisive, or even just intrinsically relevant, to normative questions in evidence law theory."). The vision of legal epistemology presented in this article is outside the scope of their critique in that epistemology was used to explain or illuminate aspects of legal proof. Moreover, some of the applications in this article are broader than—and do fit comfortably inside—the "two-tiered" model they provide for legal epistemology. They argue that epistemology might be relevant either for "designing the evidence law regime" or for a "conscientious fact-finder" (p. 85). But a central example used throughout this article, sufficiency-of-evidence review by trial and appellate courts, does not seem to fit either category—thus suggesting a broader possible scope for legal epistemology than they suggest. Furthermore, the vision presented in this article shares with Larry Laudan (see note 23, *supra*) the view that epistemic considerations are ultimately relevant for how they may contribute (or hinder) the law's goals regarding factual accuracy and the minimization of errors. Thus, I reject some of the framing in Enoch, Fisher, & Spectre (2021, p. 89-92) to the extent it posits tradeoffs between truth and some epistemic considerations. They present a thought experiment: a normative choice between (1) a more accurate legal system, or (2) a less accurate system that secures an additional epistemic criterion or property (e.g., knowledge)—and they argue that it is a kind of "epistemic fetishism" to prefer the latter. But we can run their thought experiment with the concept of "evidence" itself (because being "supported by evidence" is itself an epistemic consideration). So, if we follow their framing: should we prefer a legal system with more accuracy or one with less accuracy that requires that verdicts be supported by evidence? This strikes me as a strange question. See also Roush (2023, p. 124) ("an externalist about knowledge will find the presented choice puzzling because for us it is inconceivable that knowledge would not itself include insurance of accuracy"). Although I share with Enoch, Fisher, and Spectre the assumption that any epistemic considerations in the legal system that *do* result in decreased overall accuracy need to be justified in light of some other legal, political, or moral value (such as fairness, equality, or justice) and not in light of epistemology alone.

the evidentiary proof process of a particular legal system (or legal systems). In this sense, in applying epistemology to law, the vision presented resembles something like the philosophy of physics (Wallace, 2021; see, e.g., Norton, Pooley & Read, 2023). The similarities involve the combination of abstract philosophical tools and concepts, on one hand, with detailed specialized knowledge of complex phenomena, on the other. The complexities that arise from this interaction are also an invitation for more collaboration between philosophers and legal scholars about the details from each discipline that matter. I conclude by returning to Larry Laudan. Laudan, in my view, seemed to endorse a similar approach. Rather than deduce consequences for law from theories in the philosophy of science, he grappled with the messy details of legal proof, criminal law, and criminal procedure in the United States and attempted to bring some clarity to what he observed.

BIBLIOGRAPHY

Allen, R. & Elliott-Smith, N. (forthcoming). Proof Beyond a Reasonable Doubt Doesn't Exist: Except as an Emergent Property of a Complex System. *Journal of Criminal Law & Criminology*.

Allen, R., Pardo, M., Lawrence, W. & Smiciklas, C. (2025). Minimal Rationality and the Law of Evidence. *Journal of Criminal Law & Criminology*, *115(2)*, 269-315.

Allen, R. & Pardo, M. (2023). Evidence, Probability, and Relative Plausibility: A Response to Aitken, Taroni & Bozza. *The International Journal of Evidence & Proof, 27(2)*, 126-42.

Allen, R. (2022). Naturalized Epistemology and the Law of Evidence: A reply to Pardo, Spellman, Muffato, and Enoch. *Quaestio Facti, 3,* 253-72.

Allen, R. & Smiciklas, C. (2022). The Law's Aversion to Maked Statistics and Other Mistakes. *Legal Theory, 28(3),* 179-209.

Allen, R. & Pardo, M. (2019a). Relative Plausibility and Its Critics. *The International Journal of Evidence & Proof, 23 (1-2)*, 5-59.

Allen, R. & Pardo, M. (2019b). Clarifying Relative Plausibility: A Rejoinder. *The International Journal of Evidence & Proof*, *23(1-2)*, 205-17.

Allen, R. & Laudan, L. (2008). Deadly Dilemmas. *Texas Tech Law Review, 41(1),* 65-92.

Bentham, J. (1843). *An Introductory View of the Rationale of Judicial Evidence, Works VI(5)*, (Bowring ed., 2002).

Allen, R. & Pardo, M. (2007). The Problematic Value of Mathematical Models of Evidence. *The Journal of Legal Studies, 36(1),* 107-40.

Amaya, A. (2019). The Explanationist Revolution in Evidence Law. *The International Journal of Evidence & Proof*, *23(1-2)*, 60-67.

Arcila-Valenzuela, M. & Paez, A. (2024). Testimonial Injustice: The Facts of the Matter. *The Review of Philosophy and Psychology, 15*, 582-602)

Buchak, L. (2014). Belief, Credence, and Norms. *Philosophical Studies, 169(2)*, 285-311.

Cheng, E. & Pardo, M. (2015). Accuracy, Optimality, and the Preponderance Standard. *Law, Probability, and Risk*, *14(3)*, 193-212.

