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ESSAY

THE ECONOMICS—CONVENTIONAL, BEHAVIORAL, AND POLITICAL—OF “SUBSEQUENT REMEDIAL MEASURES” EVIDENCE

Dan M. Kahan*

Economic analyses of evidence law have proliferated in recent years. This paper criticizes the economic justifications that have been advanced on behalf of one rule in particular: the ban on proof of “subsequent remedial measures” (SRM) to suggest inadequate precautions were taken before an accident. The conventional economic defense of this rule—that allowing SRM proofs discourages parties from taking steps ex post to prevent recurrence of accidents—ignores the negative effect that banning SRM evidence has on incentives to take care ex ante. The behavioral economic rationale—that factfinders will overvalue SRM proofs because of “hindsight bias”—fails to weigh the risk of erroneous imposition of liability when such evidence is admitted against the risk of erroneous nonimposition of liability when it is excluded. Rather than a categorical ban, economic analysis supports a case-by-case evaluation of whether SRM proofs should be admitted in light of the strength of the remaining evidence in the case. The uneven enforcement of the SRM ban often noted by commentators can in fact be defended on these grounds. The scholarly defense of a categorical ban, this Essay concludes, reflects a decidedly unempirical (and necessarily conservative) style of economic analysis that seeks to win assent by showing that it can rationalize existing legal rules. This form of law and economics is singularly unsuited for the analysis of evidence because it exacerbates the tendency of undesirable rules of proof to perpetuate themselves through the effect they have in shaping popular beliefs about how the world works.

INTRODUCTION

Just over a decade ago, Professor Richard Friedman wrote an article puzzling over why the “law and economics movement,” despite its “major impact on many areas of law,” had had so “little on the law of evidence.”¹ In the years since, Friedman’s “hope that . . . more legal economists . . . [would] find evidentiary issues worthy of exploration”² has been amply fulfilled. The field of evidence has grown into a bustling colony within

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º Id. at 1538.
the “L&E” empire, densely populated with communities of both conventional and behavioral legal economists.\(^3\)

My object in this Essay is to offer a critical assessment of one evidence rule that L&E is commonly understood to justify. That rule categorically bars so-called “subsequent remedial measure” (SRM) proofs—evidence of action taken to prevent recurrence of an accident, offered to support the inference that the defendant could have and should have taken such action before the plaintiff suffered injury.\(^4\) By eliminating the prospect that steps to reduce future accidents will be used to prove liability for past conduct, the SRM rule, according to conventional law and economics (CLEC), removes a disincentive to behavior that promotes social wealth.\(^5\) Behavioral law and economics (BLEC) buttresses the case for the rule by adding that it prevents the factfinder from indulging “hindsight bias”: Once the factfinder learns that a party adopted a particular remedial measure ex post, it will be psychologically impelled to overestimate how readily the utility of such a measure could have been predicted ex ante.\(^6\) Although developed more systematically through

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contemporary L&E frameworks, these rationales are among the ones that have been offered to justify the rule since its inception at common law.7

My argument is that the economic justifications for the SRM rule are uncompelling. Neither CLEC nor BLEC convincingly justifies categorical exclusion of SRM proofs. Indeed, properly applied, both theories furnish compelling support for admitting such evidence, conditional on highly particular, fact-specific balancing of the sort that courts use to determine admissibility of evidence generally. Those conditioned (through Pavlovian stimuli, including the approving nod of professors and the ready acceptance of law review articles) to believe the law is “efficient” might be tempted to view the near-universality of the rule as cause to discount the substance of my critique of the economic justifications for the SRM rule. So, for good measure, I will reinforce the argument with an account of the political economy of evidence lawmaking that explains why we should expect the SRM rule to persist—particularly in the Federal Rules of Evidence—despite any adverse effect on social wealth.

My motivations are several. One is to justify a narrow application (or, more candidly, a simple evasion) of the SRM rule. Like other categorical exclusion rules,8 the bar on SRM proofs turns on the application of analytically complex—or just plain ambiguous—criteria defining the type of evidence to which it applies and the purposes for which such evidence can and cannot be used. Judges predictably negotiate these complexities by considering whether application of the rule to the case at hand would advance the rationales of the rule.9 Consequently, in the course of its application, the SRM rule tends to transmute from a categorical bar into exactly the sort of fact-specific assessment that the rule is meant to supplant. Commentators usually criticize this tendency;10 I embrace it. Because my own economic analysis of the SRM rule shows why it would be a mistake to apply it categorically, this Essay defends an approach to applying it that renders the rule noncategorical.

Another and more basic objective is to raise a note of caution about a recurring bias in the economic analysis of evidence, and indeed in economic analysis more generally. Although such analyses take the form of

7. See Fed. R. Evid. 407 advisory committee’s note (identifying these as rationales for rule at common law).
10. See, e.g., 23 Charles Alan Wright & Kenneth W. Graham, Jr., Federal Practice and Procedure §§ 5282, 5288–5289 (1980 & Supp. 2009) (discussing “obvious threat to the integrity . . . of the general exclusionary rule” when SRM proofs deemed admissible under various exceptions to Rule 407 ban, such as to prove feasibility or impeach witness).
normative evaluations of particular rules, their primary aim is to demonstrate the plausibility of economic frameworks generally—often in the face of skepticism by noneconomic theorists—by showing that these frameworks cogently explain why these rules have the content that they do. Because the rhetorical force of this strategy depends on demonstrating an agreement between economic analysis and existing doctrine, those who use it tend to avoid drawing attention to contentious empirical premises relating to the actual welfare effects of the rules they are defending.\textsuperscript{11} This characteristic of L&E theorizing is troubling no matter where it occurs. But I believe it is distinctively problematic when applied to the law of evidence. Evidence law by its nature exerts tremendous power over collective understandings of how the world works.\textsuperscript{12} It is therefore especially vital that scholarly analysts of evidence law probe it with methods that reflect appropriate critical distance and skepticism.\textsuperscript{13}

My argument unfolds in four parts. Part I presents an overview of the SRM rule and its standard CLEC and BLEC justifications. Parts II and III critique these justifications. Lastly, Part IV critiques the political economy of the rule.

I. The SRM Rule: Law and Theory

A person loses control of an electric saw that severs his finger, and he sues the manufacturer for failing to equip the saw with a guard that he alleges would have prevented his injury. At trial, he seeks to introduce evidence that, after the accident, the manufacturer redesigned the saw to include such a guard.\textsuperscript{14} The SRM rule will determine admissibility of this proof, which I will use as a running example to illustrate how the rule works and what it is thought to accomplish.

To make sense of the rule, it helps to start with the regime that it modifies. The key concepts in this regime are relevance and prejudice.

\textsuperscript{11} See, e.g., Herbert Hovenkamp, Positivism in Law & Economics, 78 Calif. L. Rev. 815, 822–25 (1990) (“[V]ery little in . . . most . . . writing on law & economics[,] could be described as a rigorous attempt to falsify alternative explanations for a given phenomenon.”).

\textsuperscript{12} See generally Michael J. Saks & Robert F. Kidd, Human Information-Processing and Adjudication: Trial by Heuristics, 15 Law & Soc’y Rev. 123 (1981) (highlighting that “[m]ost legal decision making . . . is done under conditions of uncertainty” and pointing to “the effect of [a] trial’s format on the fact finder’s subjective certainty of guilt”).

\textsuperscript{13} This is the mission, in fact, that legal scholars have been exhorted to fulfill by the recent National Academy of Sciences report detailing the large number of scandalous deficiencies in forensic science that have become entrenched because of the long judicial acceptance of them. See Nat’l Research Council of the Nat’l Acads., Strengthening Forensic Science in the United States: A Path Forward 85–111 (2009) (describing “the legal system’s reliance on forensic science evidence in criminal prosecutions and . . . the existing adversarial process for admitting this type of evidence”). This Essay is meant as a contribution to this urgent effort and is offered in a spirit of gratitude toward, and admiration of, the Report’s courageous authors.

\textsuperscript{14} This fact pattern has arisen in actual product liability cases. See, e.g., Ross v. Black & Decker, Inc., 977 F.2d 1178, 1184–85 (7th Cir. 1992).
Under the modern approach—reflected in Federal Rule of Evidence 401—evidence is deemed relevant if it has “any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be [judged to be] without the evidence.” This standard sets a deliberately low threshold. To be relevant, a piece of evidence certainly does not, on its own, have to demonstrate that a legally consequential fact (or its negation) is more probable than not; it need only change the factfinder’s assessment of the likelihood of that fact to some detectable extent.

Evidence that satisfies this relatively low threshold can still be excluded, however, if “its probative value is substantially outweighed by the danger of unfair prejudice.” Prejudice refers to the tendency of evidence to induce decision on some “improper basis.” Improper bases for decision typically include some form of bias, emotional or cognitive. But prejudice is understood broadly enough to encompass pretty much any undesirable consequence associated with admissibility—including disregard for some important societal interest or value, or a simple waste of time or other inconvenience.

Ordinarily, as reflected in Rule 403, courts attempt a comparative weighing of probity and prejudice when considering admissibility. However, a set of rules—of which the SRM rule is one—singles out entire categories of evidence for per se exclusion. While not completely devoid of relevance, the types of proof specified by the categorical exclusion rules are understood to involve such low degrees of likely probative value


16. See Fed. R. Evid. 401 advisory committee’s note (explaining rule is meant to set forth liberal standard—“a brick is not a wall”—and to dispel any “confusion between questions of admissibility and questions of the sufficiency of the evidence” (quoting McCormick on Evidence 641 (John W. Strong ed., 5th ed. 1999) (internal quotation marks omitted))).


18. Fed. R. Evid. 403 advisory committee’s note.


21. See Fed. R. Evid. 403 (“Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.”).
and such high degrees of likely prejudice that case-specific balancing can efficiently be dispensed with.\(^{22}\)

The categorical exclusion rules have a signature form. First, each contains a definitional element, which identifies the type of evidence subject to the rule. Second, each has a forbidden-purpose element that specifies the inference or set of inferences that such evidence is not admissible to establish; evidence that comes within the definitional element can be introduced for other purposes subject to the usual case-specific, Rule 403 balancing of probity and prejudice. For example, the ban on “character propensity” proofs (Rule 404) prohibits evidence of a disposition or “trait of character” offered to support the inference that a person behaved “in conformity” with his or her character “on a particular occasion.”\(^{23}\) Character propensity proofs are understood to invite indulgence of unreliable assumptions about the strength of individuals’ behavioral tendencies and also to denigrate ideals of free will and individual self-determination.\(^{24}\) However, the bar on character propensity proofs does not prohibit evidence indicative of a person’s character when offered for “other purposes, such as proof of . . . knowledge, identity, or absence of mistake.”\(^{25}\)

The SRM rule fits this pattern. As reflected in Federal Rule of Evidence 407 (a typical categorical rule formulation adopted verbatim in many states), the definitional element makes the rule applicable to “measures” implemented “after an injury or harm” that “would have made the injury or harm less likely to occur” if “taken previously.”\(^{26}\) Rule 407 forbids introducing this evidence “to prove negligence, culpable conduct, a defect in a product, a defect in a product’s design, or a need for a warning or instruction.”\(^{27}\) In the case of the individual injured while using the electric saw, for example, the rule would prohibit introduction of the

\(^{22}\) See Fed. R. Evid. 401 advisory committee’s note (stating “Rule 404 and those following it” govern “situations [that] recur with sufficient frequency to create patterns susceptible of treatment by specific rules” reflecting “application of [Rule 401] as limited by the exclusionary principles of Rule 403”); Fed. R. Evid. 403 advisory committee’s note (describing Rules 404 and 407–411 as “concrete applications” of the “policies underlying” Rule 403 to “particular situations” that admit of “specific rules”).

