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NOTES

HINDSIGHT BIAS AND THE SUBSEQUENT REMEDIAL MEASURES RULE: FIXING THE FEASIBILITY EXCEPTION

“HINDSIGHT IS 20/20.”

Nowhere has this maxim been more true than in the American courts of civil law when dealing with negligence and liability. To be sure, hindsight is 20/20; we always know what we should have done after something happens, but why? And in the context of a legal proceeding, where jurors are supposed to determine liability based on the defendant's actions *before* the injury occurred, is this fair?

Under traditional, or *de jure*, negligence law, a plaintiff must prove four elements: first, that the defendant owed him a duty of reasonable care; second, that the defendant breached that duty; third, that the breach was the actual cause of the damage or injury to the plaintiff; and fourth, that the defendant's conduct was the proximate cause, or legal cause, of the plaintiff's injury.¹ The law requires that juries decide the second element – whether the defendant breached his duty to the plaintiff – based on the defendant's actions before the accident. This prescription that the jury take an *ex ante* viewpoint poses a great financial risk and danger to the defendant that what is called “hindsight bias” will negatively affect the outcome, especially where evi-

¹ See generally, e.g., RESTATEMENT (SECOND) OF TORTS (1965); WILLIAM PROSSER & PAUL KEETON, THE LAW OF TORTS (5th ed. 1984). See also *Wilson v. Sibert*, 535 P.2d 1034 (Alaska 1975) (detailing the general duty owed to plaintiffs); *Ind. Consol. Ins. Co. v. Mathew*, 402 N.E.2d 1000 (Ind. Ct. App. 1980) (discussing the element of breach of duty); *Palsgraf v. Long Island R.R. Co.*, 162 N.E. 99 (N.Y. 1928) (discussing and defining cause in fact and proximate cause in negligence actions).

dence of subsequent remedial measures is introduced to show the feasibility of that measure.

The Subsequent Remedial Measures Rule of the Federal Rules of Evidence² is an attempt to mitigate the hindsight bias that is inherent in negligence trials by providing a general rule of exclusion of such evidence to show negligence. Evidence of a subsequent remedial measure is only admissible to show feasibility, control or ownership, if controverted. The Subsequent Remedial Measures rule states, in pertinent part, that

[w]hen, 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 to prove negligence . . . [or] culpable conduct This rule does not require the exclusion of evidence of subsequent measures when offered for another purpose, such as proving ownership, control, or feasibility of precautionary measures, if controverted, or impeachment.³

However, the definition of “feasible” varies from circuit to circuit, leaving open the possibility that, while the evidence may not be admissible to show negligence, it may be admissible to show the measure’s feasibility under a definition of “feasible” that strongly resembles “reasonable.”

For example, in *Kenny v. Southeastern Pennsylvania Transportation Authority*,⁴ a young woman was seated at a bench on an elevated train platform at approximately 9:00 p.m., waiting for her train. There was only one other person on the platform at the time – a man on the opposite side of the tracks. The man crossed over to the woman’s side of the platform, and after a brief exchange, dragged her approximately 150 feet to a darkened end of the platform. There, he beat and raped her.⁵

After the incident, the young woman filed suit against the transit authority and the City of Philadelphia, alleging negligence.⁶ At trial, a transit employee testified that the platform’s lighting was checked on a daily basis, and that he had replaced at least one light bulb about

² FED. R. EVID. 407.

³ *Id.*

⁴ 581 F.2d 351 (3d Cir. 1978).

⁵ *Id.* at 352.

⁶ *Id.* The City of Philadelphia was dismissed from the suit after presenting proof that the transit authority had knowledge of the dangerous condition on the platform and failed to remedy it. *Id.* at 354.

an hour before the incident. However, on cross-examination, the woman's counsel elicited the fact that a new fluorescent lighting fixture was installed only a few days after the attack.⁷ While the District Court ultimately held that the lack of lighting was not a proximate cause of the woman's attack, the evidence was admitted for both impeachment and to show the feasibility of precautions.⁸

On appeal, the Third Circuit held that the testimony that fluorescent lighting was installed four days after the rape was admissible because "when the defendant opens up the issue by claiming that all reasonable care was being exercised at the time, [then] the plaintiff may attack that contention by showing later repairs which are inconsistent with it."⁹ In articulating this definition, the court drew a nearly indiscernible line between evidence offered for impeachment and evidence to show feasibility where controverted. While the definition may have been intended to speak only to the impeachment exception,¹⁰ it was couched as a response and affirmation of the admission under *both* the impeachment *and* feasibility exception. The ultimate result of such a definition is less a fine line and more a broad definition of "feasibility."