Cohen, L. (1977). *The Probable and The Provable*. Oxford University Press.

Dei Vecchi, D. (2020). Laudan's Error: Reasonable Doubt and Acquittals of Guilty People. *The International Journal of Evidence & Proof, 24(3)*, 211-32.

Enoch, D., Fisher, T. & Spectre, L. (2021). Does Legal Epistemology Rest on a Mistake? On Fetishism, Two-Tiered System Design, and Conscientious Fact-Finding. *Philosophical Issues, 31(1),* 85-103.

Enoch, D. & Spectre, L. (2019). Sensitivity, Safety, and the Law: A Reply to Pardo. *Legal Theory, 25(3),* 178-199.

Enoch, D., Spectre, L. & Fisher, T. (2012). Statistical Evidence, Sensitivity, and the Legal Value of Knowledge. *Philosophy & Public Affairs, 40(3)*, 197-224.
Epstein, D. & Goodman, L. (2019). Discounting Women: Doubting Domestic Violence Survivors' Credibility and Dismissing Their Experiences. *University of Pennsylvania Law Review*, *167(2),* 399-461.
Ferrer Beltran, J. (2006). Legal Proof and Fact Finders' Beliefs. *Legal Theory, 12(4),* 293-314.
Fricker, M. (2007). *Epistemic Injustice*. Oxford University Press.
Fricker, M. (1998). Rational Authority and Social Power: Towards a Truly Social Epistemology. *Proceedings of the Aristotelian Society, New Series, 98,* 159-77.
Ho, H. (2025). Should we be Convicting People We Don't Believe to be Guilty? *Quaestio Facti, 6,* 101-29.
Ho, H. (2008). *A Philosophy of Evidence Law*. Oxford University Press.
Gardiner, G. (2019a). Legal Burdens of Proof and Statistical Evidence. D. Coady & J. Chase (eds.) *The Routledge Handbook of Applied Epistemology*. Routledge.
Gardiner, G. (2019b). The Reasonable and the Relevant. *Philosophy & Public Affairs, 47(3)*, 288-318.
Gardiner, G. (2017). In Defence of Reasonable Doubt. *Journal of Applied Epistemology, 34(2)*, 221-41.
Gettier, E. (1963). Is Justified True Belief Knowledge? *Analysis, 23(6),* 121-23.
Gonzales Rose, J. (2024). A Critical Perspective on Testimonial Injustice: Interrogating Witnesses' Credibility Excess in Criminal Trials: A Comment on Frederico Picinali's "Evidential Reasoning, Testimonial Injustice and the Fairness of the Criminal Trial." *Quaestio Facti, 7,* 173-85.
Gonzales Rose, J. (2021). Race, Evidence, and Epistemic Injustice. C. Dahlman, A. Stein & G. Tuzet (eds.). *Philosophical Foundations of Evidence Law*. Oxford University Press.
Greco, J. (2012). Better Safe than Sensitive. K. Becker & T. Black (eds.) *The Sensitivity Principle in Epistemology*, 193-206.
Johnson King, Z. (2022). Safety, Sensitivity, and Admissibility. *Synthese, 200(6)*, 1-22.
Lacey, N. (2004). *A Life of H.L.A. Hart: The Nightmare and the Noble Dream*. Oxford University Press.
Lackey, J. (2023). *Criminal Testimonial Injustice*. Oxford University Press.
Lackey, J. (2021). Norms of Criminal Conviction. *Philosophical Issues, 31(1),* 188-209.
Laudan, L. (2006). *Truth, Error, and Criminal Law: An Essay in Legal Epistemology.* Cambridge University Press.
Laudan, L. (2016). *The Law's Flaws: Rethinking Trials and Errors?.* College Publications.
Laudan, L. (2015). Why Asymmetric Rules of Procedure Make it Impossible to Calculate a Rationally Warranted Standard of Proof. Available at: *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2584658* .
Laudan, L. (2007). Strange Bedfellows: Inference to the Best Explanation and the Criminal Standard of Proof. *The International Journal of Evidence & Proof, 11(4)*, 292-306.
Laudan, L. A Confutation of Convergent Realism. *Philosophy of Science, 48(1)*, 19-49.
Leubsdorf, J. (2015). The Surprising History of the Preponderance Standard of Civil Proof. *Florida Law Review, 67(5)*, 1569-1619.
Mikhail, J. (2007). "Plucking the Mask of Mystery From its Face": Jurisprudence and H.L.A. Hart. *Georgetown Law Journal, 95*, 733-779.
Moss, S. (2023). Knowledge and Legal Proof. T. Gendler *et al.* (eds.). *Oxford Studies in Epistemology, Volume 7*. Oxford University Press.
Moss, S. (2018). *Probabilistic Knowledge*. Oxford University Press.
Mueller, A. (2024). Legal Proof: Why Knowledge Matters and Knowing Does Not. *Asian Journal of Philosophy, 3(28)*, 1-22.
Nesson, C. (1979). Reasonable Doubt and Permissive Inferences: The Value of Complexity. *Harvard Law Review, 92(6)*, 1187-1225.
Norton, J., Pooley, O. & Read, J. (2023). The Hole Argument. *Stanford Encyclopedia of Philosophy*, available at: *https://plato.stanford.edu/entries/spacetime-holearg/* .
Pardo, M. (forthcoming). The Standard of Proof in Racial-Gerrymandering Cases: *Alexander's* Mistake and its Implications. *University of Illinois Law Review, 2026(1).*