\(^{23}\) See, e.g., Michelson v. United States, 335 U.S. 469, 475–76 (1948) (“The inquiry is not rejected because character is irrelevant; on the contrary, it is said to weigh too much with the jury and to so overpersuade them as to prejudice one with a bad general record . . . .” (footnote omitted)); Gerard E. Lynch, RICO: The Crime of Being a Criminal, 87 Colum. L. Rev. 920, 936 (1987) (“To infer that a defendant committed the particular offense for which he is being tried from the fact that he has previously committed other crimes of a generally similar nature—or, worse still, other crimes of an entirely different nature—is not only unfair, but inconsistent with a fundamental supposition that criminal behavior is punishable because it represents a free choice at a particular moment in time to commit an immoral act.”).

\(^{24}\) Id.

\(^{25}\) Fed. R. Evid. 404(b).

\(^{26}\) Fed. R. Evid. 407.

\(^{27}\) Id.
postaccident installation of a guard to support the inference that the failure to equip the saw with a guard at the outset was negligent or rendered the saw unreasonably dangerous. But such evidence could be introduced for “another purpose, such as proving ownership, control, or feasibility of precautionary measures if controverted, or impeachment.”

Like the other categorical exclusion rules, the SRM ban reflects a determination that the prejudice associated with such evidence is highly likely to outweigh whatever probative value it might have. The Advisory Committee for Rule 407 explains:

The rule rests on two grounds. (1) The conduct is not in fact an admission, since the conduct is equally consistent with injury by mere accident or through contributory negligence. Or, as Baron Bramwell put it, the rule rejects the notion that “because the world gets wiser as it gets older, therefore it was foolish before.” Hart v. Lancashire & Yorkshire Ry. Co., 21 L.T.R.N.S. 261, 263 (1869). Under a liberal theory of relevancy this ground alone would not support exclusion, as the inference is still a possible one. (2) The other, and more impressive, ground for exclusion rests on a social policy of encouraging people to take, or at least not discouraging them from taking, steps in furtherance of added safety.

The two sorts of prejudice the Advisory Committee Notes associate with Rule 407 can be readily translated into economic rationales for excluding SRM proofs. The ground the Committee identifies as “more impressive” is easily understood in CLEC terms. If a party fears a factfinder will treat an SRM proof as evidence that such measures could and should have been adopted before the accident, fear of enhanced liability could deter that party from taking socially desirable precautions to prevent such accidents from recurring (such as equipping the dangerous saw with a guard, in the example). From this perspective, it makes sense to categorically exclude such evidence, because the contribution SRM evidence makes to the accurate determination of facts in the courtroom will always (or nearly always) be offset by the distorting effect its anticipated admission would have on behavior outside of it.

The rationale that the Advisory Committee views as the weaker one for the SRM rule—Baron Bramwell’s concern that the wisdom of experience will be treated as evidence of prior foolishness—grows stronger when fortified with insights from BLEC. The Advisory Committee’s skepticism about this rationale would be fully warranted if one understood that position as asserting only that SRM proofs are by their nature irrele-

28. Id.; see also Ross v. Black & Decker, Inc., 977 F.2d 1178, 1184–85 (7th Cir. 1992) (“[U]nder Rule 407, post-manufacture remedial measures are admissible if the manufacturer disputes the feasibility of the remedial measures.”).


30. See, e.g., Posner, Economic Approach, supra note 3, at 1485 (“The primary concern is that the admissibility of such evidence would, by discouraging repairs, increase the risk of future accidents.”).
vant—a position courts sometimes advance. A party who correctly judged the prospect of a serious accident to be, and to remain, remote would have little economic incentive to adopt a remedial measure even after such an event occurred. A party would also have little reason to adopt such a measure if it had correctly determined before the accident that such a measure would be ineffective in averting it. The subsequent adoption of a precaution, then, furnishes a rational factfinder with reasons to assume that the party adopting the precaution knew such measures were warranted ex ante. That effect is enough to get an SRM proof over the low threshold set by Rule 401, even if it does not by itself prove the party behaved in a substandard manner by failing to adopt the measure earlier.

But BLEC tells us that a real-world factfinder is unlikely to give SRM proofs an effect this limited. “Hindsight bias” refers to the tendency of individuals to form an exaggerated assessment of how easily some contingency (a surprise attack by an invading army, say) could have been predicted once they learn it actually occurred. In the setting of SRM proofs, then, a factfinder who learns a party responded to an accident by adopting precautions against recurrence (e.g., adding a guard to the design of the electric saw) will overestimate how readily the utility of that measure could have been gauged before the accident. It is true the SRM proof supplies the factfinder with reasons to revise downward its assessment of the likelihood of two exculpating scenarios: that the probability of the accident was and remains trivially remote, and that a precaution would not have helped anyway. But as a result of hindsight bias, the factfinder could well be lulled into downgrading the likelihood of multiple other exculpating scenarios consistent with ex post adoption of the measure. Such exculpating scenarios include, for example, the accident itself furnishing critical, previously inaccessible information about the probability or magnitude of possible accidents; postaccident circumstances reducing the cost or increasing the effectiveness of the precaution enough to tip the balance in favor of its implementation; or even the

31. See, e.g., Columbia & Puget Sound R.R. v. Hawthorne, 144 U.S. 202, 208 (1892) (“[S]uch acts afford no legitimate basis for construing such an act as an admission of previous neglect of duty. A person may have exercised all the care which the law required, and yet, in the light of his new experience, after an unexpected accident has occurred, and as a measure of extreme caution, he may adopt additional safeguards.” (quoting Morse v. Minneapolis & St. L. Ry. Co., 16 N.W. 358, 359 (Minn. 1883))); Grenada Steel Indus., Inc. v. Ala. Oxygen Co., 695 F.2d 883, 888 (5th Cir. 1983) (“[C]hanges in design . . . might be made after an accident for a number of different reasons: simply to avoid another injury, as a sort of admission of error, because a better way has been discovered, or to implement an idea or plan conceived before the accident.”).

32. See generally Fed. R. Evid. 401 advisory committee’s note (“The standard of probability under the rule . . . has the added virtue of avoiding confusion between questions of admissibility and questions of the sufficiency of the evidence.”).

experience of the accident instilling in the party a supererogatory motivation to adopt a precaution that the law would impose no duty to implement. BLEC posits that this distortion of judgment is so likely to outweigh any appropriate contribution SRM proofs make to accurate factfinding that the evidence should be excluded categorically.34

Indeed, the adverse effect that hindsight bias has on factfinding can magnify the adverse effect it has on behavior. The more likely factfinders are to overvalue SRM proofs, the more likely parties are to refrain from adopting them out of fear of liability. If parties anticipated that factfinders would give such proofs only the weight they are correctly due, none would face any disincentive against adopting precautionary measures on the basis of genuine postaccident contingencies, including new information revealed by the accident itself.35 Enriched with the psychological sophistication of BLEC, Bramwell’s concern—that factfinders will fallaciously infer that because someone learned from his mistake, he could have learned just as much without making it—is thus seen to be part of what gives the “more impressive” ground for the SRM rule its strength.

Of course, only someone whose moral imagination has been fully occupied by the L&E worldview would think that CLEC and BLEC supply the sole conceivable understandings of the prejudice averted by the SRM rule. Presumably, a person who appropriately values others should be motivated to do whatever she reasonably can to prevent recurrence of an injurious accident; an individual who experiences such motivation deserves praise, or at least less condemnation, than someone who reacts to another’s injury with cold indifference or even cold calculation. Putting someone who tries to make the world safer in more legal peril than someone who does not, then, seems to express a morally false account of the elements of good character—wholly apart from what we think the incentives of such an outcome might be.36 The law’s communication of this deficient message would be a form of prejudice akin to the denigration of the ideal of autonomy associated with admission of character propensity evidence.

34. See Rachlinski, Psychological Theory, supra note 6, at 617–18 (noting courts have deemed SRM proofs inadmissible out of fear of hindsight bias impacting juries’ liability determinations).

35. See Flaminio v. Honda Motor Co., 733 F.2d 463, 471 (7th Cir. 1984) (Posner, J.) (“It is only because juries are believed to overreact to evidence of subsequent remedial measures that the admissibility of such evidence could deter defendants from taking such measures.”); Rachlinski, Psychological Theory, supra note 6, at 617–18 (arguing if jury gave appropriate weight to evidence of remedial measures, “[d]efendants should . . . have no fear” of SRM proofs).

36. See Hawthorne, 144 U.S. at 208 (“The more careful a person is . . . the more likely he would be to [engage in a remedial measure] . . . [T]o have such acts construed as an admission of prior negligence . . . virtually holds out an inducement for continued negligence.” (quoting Morse, 16 N.W. at 359)).
The rationales for the SRM ban are important because the terms of the rule are, at a minimum, analytically complex, if not incoherent. This is the case for all the categorical exclusion rules. Just as the courts must do with the other rules, then, they must construe the SRM ban’s definitional and forbidden-purpose elements in a manner that reflects a sensible understanding of when and how proffered evidence creates the forms of prejudice the rules are designed to deflect.

For example, does the SRM bar apply to so-called “third party” remedial measures—ones adopted after an accident by a nonparty who is in a position to take action to prevent recurrence of an accident? Imagine that the worker injured by the electric saw seeks to introduce evidence that, after the accident, the worker’s own employer devised a guard to make the saw less dangerous. Presumably, or so the argument would go, if the employer was able to take remedial action afterwards, there is more reason to think the manufacturer could have done so before. Can the saw’s manufacturer object to admission of this proof? After all, the employer presumably could have invoked Rule 407 had the injured worker sued her for negligently supplying her with dangerous equipment. The use of the passive voice in the text of Rule 407 leaves the status of such evidence unclear: “When, after an injury or harm allegedly caused by an event, measures are taken that, if taken previously, would have made the injury or harm less likely to occur . . .”37 Well, taken by whom? By the defendant and the defendant alone, courts have concluded. They reason that parties will be deterred from adopting postaccident precautions only by the prospect of their own actions being admitted against them.38 Far from deterring precaution-taking, treating a precautionary response as admissible against parties other than the one who adopted it creates incentives for every party in a position to implement such a measure—the manufacturer and the employer, in the example—to be the first to do so.39 This argument is sound if one focuses one’s attention only on the CLEC rationale. It is also convincing under the noneconomic, expressive rationale, since admission of the third party’s remedial measures puts it at no risk. Nevertheless, it seems to give short shrift to the Bramwellian BLEC rationale, since there is no reason to think factfinders will overestimate the foreseeable utility of a precautionary measure (here the equipment modification) based only on the defendant’s, and not on a third party’s, ex post adoption of it.