The Third Circuit, however, is not alone in opening the door to a less-than-narrow definition of "feasibility." In many jurisdictions, if a defendant merely argues that the measure was not practical or economical, that argument is enough to controvert the plaintiff's assertion that the measure was "feasible," thus rendering the evidence admissible.¹¹ Now that the evidence is admitted, how will the jury react? A close examination of the subsequent remedial measures rule, its purposes, and the decision-making process called "hindsight bias" may help to answer this question.

This Note argues that hindsight bias causes evidence of subsequent remedial measures, admitted to show feasibility, to ultimately speak

⁷ *Id.* at 355-56.

⁸ *Id.*

⁹ *Id.* at 356. The trial court held that the evidence was admissible to show feasibility and for impeachment purposes. *Id.* at 355-56. The Court of Appeals affirmed the trial court's admission for both purposes. *Id.*

¹⁰ See, e.g., *Wilkinson v. Carnival Cruise Lines, Inc.*, 920 F.2d 1560, 1567 (11th Cir. 1991) (noting that, while the evidence was being used for impeachment purposes, the exception "may well possess the capacity to engulf the rule"); *Petree v. Victor Fluid Power, Inc.*, 887 F.2d 34, 38 (3d Cir. 1989) (applying this definition to an impeachment issue).

¹¹ See, e.g., *Espeaignette v. Gene Tierney Co., Inc.*, 43 F.3d 1, 6 (1st Cir. 1994) (defining "feasible" as "practical"); *Anderson v. Malloy*, 700 F.2d 1208, 1213 (8th Cir. 1983) (defining "feasible" as "possible"); *Brookshire Bros. v. Lewis*, 911 S.W.2d 791, 797 (Tex. App. 1995) (applying Texas Rule of Evidence 407 to conclude that a clear controversion of the possibility, economic feasibility, or efficacy of the measure is required before evidence of the measure can be admitted).

directly to the defendant's negligence, an outcome that is supposed to be prohibited by the Federal Rules of Evidence. Part I describes hindsight bias and explains how hindsight bias can influence juries' perceptions in negligence cases. Part II details how the subsequent remedial measures rule is currently applied, and how a broad definition of the term "feasible" has led to the admission of evidence that was intended by Congress to be admissible in only limited circumstances. Part III explains how hindsight bias specifically affects juries' perceptions of subsequent remedial measures that are admitted to show feasibility. Part IV suggests remedies that, on their own or in combination with each other, may mitigate hindsight bias' effect on evidence of subsequent remedial measures.

I. HINDSIGHT BIAS

A. *Is Hindsight Really 20/20?*

*"The ex post perspective of litigation exerts a hydraulic force that distorts judgment."*¹²

Most people know the old maxim that "hindsight is 20/20." Perhaps without knowing it, many people engage in hindsight bias; "Monday-morning quarterbacking" is perhaps its most well-known manifestation.¹³ But what, exactly, is hindsight bias, and how might it adversely affect a defendant in a negligence case?

The basic theory of hindsight bias was developed in 1975 by Baruch Fischhoff.¹⁴ Although Fischhoff's first research topics were primarily historical events and psychotherapy patients' case histories, the theory has gained wide recognition as a fundamental psychological tendency. Hindsight bias is the tendency to regard events that have already occurred as having always been inevitable.¹⁵ As a general rule, finding out that an outcome has already occurred increases that outcome's perceived *ex ante* likelihood.¹⁶ People tend to believe

¹² Carroll v. Otis Elevator, 896 F.2d 210, 215 (7th Cir. 1990).

¹³ Philip G. Peters, Jr., *Hindsight Bias and Tort Liability: Avoiding Premature Conclusions*, 31 ARIZ. ST. L.J. 1277, 1299 (1999).

¹⁴ Baruch Fischhoff, *Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty*, 1 J. EXPERIMENTAL PSYCHOL.: HUMAN PERCEPTION & PERFORMANCE 288 (1975).

¹⁵ *Id.* at 288-89. What is now known as hindsight bias was previously called "creeping determinism" by other psychologists and researchers. *Id.* See also Hal R. Arkes et al., *Hindsight Bias Among Physicians Weighing the Likelihood of Diagnoses*, 66 J. APPLIED PSYCHOL. 252, 252-54 (1981).