Pardo, M. (2023a). What Makes Evidence Sufficient?. *Arizona Law Review, 65(2)*, 431-78.
Pardo, M. (2023b). On Proving Mabrus and Zorgs. *Vanderbilt Law Review, 76(6)*, 1653-80.
Pardo, M. (2019). The Paradoxes of Legal Proof: A Critical Guide. *Boston University Law Review, 99(1)*, 233-90.
Pardo, M. (2018). Safety vs Sensitivity: Possible Worlds and the Law of Evidence. *Legal Theory, 24(1),* 50-75.
Pardo, M. (2013). The Nature and Purpose of Evidence Theory. *Vanderbilt Law Review*, *66(2)*, 547-613.
Pardo, M. (2011). More on the Gettier Problem and Legal Proof: Unsafe Nonknowledge Does Not Mean that Knowledge Must be Safe. *Legal Theory, 17(1)*, 75-80.
Pardo, M. (2010). The Gettier Problem and Legal Proof. *Legal Theory, 16(1),* 37-57.
Pardo, M. & Allen, R. (2008). Juridical Proof and the Best Explanation. *Law and Philosophy, 27*, 223-68.
Pardo, M. (2007). On Misshapen Stones and Criminal Law's Epistemology. *Texas Law Review, 86(2)*, 347-83.
Pardo, M. (2005). The Field of Evidence and the Field of Knowledge. *Law and Philosophy, 24(4)*, 321-92.
Picinali, F. (2024). Evidential Reasoning, Testimonial Injustice and the Fairness of the Criminal Trial. *Quaestio Facti, 6,* 201-35.
Pritchard, D. (2015). Risk. *Metaphilosophy, 46(3),* 436-61.
Psillos, S. (2023). In Science We Trust: Larry Laudan (1941-2022), *Journal for General Philosophy of Science, 54*, 523-33.
Quine, W. (1969). *Ontological Relativity & Other Essays*. Columbia University Press.
Redmayne, Mike. (2008). Exploring the Proof Paradoxes. *Legal Theory, 14(4),* 281-309.
Roberts, P. (2023). Theorising Evidence Law. *Oxford Journal of Legal Studies, 43(3),* 629-49.
Ross, L. (2020). Recent Work on the Proof Paradox. *Philosophy Compass, 15(6)*, 1-11.
Roush, S. (2023). Knowledge, Evidence, and Naked Statistics. L. Oliveira (ed.). *Externalism About Knowledge*. Oxford University Press.
Smith, M. (2018). When Does Evidence Suffice for Conviction?. *Mind, 127(508)*, 1193-1218.
Tuerkheimer, D. (2017). Incredible Women: Sexual Violence and the Credibility Discount. *University of Pennsylvania Law Review, 166(1),* 1-58,
Twining, W. (2019). Bentham's Theory of Evidence: Setting a Context. *Journal of Bentham Studies, 18(1)*, 20-37.
Wallace, D. (2021). *Philosophy of Physics: A Very Short Introduction*. Oxford University Press.
Wells, G. (1992). Naked Statistical Evidence of Liability: Is Subjective Probability Enough? *Journal of Personality & Social Psychology, 62(5)*, 739-52.
Williamson, T. (2000). *Knowledge and its Limits*. Oxford University Press.

Case law and legislation

Addington v. Texas, 441 U.S. 418 (1979)
Bourjaily v. United States 483 U.S. 171 (1987)
Clark v. Sweeney, 607 U.S. __ (2025)
Colorado v. New Mexico, 467 U.S. 310 (1984)
Cruzan v. Missouri Dep't of Health, 497 U.S. 261 (1990)
E.M.D. Sales, Inc. v. Carrera, 604 U.S. 45 (2025)
Federal Rules of Evidence
Federal Rules of Civil Procedure
Federal Rules of Criminal Procedure
Greenlaw v. United States, 554 U.S. 237 (2008)
Huddleston v. United States, 485 U.S. 681 (1988)

In re Winship, 397 U.S. 358 (1970)
Jackson v. Virgina, 443 U.S. 307 (1979)
Pena-Rodriguez v. Colorado, 137 S. Ct. 855 (2017)
Pennsylvania v. Reese, 663 A.2d 206 (1995)
Reeves v. Sanderson, 530 U.S. 133 (2000)
Tyson Foods, Inc. v. Bouaphakeo, 136 S. Ct. 1036 (2016)
United States v. Sineneng-Smith, 140 S. Ct. 1575 (2020)
United States v. Soto-Zuniga, 837 F.3d 992, 1004-05 (9th Cir. 2016)
United States v. Fatico, 458 F.3d 388 (E.D.N.Y. 1978)
United States Courts for the Ninth Circuit, Manual of Modern Criminal Jury Instructions (2010), available at: https://www.ce9.uscourts.gov/jury-instructions/