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38. See, e.g., Diehl v. Blaw-Knox, 360 F.3d 426, 430 (3d Cir. 2004) (“Th[e] policy [behind Rule 407] is not implicated where the evidence concerns remedial measures taken by [a non-party] . . . to the lawsuit. The admission of [such evidence] necessarily will not expose that non-party to liability, and therefore will not discourage the non-party from taking the remedial measures in the first place.”).

39. See, e.g., Raymond v. Raymond Corp., 938 F.2d 1518, 1524 (1st Cir. 1991) (finding Rule 407’s underlying social policy not furthered by inclusion of third-party repairs and affirming Rule 407’s application only to measures taken by defendant).
The forbidden-purpose element creates even more pressure to advert to the animating purposes of the rule in construing its terms. In the example, the injured worker would not be permitted to present evidence of the manufacturer’s modification of the saw to support the inference that the omission of a guard from the original design made the product unreasonably dangerous. But as soon as the manufacturer called a witness to testify that it was reasonable for the company to omit a guard from the design, the injured worker could proffer the subsequent redesign to show “feasibility,” which the manufacturer’s proof could be characterized as having “controverted.” To the same effect, the plaintiff could simply ask the manufacturer’s witness on cross-examination whether it would have been “feasible” or “reasonable” or simply a “good idea” for the manufacturer to include a guard in the design of the saw. When the witness answers in the negative, the worker’s attorney can introduce the evidence to show feasibility, if the witness has “controverted” that in her answer. Alternatively, if the witness states the accident was too unlikely, or the guard insufficiently efficacious, to justify such a precaution, the plaintiff can use the postaccident redesign to impeach her by showing the manufacturer behaved in a way that seems to belie the witness’s opinion. If the witness answers in the affirmative, that is even more advantageous for the plaintiff: The witness would be admitting the defendant’s liability.

Although Rule 407 explicitly describes proof of “feasibility” and “impeachment” as “other purpose[s],” the conceptual line between them and the one the SRM bar forbids is microscopically thin. The SRM ban forbids introduction of a subsequent measure to imply the defendant should have implemented it earlier—yet establishing the “feasibility” of such action is relevant only as a premise of exactly that inference. The proviso that feasibility must first be “controverted” is arguably meaningless: Denial of the feasibility of the precaution is implicit in the defendant’s contesting the plaintiff’s claim. It is analytically possible for the factfinder to infer that the defense witness is not credible without concluding that the defendant’s behavior was substandard. But it seems psy-

40. See, e.g., Anderson v. Malloy, 700 F.2d 1208, 1212–14 (8th Cir. 1983) (finding defendants had controverted feasibility of safety measures and vacating judgment based on district court’s exclusion of evidence).
41. See id. at 1213–14 (“The plaintiffs were entitled to show affirmatively that these devices were feasible . . . and [that the defendants] in fact installed the same devices that they testified could not be used successfully.”); Jacobson v. Manfredi by Manfredi, 679 P.2d 251, 254–55 (Nev. 1984) (applying Rule 407’s exception for feasibility to allow admission of SRM proof where “the utility and safety” of original product versus post-SRM product were contested).
44. See generally Weinstein & Berger, supra note 9, § 7.04[4][c] (“[T]he feasibility of a precaution may bear on whether it was negligent not [to] have taken [it]; thus, negligence and feasibility are often not distinct issues.”).
chologically impossible for the factfinder to treat adoption of the guard as a reason to suspect the witness of lying, or of simply being uninformed, if the factfinder does not at the same time treat that action as a reason to believe the manufacturer itself now recognizes it could and should have adopted the measure ex ante. In any case, because SRM proofs will invariably be relevant to prove feasibility and to impeach defense witnesses, classifying these as “other purposes” raises the concern that a plaintiff will always be able to style the proof as one that avoids the SRM ban.45

Courts follow one of two strategies for plugging this forbidden-purpose loophole in the rule. One is to contort the meaning of “feasibility” and “impeachment.” In everyday speech, when we describe a course of action as “infeasible,” we typically mean to convey that it is unreasonably costly or inconvenient.46 Nevertheless, in interpreting the SRM bar, some courts suggest that merely disputing the cost-effectiveness of a safety measure does not amount to “controverting” its “feasibility.”47 Presumably, then, these courts see “controverting” the “feasibility” of a precaution as akin to asserting the literal impossibility of its adoption. But since a defendant need not demonstrate the impossibility—only the cost-ineffectiveness—of a precaution to defeat liability,48 none is likely ever to “controvert feasibility” in that way. Courts also sometimes conclude that ex post adoption of a precautionary measure does not “impeach” a defense witness who testifies that such a measure was deemed unreasonable, because it remains possible the accident itself revealed the utility of the measure.49 This is just a variant of the misguided claim that SRM proofs are necessarily “irrelevant.” Whether or not it rules out alternative expla-
nations, an SRM proof gives the factfinder more reason than it would have had to infer the witness is dissembling or ignorant. More reason to discount, not sufficient reason to discount, is all it takes to make evidence relevant for impeachment.50 In fact, candid courts do not deny these points. They point out, however, that giving “feasibility” and “impeachment” their normal meanings here would enable systematic evasion of the categorical ban on SRM proofs and thus thwart the policies that animate the rule.51

A second strategy, however, exploits the porousness of the forbidden-purpose element to enable evasion, but only selectively. This position accepts that SRM proofs aimed at rebutting claims of cost-ineffectiveness, and at discrediting witnesses who advocate those claims, fall outside the forbidden-purpose element of the rule. Nevertheless, such a conclusion does not entail categorical admission of such proofs; rather, it permits exclusion of them under Rule 403 (or its equivalent) when a court determines, on the basis of case-specific analysis, that their probative value is outweighed by prejudice. One element of prejudice that courts using this approach take into account is the adverse impact that permitting feasibility and impeachment proofs too readily could have on the policy aims promoted by the SRM rule. In effect, courts use Rule 403 to police the perimeter of Rule 407.52

They can even use Rule 403 to extend that perimeter. When they are motivated to enforce the policy aims of Rule 407 by excluding feasibil-

50. See 3 Christopher B. Mueller & Laird C. Kirkpatrick, Federal Evidence § 6:86 (3d ed. 2009) (noting “[s]ometimes initial testimony and counterproof conflict completely, literally, and inescapably,” and at “other times the initial testimony and counterproof conflict in more suble ways”); see also United States v. Abel, 469 U.S. 45, 49–51 (1984) (holding Rule 401’s liberal “any tendency” standard applicable to admissibility of impeachment proof).

51. See Minter v. Prime Equip. Co., 451 F.3d 1196, 1212–13 (10th Cir. 2006) (noting, because subsequent remedial measures always “contradict” and thus impeach in formal sense, courts must demand more in order to preserve Rule 407 from annihilation (citation and internal quotation marks omitted)); Flaminio, 733 F.2d at 468 (“Although any evidence of subsequent remedial measures might be thought to contradict and so in a sense impeach a defendant’s testimony that he was using due care at the time of the accident, if this counted as ‘impeachment’ the exception would swallow the rule.”); Tuer, 701 A.2d at 1112 (asserting “[t]he] pragmatically necessary[ ] view is that the impeachment exception cannot be read in so expansive a manner” as to cover contradiction by conduct).

52. See, e.g., Stecyk v. Bell Helicopter Textron, Inc., 295 F.3d 408, 415–16 (3d Cir. 2002) (“Under Rule 407, together with the Rule 403 unfair prejudice/probative value weighing, the trial court retains broad power to insure that remedial measures evidence is not improperly admitted under the guise of the impeachment exception.” (footnote omitted)); Werner v. Upjohn Co., 628 F.2d 848, 855–56 (4th Cir. 1980) (holding that, in order for “central policy behind the rule . . . to be effectuated,” feasibility proofs should be admitted only after determination that probative weight is extremely high); Weinstein & Berger, supra note 9, § 7.04[4][a] (counseling use of Rule 403 to prevent use of feasibility and impeachment proofs from undercutting policy rationales of Rule 407).
ity and impeachment proofs under Rule 403, courts are necessarily recognizing that their power to combat the prejudice the SRM ban seeks to avoid is not limited to evidence offered for the purpose forbidden by the rule. Accordingly, other forms of proofs that technically fall outside the scope of the ban, including its definitional element, can also be excluded if courts determine that admission of these proofs will upset either the CLEC or BLEC rationales for the rule (or even the expressive one, for that matter). For example, courts that have concluded that Rule 407 does not apply to third-party remedial measures can still exclude such evidence under Rule 403 if they believe the distorting effect of hindsight bias will outweigh whatever licit probative value such evidence conveys.53

Or consider so-called “postmanufacture, preaccident remedial measures” (PPRMs). An example would be if the saw manufacturer added a guard to a new model of the saw after some users were injured but before the plaintiff suffered his misadventure with the original model of the saw. Permitting the plaintiff to introduce this PPRM design change into evidence would seem to punish the precautionary behavior of the manufacturer in exactly the same way and invite reliance on hindsight by the jury to the same extent as do conventional SRM proofs. On this basis, some courts have construed PPRM proofs as within the scope of the SRM rule.54 Reacting against this position, however, the Advisory Committee enacted an amendment to Rule 407 purportedly “to clarify that the rule applies only to changes made after the occurrence that produced the damages giving rise to the action” and not to “measures taken by the defendant prior to the ‘event’ causing ‘injury or harm’. . . even if they occurred after the manufacture or design of the product.”55 Amusingly, the amended language remains patently ambiguous on the status of PPRM proofs: “When, after an injury or harm allegedly caused by an event, measures are taken that, if taken previously, would have made the injury or harm less likely to occur, evidence of the subsequent measures is not admissible . . . .”56 Nothing in this formulation compels identifying the particular “injury or harm allegedly caused by an event,” the likelihood of which would have been reduced had “subsequent measures” been “taken previously.”57 But even if one gives the language its apparently intended

53. See, e.g., Middleton v. Harris Press & Shear, Inc., 796 F.2d 747, 752 (5th Cir. 1986) (“[E]vidence of subsequent changes by third parties is properly excludable because of its tendency to confuse the jury by diverting its attention from whether the product was defective at the relevant time [i.e., the time of manufacture] to what was done later.” (citation omitted)).

54. See, e.g., Petree v. Victor Fluid Power, Inc., 851 F.2d 1191, 1198 (3d Cir. 1987) (holding PPRM proofs to be within Rule 407 because “policy [behind the rule] is equally as supportive of exclusion of evidence of safety measures taken before someone is injured by a newly manufactured product, even if those measures are taken in response to experience with an older product of the same or similar design”).


57. Id.
effect, PPRM proofs are not per se admissible. Like other forms of “[e]vidence of subsequent measures . . . not barred by Rule 407,” PPRM proofs remain “subject to exclusion on Rule 403 grounds.” As a result, courts can still ban such proofs when, after a case-specific balancing, they determine that the licit probative value of the proofs is outweighed by their negative effects on primary conduct or on factfinding.