¹⁶ Fischhoff, *supra* note 14, at 297.

that this perceived inevitability was apparent in foresight as well as with hindsight,¹⁷ and generally remember their own outcome predictions as being more accurate than they actually were. This is essentially what happens when one states “I knew it all along,” even when one did not know it all along.¹⁸ Fischhoff postulated that it “not only biases people’s impressions of what they would have known without outcome knowledge, but also their impressions of what they themselves and others actually *did* know in foresight.”¹⁹

This tendency may be particularly relevant when instructing juries to make retrospective decisions as to whether the defendant’s actions were reasonable at the time of the injury in negligence actions. Subjects have shown a tendency “to exaggerate in hindsight what they knew in foresight” and to underestimate the substance and amount of facts of which they were not aware.²⁰ They also “exaggerate what could have been anticipated [with] foresight,”²¹ perceive what has happened as being inevitable, and believe that others should have been able to anticipate outcomes better than they actually did.²² Because of this reinterpretation of what others should have known or should have been able to anticipate, jurors may believe the defendant’s behavior to be less reasonable in hindsight than it would have been in foresight.²³ As Fischhoff noted, “[w]hen second-guessed by a hindsightful observer, [a defendant’s] misfortune appears to have been incompetence, folly, or worse.”²⁴

Psychologists have tested Fischhoff’s theory by exposing physicians to medical case history materials, then providing one “foresight-only” control group with no pre-determined diagnoses, and each of the other four “hindsight” groups with lists of four possible diagnoses, identifying one of the four diagnoses as “correct.”²⁵ The hindsight groups that had been given each of the least likely diagnoses deter-

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* See also Hal R. Arkes et al., *Eliminating the Hindsight Bias*, 73 J. APPLIED PSYCHOL. 305, 305 (1988) (noting that “[h]indsight bias is defined as the tendency for people considering a past event to overestimate their likelihood of having predicted its occurrence”).

²⁰ BARUCH FISCHHOFF ET AL., *ACCEPTABLE RISK* 42 (1981). Specifically, people may actually ignore facts of which they were actually aware if, after being made aware of a particular event, those facts do not mesh with the actual outcome. *Id.*

²¹ Chris William Sanchirico, *Finding Error*, 2003 MICH. ST. L. REV. 1189, 1192 (2003).

²² Baruch Fischhoff, *For Those Condemned to Study the Past: Heuristics and Biases in Hindsight*, in *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* 335, 341 (Daniel Kahneman et al., eds., 1982) (offering a thorough analysis of potential causes of the bias).

²³ Jeffrey J. Rachlinski, *A Positive Psychological Theory of Judging in Hindsight*, 65 U. CHI. L. REV. 571, 571 (1998).

²⁴ Fischhoff, *supra* note 14, at 298.

²⁵ Arkes et al., *supra* note 15, at 252-54.

mined that the identified “correct” diagnosis was more probable than the foresight-only group did. Psychologists concluded that the hindsight groups were trying to make sense of the given outcome by working backwards rather than considering the data in a forward continuum.²⁶ In other words, Fischhoff’s hindsight bias was found to distort second opinions of medical practitioners, and this conclusion has been confirmed by studies of undergraduate²⁷ and postgraduate medical students.²⁸

In a subsequent study, published in 1977, Fischhoff re-examined the “knew it all along” effect of hindsight bias.²⁹ Fischhoff concluded that, while there were times when subjects felt that they never would have known the answer to a question, in general, subjects exaggerated how much they would have known had they not been told the answer in advance.³⁰ This response was even more prevalent in group situations, leading Fischhoff to suggest that people in group settings were capable of generating feelings of having known something about even the most obscure facts.³¹

Fischhoff then compared the results of his 1977 study with those of his hindsight bias study in 1975. He hypothesized that in both situations subjects were essentially seeking to integrate the answer or outcome with everything else they knew about the subject.³² In integrating the answer or outcome, subjects reinterpreted previously held information in light of the reported answer or outcome;³³ the process is so natural and immediate—and appropriate, when done correctly—that people are generally unaware that they are doing it.³⁴ Because of this integration process, people tend to “overestimate how obvious the answer appeared (memory) or would have appeared (hy-

²⁶ *Id.*

²⁷ *Id.*

²⁸ Neal V. Dawson et al., *Hindsight Bias: An Impediment to Accurate Probability Estimation in Clinicopathologic Conferences*, 8 MED. DECISION MAKING 259, 259-64 (1988) (concluding that clinicopathologic conferences, although valued teaching tools, are susceptible to the hindsight bias).

²⁹ Baruch Fischhoff, *Perceived Informativeness of Facts*, 3 J. EXPERIMENTAL PSYCHOL.: HUM. PERCEPTION & PERFORMANCE 349, 356 (1977). The “knew it all along” effect can be viewed in most people’s every day experiences, for instance, while watching a game show like *Jeopardy*. The question is presented, and before the viewer can respond, a contestant answers correctly. The viewer then normally says something like “Oh, I knew that,” whether he actually knew it or not.