But determining whether in any given case the risk of prejudice outweighs the probity of a PPRM proof—or of a third-party SRM proof, or an SRM feasibility or impeachment proof—will always be a judgment call. The judge’s decision, moreover, will necessarily be influenced by how compelling she finds the CLEC and BLEC rationales (as well as the noneconomic expressive justification) for the SRM ban. The more persuaded a judge is of the soundness of those rationales in general, the more likely she will be to see them as outweighing any probative value of a “permissible” SRM proof in a particular case; the less persuaded, the less likely.

Indeed, one objection to the use of Rule 403 to demarcate the boundary between permissible and impermissible SRM proofs would be that it effectively strips the SRM ban of its categorical character. Rule 403 is up to the task of policing the Rule 407 perimeter. But if Rule 403 is the only device a judge employs to limit use of SRM evidence for proving feasibility or for impeachment, then Rule 407 will never require her to exclude evidence she would have admitted if Rule 403 were the sole limit on SRM proofs. Similarly, if a judge overtly relies on the policy rationales to determine what the definitional and forbidden-purpose elements of the SRM rule mean, she will conclude Rule 407 applies only when she would likely have invoked those rationales to exclude under Rule 403 anyway. It is not the “exceptions” to the SRM rule, but rather the attrac-


59. See, e.g., Trull v. Volkswagen of Am., Inc., 187 F.3d 88, 96 (1st Cir. 1999) (excluding PPRM proof on Rule 405 grounds).

60. See generally Sprint/United Mgmt. Co. v. Mendelsohn, 552 U.S. 379, 384 (2008) (explaining that because Rule 403 “requires an on-the-spot balancing of probative value and prejudice, potentially to exclude as unduly prejudicial some evidence that already has been found to be factually relevant, . . . courts of appeals [should] uphold Rule 403 rulings unless the district court has abused its discretion” (citation and internal quotation marks omitted)).

61. This is a charge made about judicial application of both the categorical exclusion rules generally and the bar on character propensity proofs in particular. See, e.g., D. Michael Risinger & Jeffrey L. Loop, Three Card Monte, Monty Hall, Modus Operandi and “Offender Profiling”: Some Lessons of Modern Cognitive Science for the Law of Evidence, 24 Cardozo L. Rev. 193, 206 (2002) (noting “ill-defined and indeterminate” line between permissible and impermissible uses of character evidence has resulted in admissibility decisions being “heavily subject to non-doctrinal influences like the judge’s idiosyncratic personal views”).

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tion of relying on its policy rationales to guide its application in particular cases, that threatens to swallow the SRM rule.62

But is this really such a bad outcome? It depends on how compelling the CLEC and BLEC rationales are as grounds for excluding evidence categorically. If the rationales for the SRM ban furnish, at best, case-specific grounds for exclusion, then we should be celebrating, not resisting, the transmutation of Rule 407 into Rule 403. I suggest that the economic rationales for the rule support only selective, not categorical, exclusion of SRM proofs.

II. The Behavioral Economics of the SRM Rule

I start with a critique of the BLEC justification for the SRM rule. That justification asserts factfinders are likely to overvalue SRM proofs as a result of hindsight bias. I do not dispute this claim. The problem is that the argument neglects to weigh the benefit of preventing the factfinder from giving too much weight to SRM proofs against the cost of constraining it always to give them too little, as necessarily happens when admitted relevant evidence is excluded. A careful evaluation of that problem, I argue, suggests that case-by-case balancing is a superior approach.

Bayesian theory, which specifies a mode of reasoning that a rational factfinder should follow in order to maximize the accuracy of her determinations,63 furnishes an appropriate normative framework for evaluating the BLEC argument. Using Bayes’s Theorem, the rational factfinder can determine the impact any piece of evidence should have on her assessment of the likelihood of a disputed fact and therefore gauge the risk of hindsight bias.64

The linchpin of the theorem is the so-called “likelihood ratio,” which quantifies how much more consistent a piece of evidence is with a particular factual proposition (or hypothesis) than with the negation of that proposition.65 Imagine that a witness testifies that P was struck by a blue bus; imagine further that eight of ten X Company buses in the vicinity are blue, and only four of ten Y Company buses are blue. If we are assessing the proposition that “the bus that struck the plaintiff belonged to X Co., not Y Co.,” the likelihood ratio associated with the witness’s testimony is two, since the evidence of the bus’s color is twice as consistent with the

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62. See generally 23 Wright & Graham, supra note 10, § 5282 (noting that commentators attribute uneven enforcement of Rule 407 to ambivalence about policy).
64. See generally Howard Raiffa, Decision Analysis (1968) (explaining uses of Bayes’s Theorem in decisionmaking).
proposition that the bus that hit the plaintiff was an \( X \) bus than with the proposition that it was a \( Y \) bus.\(^{66}\)

Under Bayes’s Theorem, the factfinder should multiply the odds she previously assigned to the proposition—referred to as the “prior odds”—by the likelihood ratio associated with the new evidence. The result, referred to as the “posterior odds,” represents her revised assessment of the likelihood of the proposition.\(^{67}\) For example, imagine the factfinder assigned an initial probability of 40%—prior odds of 2:3—that an \( X \) Co. bus rather than a \( Y \) Co. bus struck \( P \) because \( X \) Co. owns 40% and \( Y \) Co. 60% of all the buses that travel along the location where the accident occurred.\(^{68}\) Based on the evidence that the bus was blue, she should now view the probability as 57%—2 \times 2.3, or 4:3 posterior odds—that the offending bus belonged to \( X \) Co.\(^{69}\) As should be clear, whenever the likelihood ratio is greater than one, the new evidence will increase the estimated likelihood of a proposition; whenever it is less than one, it will decrease the estimated likelihood; and whenever it is exactly one—meaning the new evidence is equally consistent with the proposition and with its negation—the revised estimate will be the same as the original one.

We can use the Bayesian framework as a gloss on concepts of relevance and prejudice in evidence law. Evidence has at least some “tendency to make the existence of [a] fact that is of consequence to the determination of the action more probable or less probable”\(^{70}\)—and thus is relevant—so long as that evidence has a likelihood ratio either greater or less than one, respectively. Evidence is prejudicial, from a Bayesian per-

\(^{66}\) A simple proof illustrates why. Imagine an experiment in which we randomly assigned subjects to be hit with equal probability (0.5 and 0.5) by one of \( X \) Company’s buses, 80% of which are blue, or one of \( Y \) Company’s buses, only 40% of which are blue. In that case, the probability that any given subject would be hit by a blue \( X \) Co. bus would be 0.5(0.8), or 0.4, whereas the likelihood that he or she would be hit by a blue \( Y \) Co. bus would be 0.5(0.4), or 0.2. If we repeated the trial 1,000 times, we would expect subjects to be hit 400 times by a blue \( X \) Co. bus and only 200 times by a blue \( Y \) Co. bus. Accordingly, it is twice as likely that any subject hit by a blue bus will have been struck by an \( X \) Co. bus than by a \( Y \) Co. bus. In that sense, then, the evidence that the bus that hit \( P \) was blue is twice as consistent with the proposition that an \( X \) Co. bus hit him or her than it is with the proposition that a \( Y \) Co. bus did.

\(^{67}\) See Finkelstein & Levin, supra note 65, at 75–76.

\(^{68}\) See Laurence H. Tribe, Trial by Mathematics: Precision and Ritual in the Legal Process, 84 Harv. L. Rev. 1329, 1340–41 (1971) (stating famous “blue bus” problem and asking "[w]hat effect, if any . . ., should such [a] proof be given?").

\(^{69}\) Again, a simple proof can demonstrate this point. Imagine we randomly selected one bus from the entire set of \( X \) Co. and \( Y \) Co. buses to run over \( P \). There would thus be a 40% chance that \( P \) would be hit by an \( X \) Co. bus and a 60% chance that he or she would be hit by a \( Y \) Co. bus. The likelihood that \( P \) would be hit by a blue \( X \) Co. bus is thus 2/5 (the likelihood that the bus belongs to \( X \) Co.) times 4/5 (the likelihood any \( X \) Co. bus is blue), or 8/25. The likelihood \( P \) would be hit by blue \( Y \) Co. bus is 3/5 (the likelihood that the bus belongs to \( Y \) Co.) times 2/5 (the likelihood that any \( Y \) Co. bus is blue), or 6/25. Accordingly, should \( P \) be hit by a blue bus, the odds are 8:6, or 4:3—57%—that it will be an \( X \) Co. bus rather than a \( Y \) Co. bus.

\(^{70}\) Fed. R. Evid. 401 (emphasis added).
spective, whenever it induces the factfinder to assign to a fact a revised probability different from the product of the factfinder’s prior odds and the likelihood ratio associated with that evidence.\textsuperscript{71}

Interpreted against the background of this theory, the prospect of hindsight bias does not make SRM proofs irrelevant. The defendant’s implementation of a precaution aimed at preventing recurrence of an accident will at least sometimes be associated with a likelihood ratio greater or less than one for various facts of consequence. A particular preventive measure that would not have been reasonably justified at $t_1$ is less likely to be reasonably justified at $t_2$ than one that would have been reasonably justified even at $t_1$. Accordingly, the adoption of a preventive measure after an accident is more consistent with the conclusion that it would have been reasonable to adopt it before the accident than with the conclusion that it would not have been reasonable to adopt it at that time. In considering whether the defendant behaved unreasonably in failing to adopt the preventive measure ex ante, then, the likelihood ratio associated with adoption of such a measure ex post is greater than one.\textsuperscript{72}

Rather than being understood as denying that SRM proofs can ever be relevant, the BLEC rationale should be understood as deeming such proofs to be prejudicial in the Bayesian sense. According to this position, hindsight bias will drive factfinders who learn of an SRM to overestimate how readily the utility of such a measure could have been foreseen in advance. They give less weight than they should to any evidence that the accident itself furnished previously inaccessible information about the likelihood of such a misfortune; that changes in technology reduced the cost or increased the efficacy of the preventive measure; or that, after the accident, the defendant was moved to engage in supererogatory steps to avoid recurrence.\textsuperscript{73} Thus, in considering whether the defendant behaved in a substandard manner ex ante, they effectively assign a likelihood ratio to ex post adoption of a precautionary measure that is higher than it should be, and as a result they form a higher revised estimate of the likelihood of substandard behavior than they rationally should.

One could respond critically to this argument in a number of ways. One would be to question its empirical premises. Some commentators, for example, argue that it should be possible to counteract the distorting impact of hindsight bias by warning factfinders—presumably with a cautionary instruction, reinforced by arguments of counsel—that they


\textsuperscript{72} Cf. Chris William Sanchirico, Finding Error, 2003 Mich. St. L. Rev. 1189, 1197–1200 (explaining why it is generally rational to revise upward one’s ex ante estimate of event’s likelihood after receiving information that such event occurred).

\textsuperscript{73} See supra text accompanying notes 33–34.
should be wary of this bias when considering the probative value of SRM proofs.74

But there is an even more fundamental response to the BLEC argument so conceived. Even if we assume that SRM proofs generate hindsight bias, and that this distortion is essentially intractable, it does not follow within a Bayesian framework that such proofs should be categorically, as opposed to selectively, excluded.

The prejudicial effect of SRM proofs, according to BLEC, is that they are overvalued—that is, that as a result of hindsight bias, they are assigned more weight than they deserve. But being overvalued does not make SRM proofs valueless; they do, at least sometimes, justify revising upward an estimate of substandard conduct on the part of the defendant—just not as much as factfinders are apparently wont to do. We can, in theory, compare how much it reduces the marginal likelihood of error when a factfinder gives an SRM proof too much weight with how much it reduces the marginal likelihood of error when a factfinder cannot give such a proof any weight. If we use a Bayesian conception of balancing probity and prejudice, the problem of overvaluation justifies exclusion only if the former exceeds the latter.

Determining whether this condition is satisfied requires more information about both the magnitude of the overvaluation and the prior odds the factfinder assigns to substandard behavior. Assume that a factfinder in effect believes that 100% of defendants who have behaved unreasonably by failing to adopt a precaution before an accident take steps to avoid recurrence, but that only 1% of defendants who behaved reasonably in failing to adopt precautions before do so after. Now assume further that in reality only 50% of defendants who behaved unreasonably before the accident take such steps after, while some 25% of defendants who behaved reasonably in failing to take such steps at the outset still adopt such measures later (because of information not available before, advances in technology, or the pull of guilty consciences). In that case, the factfinder, in considering whether the defendant behaved unreasonably, will assign a likelihood ratio of 100 to the SRM proof, whereas she should have assigned it a likelihood ratio of only 2—a 50-fold overvaluation.

Is it beneficial to exclude the SRM proof under these circumstances? It depends on how likely the factfinder would be to deem the defendant’s conduct substandard, absent the SRM proof. Imagine a case in which it seems fairly unlikely, say 10% (prior odds of 1:9), that the defendant is at fault without such evidence. In that case, upon receipt of an SRM proof,

a rational factfinder—one that does not experience hindsight bias and that therefore assigns the evidence a likelihood ratio of 2, to continue with the example in the previous paragraph—would now believe the likelihood of negligence is still low, only 22% (2 x 1:9 = posterior odds of 2:9). In contrast, a factfinder who, as a result of hindsight bias, overvalues the evidence and assigns it a likelihood ratio of 100 would conclude that the likelihood of substandard behavior is 92% (100 x 1:9 = posterior odds of 100:9, or approximately 11:1), and thus mistakenly hold the defendant liable.

Yet imagine a closer case, one in which the factfinder’s estimate of faulty or substandard behavior prior to receipt of the SRM proof is 45% (prior odds of 9:11). Upon introduction of the SRM proof, a factfinder that overvalues such evidence as a result of hindsight bias would conclude that the likelihood of substandard behavior is 99% (100 x 9:1 = posterior odds of 900:11 or approximately 90:1), and thus find the defendant liable. A factfinder that accurately values SRM evidence would conclude that the likelihood of negligence (or whatever species of substandard behavior suffices to establish liability) is only 62% (2 x 9:11 = posterior odds of 18:11). But while smaller than 99%, a likelihood of 62% is still sufficiently high (under a preponderance of the evidence standard) to rule in the plaintiff’s favor. Accordingly, it is now the exclusion of such evidence, which would leave the factfinder with an estimated likelihood of fault (45%) below the threshold for liability, that would result in a mistaken verdict—a finding of no liability. If our goal is to minimize the likelihood of an erroneous outcome, then admitting the evidence is warranted despite the problem of overvaluation associated with hindsight bias.

These numbers are obviously hypothetical. But they illustrate that hindsight bias does not necessarily justify categorical exclusion of SRM proofs. Excluding such evidence means that the law will necessarily get the wrong result—a finding of no liability when the defendant was in fact negligent or otherwise faulty—in some class of cases. Without some empirically grounded numbers, why simply assume that the loss of accuracy associated with too few judgments of liability is smaller than the loss of accuracy associated with too many? Perhaps “close” cases grossly predominate over “not close” ones. Or perhaps the discrepancy in likelihood ratios is not nearly so huge as this hypothetical analysis supposes, in which case admission might pose only a very modest risk of erroneous findings of liability yet still contribute meaningfully to avoiding erroneous findings of no liability.

Although the Bayesian analysis used here tells us nothing about the relative frequency of mistakes associated with invariably excluding or admitting SRM proofs, it does reveal something important about the nature of the cases in which exclusion and admission are likely, respectively, to result in an erroneous outcome (Figure 1).
However large or small the discrepancy in the true and perceived likelihood ratios associated with an SRM proof, admission of the proof causes a real-world factfinder to revise her prior odds to a greater degree than she would if she gave the evidence the weight it was due. Exclusion, on the other hand, preempts her from revising them at all, and hence from revising them as much as she would if she gave the evidence its proper effect. Under these circumstances, the question of which ruling presents the greater likelihood of error—admission or exclusion—will be highly dependent on the probative force of the non-SRM evidence in the case. Admission of an SRM proof is most likely to result in error when the non-SRM evidence strongly supports the defendant; that is the type of case in which an irrational factfinder, but not a rational factfinder, is likely to see the SRM proof as decisive evidence of substandard conduct.

![Figure 1](image)

**Figure 1. Errors Associated with Admission and Exclusion of SRM Proof.** Curves reflect Bayesian updating. In each graph, “unbiased perception if admitted” reflects the “true likelihood ratio” associated with an SRM proof; “biased perception if admitted” reflects the exaggerated “perceived likelihood” ratio caused by hindsight bias; and “perception if excluded” reflects a likelihood ratio of one to indicate the lack of any updating absent new evidence. The values assigned to those ratios are varied in graphs A, B, and C to illustrate how the magnitude of the difference between them influences the curves. Under the depicted conditions, admitting the evidence will result in a mistaken finding of liability when the estimated likelihood of fault without the SRM proof is within the dark gray zone, while excluding it will result in an erroneous finding of no liability when the estimated likelihood of fault before the SRM proof is in the light gray zone. Neither admitting nor excluding the evidence will result in an erroneous outcome when the likelihood of fault before the SRM proof is in the white zone.

The situation in which exclusion is most likely to result in error is when the evidence on liability is otherwise relatively close. In that type of case, exclusion presents a relatively high risk that the factfinder will fail to
find liability when a rational factfinder who is informed of and gives appropriate weight to the SRM proof would. To be sure, the irrational factfinder in such a case will give the SRM proof more weight than the rational factfinder would, and so will be even more confident: in the hypothetical, a feeling of 99% confidence, as opposed to 62%, that the defendant behaved in a substandard way. But because, under a preponderance of the evidence standard, the rational factfinder apprised of the SRM proof would also be confident enough (62%) to find the defendant liable, the overly exuberant irrational factfinder will still be getting the right result when the proof is admitted.

Finally, there are cases in which the evidence otherwise strongly supports the plaintiff. Because the plaintiff is likely to win regardless of whether the SRM proof is admitted or excluded in such a case, minimizing error does not furnish a reason for either disposition.

This picture of the conditions in which error of one sort or another is likely to occur suggests the potential utility of a selective rather than a categorical exclusion rule for SRM evidence. If a judge excludes SRM proofs in cases in which the plaintiff’s case is otherwise weak, and is receptive to admission of such proofs in cases in which the issue of the defendant’s substandard conduct is otherwise close, she will minimize the sum total of erroneous outcomes—either mistaken findings of liability or mistaken findings of nonliability—relative to a rule that categorically excludes or admits such proofs. In cases in which the plaintiff’s case is otherwise strong, exclusion is unlikely to result in error (the plaintiff should win anyway) and can be justified on grounds of avoiding “undue delay, waste of time, or needless presentation of cumulative evidence.” 75 But to be confident that she does not inadvertently exclude evidence on that ground in what is in fact a close case, the judge should be sure to set a fairly high threshold for identifying a “strong” plaintiff case (Figure 2). 76

75. Fed. R. Evid. 403.
76. For a more thoroughgoing expression of skepticism toward “overvaluation” as a ground for excluding relevant evidence in general, see Richard D. Friedman, Minimizing the Jury Over-Valuation Concern, 2003 Mich. St. L. Rev. 967, 969–71. Friedman reasons that because truth-seeking warrants exclusion only when the degree of “overvaluation exceeds the ‘appropriate’ valuation” of evidence, a court should exclude evidence only when it concludes “the jury is according more than double the appropriate weight to the evidence.” Id. at 969. In my view, this analysis furnishes insufficient attention to the role that the strength of the remaining evidence in the case plays in assessing the respective risks of error associated with admitting and excluding overvalued evidence.
perceived LR: 100
true LR: 2
Exclude: Prej > Prob
Admit: Prob > Prej
Exclude: Cumulative

--- biased perception if admitted
--- unbiased perception if admitted
--- perception if excluded

Figure 2. Optimal Selective-Exclusion Strategy. Curves reflect Bayesian updating. "Unbiased perception if admitted" reflects the "true likelihood ratio" associated with an SRM proof; "biased perception if admitted" reflects the exaggerated "perceived likelihood" ratio caused by hindsight bias; and "perception if excluded" reflects a likelihood ratio of one to indicate the absence of any updating absent new evidence. Under the depicted conditions, the approach most likely to generate a correct outcome is for the court to exclude the evidence on the ground that prejudice exceeds probative value when the estimated likelihood of fault before the SRM proof is within the dark gray zone; and admit it on the ground that probative value exceeds prejudice when the estimated likelihood of fault before the SRM proof is in the light gray zone. When the estimated likelihood of fault before the SRM proof lies in the white zone, the evidence can, at a reasonably small risk of error, be excluded on the grounds that it is cumulative.

This selective exclusion strategy is potentially optimal, but is it feasible? If we thought that judges lacked the capacity to distinguish “close” cases from others, then it might make sense to adopt a categorical exclusion rule (or possibly a categorical admission rule!) on the theory that admission is more likely to lead to error than exclusion (or vice versa) in the run of cases.

But such skepticism about judges’ powers of discernment seems odd. Distinguishing cases in which the evidence is otherwise “strong” from ones in which the evidence is otherwise “close” is what judges do routinely when they perform the sort of case-by-case balancing contemplated by Rule 403. When weighing the “probative value” against the “risk of prejudice” associated with a piece of evidence, judges measure those qual-

77. Cf. id. at 970 (suggesting one reason for judges to be reluctant to treat overvaluation of evidence as basis for excluding admittedly relevant proofs is difficulty judges themselves are likely to have in assessing both potential jury overvaluation of such evidence and actual appropriate weight to give it).
ities not in absolute but in marginal terms. That is, rather than considering a piece of “evidence . . . as an island, with estimates of its own probative value and unfairly prejudicial risk [as] the sole reference points,” the court must “take account of the full evidentiary context of the case as the court understands it.”