³⁰ *Id.*

³¹ *Id.*

³² *Id.* See also Shari Seidman Diamond & Neil Vidmar, *Jury Room Ruminations on Forbidden Topics*, 87 VA. L. REV. 1857, 1858 (2001) (noting that blindfolding techniques do not generally work because jurors often discuss forbidden topics).

³³ Fischhoff, *supra* note 29, at 356.

³⁴ *Id.*

pothetical) before its correctness was affirmed.”³⁵ Even when warned of the integration process and told specifically not to engage in it, “it is evidently extremely difficult to de-process so important a bit of information as the right answer.”³⁶

A concurrent study by Roth and Meisel analyzed how the hindsight bias could affect determinations of negligence in *Tarasoff*-type malpractice cases.³⁷ Roth and Meisel correctly noted that

[u]nfortunately, what is reasonable in a given situation cannot be determined with scientific precision, and when it is determined by a jury it is always after the harm has been done. Although the jury is cautioned that reasonableness must be judged without the benefit of hindsight, knowledge of the occurrence of untoward events . . . cannot easily be put aside.³⁸

Subsequent studies have found that in similar factual settings, individual “judges” are significantly affected by the hindsight bias, particularly the knowledge of the “untoward event.”³⁹ The determination of negligence is influenced by the report of damages or harm even where the therapist or defendant acted in a manner consistent with the professional standard of care, or, in other words, where the duty of care was not breached.⁴⁰ Specifically, the hindsight bias was most palpable in the jurors’ determinations of the foreseeability of the wrongful behavior.⁴¹ In cases where a subsequent remedial measure might be admitted into evidence, the Roth and Meisel study and the LaBine study clearly indicate that the danger to the defendant of the hindsight bias affecting jurors’ perceptions of foreseeability might significantly hinder their case.

³⁵ *Id.*

³⁶ *Id.*

³⁷ Loren H. Roth & Alan Meisel, *Dangerousness, Confidentiality, and the Duty to Warn*, 134 AM. J. OF PSYCHIATRY 508 (1977). In *Tarasoff v. Regents of the University of California*, 551 P.2d 334 (Cal. 1976), the defendants—a therapist and the police—failed to confine a patient who had expressed his intention to kill the victim, and also failed to warn the victim that the patient had the intent to kill her. After the patient killed the victim, her parents sued, alleging that the defendants owed the victim the duty to warn of the impending danger.

³⁸ *Id.* at 509.

³⁹ Susan J. LaBine & Gary LaBine, *Determinations of Negligence and the Hindsight Bias*, 20 LAW & HUM. BEHAV. 501, 510 (1996).

⁴⁰ *Id.*

⁴¹ *Id.* at 511. The LaBine study’s findings are consistent with estimates made by other researchers, who found that as many as 18-27% of observers may change their decision from negligent to not negligent when they know that an event has occurred and the evaluative task is unfamiliar to them. *Id.* (citing J.J. Christensen-Szalancki & C. F. Willham, *The Hindsight Bias: A Meta-Analysis*, 48 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 147 (1991)). Therefore, because most jurors are not familiar with professional standards or what constitutes reasonable care, the hindsight bias can significantly impact the outcome of a case.

The danger to defendants presented by the hindsight bias in combination with evidence of subsequent remedial measures was demonstrated in *Kenny*, where jurors were presented with evidence that fluorescent lighting was installed only four days after a rape occurred.⁴² Jurors were instructed not to consider the installation of lights as evidence of culpable conduct or negligence.⁴³ However, as a result of hindsight bias, it is likely that jurors, faced with the facts of a young woman's rape and the transit authority's assertion that it had taken all reasonable precautions, integrated the testimony about the installation of fluorescent lighting into their own estimates of what the defendant knew or should have known, and thereby overestimated how obvious or possible the installation of lighting appeared as a solution to a darkened platform based on its subsequent installation. When considered in light of all other facts, the transit authority's failure to install the lighting sooner may have appeared less reasonable than it would have had the evidence never been admitted.