A piece of evidence that has considerable probative force when considered in isolation might contribute little to determination of a fact amply addressed by “substitute[,]” “alternative,” or already admitted pieces of evidence. In that case, the marginal probative value of such evidence is low, and a judge should not hesitate to conclude that the prejudice associated with it, even if modest, justifies exclusion. By the same token, a judge should be more reluctant to treat even appreciable prejudice as outweighing probative value when a piece of evidence—even one of modest probative force in isolation—makes a unique and critical contribution to the accurate determination of an important fact in light of the other evidence presented in the case.

The case for categorical exclusion, then, rests on uncontested (and likely untestable) empirical premises about the respective error costs associated with admission and exclusion of SRM proofs generally. But the only empirical assumption needed to justify selective exclusion is that courts are competent and “take account of the full evidentiary context” of cases in exactly the way we already expect them to do in enforcing Rule 403.

Maybe we should worry, though, that in making such a determination about SRM proofs, a judge’s assessment will itself be distorted by hindsight bias. When she learns the defendant has adopted a postaccident precaution, the judge might be moved to overestimate how readily the precaution’s utility could have been foreseen ex ante, and hence to overestimate the probative force of the alternative evidence on exactly that issue. If so, the judge might be induced by the SRM proof itself to mistake a “weak” plaintiff case for a “close” one and thus find reason to admit the proof when she should exclude it. As a strategy for containing their own bias in particular cases, then, judges should commit themselves to a rule of categorical exclusion.

79. Id. at 182–83.
80. See id. (discussing approach to applying Rule 403 to evaluate single piece of evidence’s probative value versus potential prejudice in light of case’s entire evidentiary context); see also Fed. R. Evid. 403 advisory committee’s note (counseling that “[t]he availability of other means of proof may also be an appropriate factor” in weighing probative value against prejudice); 22 Wright & Graham, supra note 10, § 5214 (noting that “in measuring probative worth under Rule 403 the judge” must consider not only “challenged evidence” but “other evidence already introduced or available to the proponent,” for “[j]ust as the probative worth of the evidence may decline when compared to the need for its use, so may that value increase when considered in connection with other evidence in the same or adjacent lines of proof”).
81. Old Chief, 519 U.S. at 182.
82. But see Mitu Gulati, Jeffrey J. Rachlinski & Donald C. Langevoort, Fraud by Hindsight, 98 Nw. U. L. Rev. 773, 802–13 (2004) (discussing judges’ concern over their
The concern that judges’ ability to constrain factfinder bias will be constrained by judges’ own susceptibility to the same biases is a reasonable one, but it is a difficulty endemic to the sort of policing function we expect judges to engage in under Rule 403.83 As scholars applying BLEC insights have persuasively argued, Rule 403 equips judges to safeguard factfinding from all manner of cognitive bias—from the “availability heuristic” to “coherence-based reasoning” to “representativeness bias.”84 The capacity of judges to administer case-specific, Rule 403 balancing as an antidote to every one of these decisionmaking pathologies presupposes that judges can themselves resist them sufficiently to consider how much they detract from any particular piece of evidence’s probative value. Empirical investigation of judicial decisionmaking furnishes support for the conclusion that judges can, in performing certain professional tasks at least, develop habits of mind that help them to counteract various biases that afflict lay persons.85 Without empirical evidence to support it, any assertion that hindsight bias uniquely contaminates judges’ capacities to decide whether that same bias warrants admission or exclusion in particular cases amounts to the sort of just-so storytelling that has become a well-known embarrassment to classical L&E86—one

own susceptibility to hindsight bias, as demonstrated by empirical evidence of judges’ nonapplication of “fraud by hindsight” doctrine in securities class action cases).


86. See Hovenkamp, supra note 11, at 822–25 (“[V]ery little in . . . most . . . writing on law & economics[,] could be described as a rigorous attempt to falsify alternative explanations for a given phenomenon.”).
that the best form of BLEC (and empirical legal studies generally) aspires to remedy.\textsuperscript{87}

For the same reason, I am not inclined to argue that my defense of selective exclusion explains the generally condemned transmutation of Rule 407 into Rule 403. That would be nothing more than a nice story, too. My point is only that a careful examination of the behavioral economic rationale for the SRM rule would normatively justify selective, case-by-case evaluation of that evidence if informed by judges’ assessments of how close the case for liability is, independent of that evidence.

III. THE CONVENTIONAL ECONOMICS OF THE SRM RULE

The CLEC rationale asserts that the SRM rule is necessary to avoid discouraging adoption of socially desirable precautions. As a defense of categorical, rather than selective, exclusion, this argument also highlights the vulnerability of economic analysis to the seductive charms of ad hocery.

The usual rejoinder to the CLEC defense of the SRM ban is that it indulges untested and implausible empirical premises.\textsuperscript{88} Imagine two prototypical defendants contemplating adoption of a reasonable precaution to prevent recurrence of an accident. The first is a commercial manufacturer, like that of the guardless electric saw in our running example, who produces a dangerous product that can be expected to present a continuing risk to consumers. The second is a noncommercial, private actor whose behavior has resulted in a chance injury to a stranger—say, the impalement of a newspaper delivery boy or girl by an icicle that fell from the eaves of a homeowner’s roof. Even without the SRM rule, the manufacturer, according to the rejoinder, would be highly unlikely to forgo the adoption of a reasonable precaution because the benefit of avoiding liability for future accidents will almost certainly outweigh the cost of precaution-taking being used against it in pending litigation.\textsuperscript{89}

For the homeowner, it is plausible to imagine that the likelihood of recurrence might be sufficiently small to make running the risk of future injury worth the gamble to avoid any adverse inference associated with an SRM.


\textsuperscript{88} See, e.g., Victor E. Schwartz, The Exclusionary Rule on Subsequent Repairs—A Rule in Need of Repair, 7 Forum 1, 6–7 (1971) (criticizing rule as lacking empirical foundation and plausibility).

\textsuperscript{89} See, e.g., Graham C. Lilly, An Introduction to the Law of Evidence § 5.17, at 172–73 (2d ed. 1987) (“Whether this rule of exclusion actually affects one’s willingness to undertake remedial steps is problematic and the assumption that it does has been seriously questioned. Arguably, even if the evidence of remedial measures were admissible, the actor would still make the necessary repairs or take other corrective action.”); id. (“Failure to [take SRMs] poses for him the risk that another person would injure himself; furthermore, the second claimant’s case would be strengthened by the fact that the defendant had notice of a possibly dangerous condition by reason of the first accident.”).
proof. But what is not plausible, according to the rejoinder, is that this latter party would even be aware of, much less influenced by, rules of evidence.90

Nevertheless, it turns out that even if we grant all of its empirical assumptions about how tort defendants are likely to be influenced by the prospect of admission of SRM proofs, the CLEC account suffers from a remarkable, and remarkably obvious, flaw: It is wholly one-sided in considering the behavioral incentives of an SRM ban. CLEC theory posits that parties are generally motivated to adopt reasonable precautions by the prospect of liability for failing to do so.91 Any legal rule, including one of proof or procedure, that diminishes the likelihood of liability thus reduces the incentive the party has to take care.92 As a result of the SRM ban, parties can anticipate that they will be shielded from a damaging form of evidence and thus face less expected liability for the failure to adopt precautions ex ante. Accordingly, a party like the saw manufacturer in our example will have less incentive to equip its saw with an admittedly reasonable guard at the outset, before any accident even occurs. There is necessarily a tradeoff, then, between the societal benefit the SRM ban confers by removing a disincentive to adopt protective measures ex post, on the one hand, and the societal cost the rule imposes in diminishing incentives to adopt reasonable protective measures ex ante, on the other. The CLEC account never even mentions this tradeoff, much less furnishes us with empirical evidence that making it in favor of the ex post approach enhances net societal welfare.

This problem is aggravated by what L&E commentators recognize as the interactive nature of the primary-conduct and adjudicatory-factfinding dimensions of the SRM rule. Those commentators stress that how big an incentive parties have to avoid adopting reasonable precautions after an accident is a function of the inappropriate overvaluation of such proofs. If juries could be counted on to give SRM proofs only the effect they rationally should, parties would not be discouraged from adopting precautions on the basis of information not reasonably discoverable before an accident.93 But by the same token, how big an incentive parties have to avoid taking reasonable precautions before an accident is a function of the inappropriate undervaluation of SRM proofs. If categori-

90. See, e.g., 2 Mueller & Kirkpatrick, supra note 50, § 4:50, at 71–72 (“[T]he rule against proving subsequent measures is not likely to be part of one’s conscious or semiconscious assumptions or awareness.”).
91. See, e.g., Richard A. Posner, A Theory of Negligence, 1 J. Legal Stud. 29, 33 (1972) (“If...the benefits in accident avoidance exceed the costs of prevention, society is better off if those costs are incurred and the accident averted, and so in this case the enterprise is made liable, in the expectation that self-interest will lead it to adopt the precautions in order to avoid a greater cost in tort judgments.”).
93. See supra note 35 and accompanying text.
cal exclusion results in parties anticipating that juries will not give such evidence appropriate weight even when it is probative of substandard conduct before an accident (because juries will never learn of its existence), then we can be confident parties will be insufficiently motivated at the outset (when the initial saw design is worked out, for example) to adopt even those precautions that they have reason to know would be worthwhile.

Determining the social desirability of a categorical exclusion rule thus requires comparing competing ex post and ex ante effects, the magnitude of which are necessarily matters of speculation. Opponents of the SRM rule tend to argue that, even if SRM proofs were freely admissible, parties would always or nearly always adopt reasonable postaccident precautions either out of fear of future liability or out of ignorance of the rule. Because these commentators believe there is no ex post disincentive for the SRM rule to remedy, it is obvious, on their reasoning, that the societal cost of the rule in discouraging precaution-taking ex ante exceeds the societal benefits of the rule. Proponents of the SRM rule obviously dispute the premise that liberal admission of SRM proofs would have no negative effect on the incentives of parties to adopt postaccident precautions. However, lacking empirical evidence to support this view, they necessarily lack any evidence that the societal benefit from neutralizing this disincentive is sufficiently large to offset the social cost the rule exacts in discouraging ex ante precaution-taking. Proponents of the rule have not even considered this problem, much less tried to estimate its size.

Whereas it would be exceedingly difficult to obtain the empirical data necessary to resolve these issues, it is fairly easy to identify a regime that, no matter what these data might show, will be superior to categorical exclusion. The first element of that regime is a selective exclusion rule for SRM proofs. As shown in the previous Part, the class of cases in which admission of SRM proofs would be most likely to lead to the erroneous imposition of liability are ones in which the remaining evidence strongly supports the defendant. These cases will consist disproportionately of defendants that did in fact adopt all reasonable precautions ex ante. Under a selective exclusion regime, any such defendant can be reasonably confident that if it chooses to adopt a new preventive measure after an accident—a measure that, by hypothesis, it could not reasonably have been expected to adopt before the accident—the court will exclude

94. See, e.g., 2 Mueller & Kirkpatrick, supra note 50, § 4:50, at 72 (“[Parties] are likely [to make products safer] regardless of evidentiary consequences in order to prevent further injuries and lawsuits and to avoid the possibility that inaction in the face of repeated accidents or injuries will itself be taken as proof of negligence, or as a basis for awarding punitive damages.”).

95. See, e.g., Fed. R. Evid. 407 advisory committee’s note (explaining SRM rule is supported by “social policy of encouraging people to take, or at least not discouraging them from taking, steps in furtherance of added safety”).

96. See supra Figure 1, Figure 2, and accompanying text.
that evidence based on Rule 403 balancing. Hence the defendant will not be deterred from adopting it. Any defendant against whom the evidence is overwhelming also should not be discouraged from adopting a postaccident preventive measure, both because the court is likely to exclude any SRM proof as cumulative and because the defendant is likely to lose anyway no matter what it does.

The prospect of admission of an SRM proof under a selective exclusion regime can thus be expected to discourage the adoption of precautions only by defendants against whom the remaining evidence is relatively close—a larger proportion of whom, by hypothesis, will in fact have behaved unreasonably by failing to adopt the precaution ex ante. Geared toward offsetting the disincentive effect for these defendants, the second element of an optimal selective exclusion regime for SRM proofs would be a provision for awarding punitive damages to any plaintiff that can show a defendant unreasonably failed to adopt an SRM after an accident. So long as the expected punitive sanction for such behavior (that is, the size of the award multiplied to offset the uncertainty of its imposition) is equal to or greater than the expected damages a defendant would have avoided had the SRM proof been excluded, this regime will neutralize litigation-driven incentives to forgo postaccident precautions just as effectively as categorical exclusion. It will do so, however, without forcing society to bear the cost that categorical exclusion imposes in the form of reduced incentives to adopt precautions ex ante.

There is nothing fanciful about the idea of using enhanced punishment to promote steps to prevent parties from hiding their noncompliance with legal duties. It is already consistent with tort law in many states, which treats deliberate decisions to minimize precaution-taking, motivated by the desire to conceal evidence that could expose an entity to liability, as satisfying the enhanced culpability standard used to determine liability for punitive damages. A similar strategy was proposed by L&E-minded scholars and adopted (more or less) by the Federal Sentencing

97. See generally A. Mitchell Polinsky & Steven Shavell, Punitive Damages: An Economic Analysis, 111 Harv. L. Rev. 869, 875, 954 (1998) (defending "a simple formula for calculating punitive damages, according to which harm is multiplied by a factor reflecting the likelihood of escaping liability" and asserting that "courts and juries often will be able to obtain enough information about the likelihood of escaping liability to apply the theory reasonably well").

98. See, e.g., Bowden v. Caldor, 710 A.2d 267, 279 (Md. 1998) ("[T]aking . . . remedial or corrective action, promptly after the misconduct[,] . . . obviously should be a mitigating factor. On the other hand, . . . attempts to conceal or cover-up the misconduct, failure to take corrective action, and similar circumstances, support the deterrence value of a significant award." (citations omitted)); Martin v. Survivair Respirators, Inc., 298 S.W.3d 23, 33–34 (Mo. Ct. App. 2009) (holding deliberate failure to take corrective action after multiple reports of life-threatening defects in firefighter air mask warranted $15 million punitive damage judgment).

Commission, by which corporate criminal offenders are (or were, prior to the de facto invalidation of the Guidelines\textsuperscript{100}) punished more or less severely depending on whether they have adopted a compliance program aimed at preventing recurrence of criminal wrongdoing by corporate agents.\textsuperscript{101}

Given the possibility of using a stick to promote ex post precaution-taking while simultaneously promoting ex ante precautions, what could possibly have motivated L&E scholars to defend the efficiency of a carrot—one that secures reasonable ex post precautions only by undermining incentives to take reasonable ex ante ones? The only answer I can think of is a preference for storytelling that bolsters the credibility of L&E as a general framework of analysis by showing that L&E arguments “fit” rather than conflict with existing doctrine.

IV. The Political Economy of the SRM Rule

There is at least one more form of economic analysis, conspicuously absent from the prevailing L&E defenses of the SRM rule, that could easily be used to cast doubt on the wisdom of it. This is public choice theory, which helps to assess the likely efficiency of democratic lawmaking.

The occasion for the application of this theory is the near-universality of the SRM rule. Following Maine’s 1996 capitulation, Rhode Island remains the only holdout against adoption of an SRM ban akin to that reflected in Federal Rule 407.\textsuperscript{102} As indicated, the efficiency of the SRM rule depends on a variety of uncertain empirical issues, including the impact of admitting SRM proofs on precaution-taking ex post and that of excluding them on precaution-taking ex ante. Absent a satisfactory way to obtain data on these effects, why not treat support for the rule among the vast majority of democratically accountable rulemakers as evi-


\textsuperscript{101} See U.S. Sentencing Guidelines Manual § 8C2.5 (2009). This approach even more clearly informs the Environmental Protection Agency’s policy on penalties for regulatory violations. See Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations, 65 Fed. Reg. 19,618, 19,619 (Apr. 11, 2000) (“To provide an incentive for entities to disclose and correct violations . . . , the Policy reduces gravity-based penalties by 75% for violations that are voluntarily discovered and promptly disclosed and corrected . . . .”); see also David W. Case, Changing Corporate Behavior Through Environmental Management Systems, 51 Wm. & Mary Envtl. L. & Pol’y Rev. 75, 92–93 (2006) (“Related factors that encourage firms to adopt [Environmental Management Systems] are that prosecutorial decisions as to whether to bring a criminal enforcement action as well as mitigation in sentencing for corporate environmental crimes can be affected by the existence of such a management program.”).

\textsuperscript{102} Brian Fielding, Note, Rhode Island’s 407 Subsequent Remedial Measure Exception: Why It Informs What Goes Around Comes Around in Restatements (Second) & (Third) of Torts, and a Modest Proposal, 14 Roger Williams U. L. Rev. 298, 299 (2009) (finding Rhode Island’s SRM rule “stands in direct contrast to its federal counterpart, as well as each of Rhode Island’s forty-nine sister states” (footnotes omitted)).
vidence that the societal gains from the ban predominate over societal losses? Don’t such rulemakers have an interest in figuring out what rule advances the well-being of their citizenries?

Sure they do, but it would be naïve to assume that the public’s interest will be decisive in determining the behavior of such rulemakers. Public choice theory tells us that democratic lawmaker will be disproportionately responsive to smaller, more highly organized, more intensely interested groups than to larger ones on whom the costs and benefits of favorable legislative outcomes are more diffusely distributed. The former will be more motivated and better situated to overcome collective action constraints on securing member contributions (particularly campaign donations) for the group good of influencing the political process.103

These conditions perfectly describe the political environment surrounding the SRM rule. The major beneficiaries are manufacturers and their insurers, which can anticipate that an SRM rule will reduce their tort liability exposure by a sizeable amount. They can thus be counted on, through industry lobbying groups, to offer significant rewards to legislators who support enacting such a rule and thereafter resisting its repeal. The parties who are adversely affected by an SRM rule are members of the public generally, who correspondingly face a small and incalculable increase in the risk of suffering injury. They are unlikely even to notice the position legislators take on the SRM ban, much less take retaliatory action against them for supporting it.

The story of the SRM rule in Maine fits this description.104 When Maine initially promulgated an SRM rule in 1975, it declined to adopt the equivalent of Rule 407. Instead, it treated SRM proofs as subject to selective exclusion under the state equivalent of Rule 403.105 For the next twenty years, the advisory committee, which continued to be responsible for amendments, consistently resisted proposals from business and insurance groups to engrat the equivalent of Federal Rule 407 onto the Maine Code.106 Finally, those same groups took their case to the Maine Legislature, which in 1996 acceded to their wishes, leaving Rhode Island the last bastion of selective exclusion.107

Even if public interest advocates could rally themselves to enact and defend selective exclusion rules in other states, however, their efforts

104. See generally Peter L. Murray, Maine Evidence § 407.1 (6th ed. 2007) (describing evolution of Maine Evidence Rule 407(a)).
105. Id. at 173.
106. Id. at 173–74.
107. See id. at 174–75 (noting that after Maine Evidence Rules Advisory Committee and Supreme Judicial Court repeatedly rebuffed demands to conform Maine evidence law to Federal Rule 407, state legislature finally enacted bill with “the support of various business, insurance and municipal groups” that “conform[ed], word for word, with Federal Rule 407”).
would be worth relatively little. Despite its admitted objective of regulating primary and not just litigation conduct, Rule 407, like the remainder of the Federal Rules of Evidence, is treated as “procedural” in nature. Hence, under the regime of Hanna v. Plummer, Rule 407 is enforceable in federal diversity actions, irrespective of state evidence law to the contrary. Defendants that have adopted postaccident precautions and are sued in state court in Rhode Island or any future Rule 407 defector will remove to federal court whenever they can. The ones that will be able to do so will generally be companies that are incorporated and have their headquarters in some other state (like Delaware). These are the very defendants (e.g., automobile companies, manufacturers of dangerous equipment, and the like) whose tortious conduct against their citizens states are likely to have the greatest stake in remediying.

Effectively, then, manufacturers and insurers only have to exploit their collective action advantages sufficiently to win in one forum in order to win everywhere. So long as they can be sure the United States Congress, which enacted Federal Rule 407 in the first place, blocks any effort to remove categorical exclusion from the Federal Rules, few states are likely to see it as worth the bother to adopt a selective exclusion rule for tort cases tried in their own courts.

What does this analysis prove? Nothing, because public choice theory, unsupported by confirmatory empirical investigation, furnishes just another storytelling template of the sort with which the economic analysis of law is richly stocked. But even as a conjecture, the political economy critique of the SRM rule does show why one cannot reliably draw any inference about the efficiency of the rule from its simple prevalence: There is ample reason to expect the SRM rule to be adopted and to persist even if it is substantially detrimental to public welfare on net. Furthermore, the ease with which one can use public choice theory to tell this unhappy story is simply more evidence of how conveniently selective L&E scholars have been in the relentlessly upbeat fables they have chosen to tell about the virtues of Rule 407.

108. 380 U.S. 460, 472 (1965) (noting existence of matters that, “though falling within the uncertain area between substance and procedure, are rationally capable of classification as either”).


110. See generally Donald P. Green & Ian Shapiro, Pathologies of Rational Choice Theory: A Critique of Applications in Political Science 5–7 (1994) (critiquing public choice storytelling in political science and economics as “not rest[ing] on a readily identifiable set of empirical successes”).
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Conclusion

In this Essay, I have tried to use L&E tools to criticize a rule of evidence—the categorical exclusion of SRM proofs—that L&E theory is conventionally thought to justify. By focusing only on how hindsight bias invests SRM proofs with too much weight, BLEC ignores how categorical exclusion necessarily invests such proofs with too little. BLEC scholarship, as admirable as it undeniably is for injecting psychological realism into economics analysis, fails to consider the relative magnitude of these two effects or to identify conditions in which one is likely to predominate over the other.

The CLEC rationale suffers from a similar one-sidedness. The SRM rule removes an incentive to adopt optimal precautions ex post. However, by excluding relevant evidence, the rule also predictably reduces the likelihood that a faulty actor will be found liable, thereby undermining incentives to engage in optimal precaution-taking ex ante. Again, commentators who advance this rationale have made no effort to determine the relative weight of these effects or to identify mechanisms that would mitigate this tradeoff.

L&E scholars have also been strikingly silent about the political economy of the SRM rule. Because it confers large benefits on intensely interested, highly organized groups—manufacturers and their insurers—and imposes uncertain costs over a large, diffuse group of ordinary citizens, public choice theory suggests the rule is likely to be adopted and persist notwithstanding any negative effect on public welfare.

One goal of this analysis was practical: to defend and suggest the mechanics of a superior selective exclusion alternative to the SRM ban. A Bayesian analysis reveals that, to minimize verdict error, selective exclusion should be tied to the relative strength of the parties’ cases. Exclusion is most warranted when the plaintiff’s case is otherwise weak. These are the cases in which the discrepancy between the modest weight SRM proofs are due, relative to how much weight factfinders are inclined to give them, is most likely to result in an erroneous finding of liability. In contrast, admission is most warranted when the plaintiff’s case is otherwise of middling strength. These are the cases in which even exclusion is most likely to result in a mistaken finding of no liability: Because even the modest weight that SRM proofs are due would likely tip the judgment of a rational factfinder toward the plaintiff, the greater weight quasi-rational factfinders would give those proofs still would lead them to the right decision. Exclusion, on the other hand, would dispose them to a mistaken verdict for the defendant. Cases in which the plaintiff’s evidence is otherwise very strong are ones in which neither admission nor exclusion is likely to affect the result, and exclusion can be justified on grounds of avoiding duplicative or wasteful proof.111

111. See supra Figure 1.
According to these guidelines, selective exclusion would, if coupled with provision for punitive damage awards, also tend toward optimal incentives to adopt precautions. The cases in which the plaintiff’s evidence is otherwise weak—where exclusion would be justified as indicated above—are likely to be dominated by ones in which the defendant engaged in adequate precautions ex ante. The prospect that exclusion of SRM proofs in such cases will undermine parties’ ex ante incentives to take precautions is thus moot ex hypothesi. In close cases, the prospect that SRM proofs will be admitted gives potential defendants an ex ante incentive to take the precautions necessary to make sure their evidence is strong should any case arise against them. Admission in such cases might create incentives to avoid taking postaccident precautions, but that effect can be offset with the threat of punitive damages for defendants found to have deliberately avoided adopting such measures. And finally, the incentive effects of any approach to SRM proofs in instances when plaintiffs’ cases are otherwise strong are negligible.112

Accordingly, if there were no SRM rule, the best approach would be for courts to use criteria based on relative case strength to make case-specific determinations of admissibility under Rule 403 or its state law equivalents. Such determinations, in fact, would be perfectly compatible with the probity-prejudice balancing contemplated by Rule 403, which requires courts to weigh the probative value of evidence at the margin—that is, with reference to the contribution that evidence makes to accurate factfinding, considering the strength of the remaining evidence.

Conveniently, implementing this approach does not even require repealing the SRM rule. As is well remarked, the rule is rife with conceptual ambiguities, particularly relating to the distinction between permissible and forbidden purposes for SRM proofs. To resolve these ambiguities, courts must continually assess just how broadly the rule should be read in order to promote its animating purposes. The economic analysis that I have presented in this Essay is geared toward answering exactly that question. Accordingly, were courts to be guided by this analysis when they make use of its economic rationales to interpret the rule, they would end up enforcing a selective exclusion SRM ban that has exactly the dimensions I propose.

Another way to put it is that courts already tend to engage in the functional equivalent of Rule 403 analysis whenever they purport to rule on the applicability of the SRM rule. This dynamic disturbs some commentators because it tends to transform the SRM ban from a mechanical, categorical one into a highly discretionary, selective exclusion one.113 I propose embracing and exploiting this dynamic to make application of the rule conform to the best understandings (or at least the best eco-

112. See supra Figure 2.
113. See generally 23 Wright & Graham, supra note 10, § 5282 (noting that commentators attribute uneven enforcement of Rule 407 to ambivalence about policy).
conomic understandings) of its rationales, which inescapably demand attention to case-specific considerations.

It is tempting to suggest that this account of how the rule should work in fact explains in whole or in part how it does. There are myriad examples of cases that reach different results on the admissibility of analytically indistinguishable SRM proofs (particularly when offered to show feasibility or to impeach).\textsuperscript{114} Perhaps close investigation of the facts in these cases (and in particular the strength of the evidence independent of the SRM proofs) could (with enough narrative fitting and shaping) reconcile these decisions on the basis of the economic analyses I have developed. The moral of the story, on this account, would be the usual one for L&E—that the life of the law is neither logic nor experience, but efficiency.

This sort of account, however, would conflict with the second goal of the Essay: to register a protest about the path the economic analysis of evidence seems intent on following. It is the very path taken by L&E on its way to its preeminence in legal scholarship generally, and it consists of the accumulation of theoretical analyses demonstrating the efficiency of existing doctrine. On its surface, this exercise in rationalization purports to justify the law on normative grounds. But just as important, this form of theorizing served, historically, to justify L&E as a credible mode of analysis by demonstrating its apparent power to systematize large bodies of law.\textsuperscript{115}

The L&E defenses of Rule 407, like many other recent applications of economic analysis to evidence, fit this pattern. By showing how the asserted rationales for the rule can be cashed out in CLEC or BLEC terms, they reveal and amplify the wisdom of the rule. And at the same time, by showing that yet another rule we have reason to believe makes sense—how else to explain its near universal and enduring use?—is exactly what their theories would prescribe, the analysis deepens our confidence in L&E.

Whatever one might think about the contribution doctrinal rationalization has made to L&E generally, this is a route to academic acceptance

\textsuperscript{114} Compare Kelly v. Crown Equip. Co., 970 F.2d 1273, 1278 (3d Cir. 1992) ("Evidence that the forklift’s design had been altered does not contradict th[e] statement [that the forklift was of ‘proper design’] since alteration did not compel the conclusion that the first design was defective." (emphasis omitted)), with Petree v. Victor Fluid Power, Inc., 887 F.2d 34, 38–41 (3d Cir. 1989) (deeming subsequent use of a “decal warning of projectile hazard . . . admissible for impeachment purposes” because it “served directly to contradict [the witness’s] claim” that product had been safely designed).

that ought to be closed to the economic analysis of evidence. The rules of evidence are already fully and perniciously self-rationalizing.

The rules of evidence both presuppose and shape our understandings of how the natural and social worlds work. A court can determine whether evidence makes a “fact . . . of consequence . . . more probable or less”116 only by recourse to empirical generalizations, themselves extrinsic to the rules, that give the evidence meaning.117 Proof that the victim was having an affair with the defendant’s wife, for example, is relevant proof of the defendant’s motivation to kill him, but only because we learned, long before being sworn in as jurors, that adultery can spark rage. But of course one source of our awareness of (or better, our imperceptible asent to) such generalizations is the law itself. We all know that infidelity can trigger fury—indeed, we learn in some sense that it should—because we see courts treat it as evidence not only that one man killed another, but that he did so on account of “provocation” that was “sufficient to arouse the passions of the ordinarily reasonable man.”118

As Jennifer Mnookin’s writings on expert evidence engagingly illustrate, this recursive process is rife with comic misadventure.119 The acceptance of still pictures as a form of proof was retarded by the suspicion of some courts, which regarded photography as something akin to magic.120 Today, the judicial system reinforces our inattention to the distorting influence of perspective when we view a photo or film—a recognized form of cognitive bias—by insisting that visual media be afforded near-dispositive significance.121 The polygraph, in contrast, has never recovered from the discredit visited on it by skeptical judges, who had been conditioned, and who in turn have conditioned us, to disregard the demonstrably less reliable, unaided truth-discriming powers of jurors.122

118. See Dan M. Kahn & Martha C. Nussbaum, Two Conceptions of Emotion in Criminal Law, 96 Colum. L. Rev. 269, 307 & n.156 (1996) (quoting People v. Logan, 164 P. 1121, 1122 (Cal. 1917)); see also id. at 307–10, 355–57 (describing importance of judicial “insist[ence] on adequate provocation” as “the infirmity of passion to which even good men are subject” (footnote omitted) (internal quotation marks omitted)).
Fingerprint analysis remains impervious to discredit precisely because the longtime acceptance of it by credulous judges has made legislators and members of the public incredulous when confronted with scientific proof that it lacks validity.\textsuperscript{123}

The primary mission of the academic study of evidence should be to preempt the self-reinforcing propagation of false empirical generalizations and scientifically deficient modes of factfinding.\textsuperscript{124} To justify as a moral matter the status scholars enjoy and the influence they wield (meager as those might be, they are amply large enough to make what academics do genuinely consequential), they must be willing to adopt a critical posture toward the mechanisms by which the judicial system certifies social truth, even though doing so will inevitably put their status and influence at risk. The style of L&E theorizing that tries to buy credibility for itself by exploiting our disposition to believe that the real is rational, and the rational real, deepens the pathologies that afflict our law as a result of this very disposition.

This is not the only style of L&E scholarship. Indeed, the most acclaimed L&E commentary today consists of a mix of original and pragmatically applied empirical work, which is just as likely to criticize and propose reforming existing doctrine as to rationalize it.\textsuperscript{125} There are some very important examples of economic analyses of evidence that conform to this model.\textsuperscript{126}

Indeed, the best reason for the academic study to resist the half-positive, half-normative rationalizing historically characteristic of the economic analysis of law is precisely its power to divert evidence scholars


\textsuperscript{124} See Nat’l Research Council of the Nat’l Acads., supra note 13, at 86 (“[E]very effort must be made to limit the risk of having the reliability of certain forensic science methodologies judicially certified before the techniques have been properly studied and their accuracy verified.”).


\textsuperscript{126} See, e.g., Simon, supra note 84, at 583–86 (“Complex decisions are solved . . . by nuanced cognitive processes that progress bidirectionally between premises and facts on the one hand, and conclusions on the other.”); Wistrich et al., Deliberately Disregarding, supra note 85, at 1323 (discussing empirical research indicating judges’ inability to disregard inadmissible information in determining guilt).
from exploiting the power of a superior form of L&E. L&E theories informed by psychological and experimental methods, in particular, supply indispensable tools for discovering and remedying the myriad deficiencies in evidence law.

It is no coincidence, in my view, that the very first systematic application of economic thinking to common law evidence doctrines—that of Jeremy Bentham—was acidly hostile to them.\textsuperscript{127} Bentham saw his iconoclastic utilitarian brand of economics as the cure for the potential of conventional modes of thinking to infect adjudication with error, and ultimately with injustice.\textsuperscript{128} We should not stand for the adulteration of his antidote—searching criticism fueled by genuinely skeptical consequentialist thinking—with the palliative that is economic storytelling.

127. See generally 4 Bentham, supra note 3 (describing aversion to English common law and evidentiary rules).