However, a distinction must be made between hindsight bias and learning from experience.⁴⁴ In ordinary circumstances, knowing the outcome of an event will cause people to update their estimates of the event's probability; this is simply known as learning from experience.⁴⁵ Hindsight bias, on the other hand, occurs when a subject is asked to predict the probability of the outcome *without* using the ultimate outcome information.⁴⁶ In hindsight bias situations, subjects' estimates of the probability will still rise, even though they have specifically been asked not to update their information base. The resulting estimate reflects hindsight bias; once we know the information, it is virtually impossible not to update our information base, or to skew our estimates in favor of a higher probability that is more in line with the actual outcome of the event.⁴⁷

Researchers have attempted to reconcile the subtle differences between hindsight bias and learning from experience with a model of

⁴² *Kenny v. Southeastern Penn. Transp. Auth.*, 581 F.2d 351, 355-56.

⁴³ *Id.* at 356. Testimonial evidence of the subsequent remedial measure was admitted for the limited purposes of impeachment and feasibility. *Id.* at 355-56.

⁴⁴ Rachlinski, *supra* note 23, at 576-77.

⁴⁵ *Id.* For example, where a person has learned from experience, while he will update his current estimate of the event's probability, he will not revise his estimate of what he knew in advance of the outcome based on the new information. Translating this to a trial setting, while the jury may increase its current estimate of the injury's probability based on the various facts of a case, it will not necessarily integrate the new information into its perception of what the defendant knew, or should have known, before the injury occurred.

⁴⁶ This distinction is important, because when evidence of subsequent remedial measures is presented at trial, the jury is being asked to consider measures taken after the accident *without* using those measures as an indicator of culpable conduct or negligence.

⁴⁷ Rachlinski, *supra* note 23, at 576-77.

hindsight bias called Reconstruction After Feedback with Take the Best (RAFT).⁴⁸ RAFT seeks to explain why our impression of how we acted or would have acted changes when we learn the outcome of the event. Hindsight bias can occur when people make a judgment or choice but, afterward, are told what the “correct” judgment would have been.⁴⁹ When asked to recall what their own judgment was, subjects’ memory of their own judgment often reflects bias toward the new information, demonstrating the effects of hindsight bias.

The RAFT model postulates that any feedback or correct information a person is given after he has indicated his initial judgment effectively “updates” the subject’s knowledge base underlying the initial judgment.⁵⁰ While the feedback does not directly affect the memory for the original response, it indirectly affects the memory for the subsequent response by updating the knowledge used to reconstruct the correct response.⁵¹ The RAFT model has been applied to subjects’ knowledge of political events, nutritional values, as well as current events and is particularly applicable to subjects’ rationales for choosing one outcome over another.⁵² Application of the RAFT model may suggest why evidence of subsequent remedial measures exacerbates the hindsight bias. Jurors, presented with evidence of the defendant’s conduct after the injury has occurred, have the benefit of the ability to update their memory or cognitive biases in order to reconstruct what the defendant should have done—the “correct” or “reasonable” response to the danger—in order to more closely coincide with the evidence of a subsequent remedial measure. Therefore, application of the RAFT model would seem to indicate that the hindsight bias would grow stronger with evidence of subsequent remedial measures and that a defendant would be more likely to be found negligent for not having acted in the “correct” manner.

Knowing how and why people update their knowledge base may prove critical in a negligence trial, particularly where evidence of *ex*

⁴⁸ Press Release, American Psychological Association, Hindsight Bias - Not Just a Convenient Memory Enhancer but an Important Part of an Efficient Memory System (May 14, 2000), available at <http://www.apa.org/releases/hindsight.html>.

⁴⁹ *Id.*

⁵⁰ Ulrich Hoffrage et al., *Hindsight Bias: A By-Product of Knowledge Updating?*, 26 J. EXPERIMENTAL PSYCHOL.: LEARNING, MEMORY & COGNITION 566, 567 (2000).

⁵¹ *Id.*

⁵² *Id.* Hoffrage has noted that “hindsight bias emerges because of systematic differences between judging and rejudging the outcome.” *Id.* The RAFT model is based on three general assumptions. First, it assumes that if the original response can’t be retrieved from the subject’s memory, it will be reconstructed by rejudging the event. Second, it assumes that the rejudgment involves a basic recall of the cues underlying the original choice or memory. Finally, it is assumed that uncertain knowledge is automatically updated by feedback. The by-product of this updating is hindsight bias. *Id.*

post measures is introduced. Hindsight bias, in non-litigation situations, is an adaptive and desirable process, as is the process of learning from experience. However, in a litigation situation, hindsight bias presents special problems. In particular, jurors are told that the defendant made a particular choice (for instance, to maintain an old incandescent lighting system) and then are told that, after an injury or other event (such as a violent rape), the defendant made the "correct" decision (installing brighter fluorescent lights). In updating their knowledge base with the "correct" judgment,⁵³ jurors' memories of their own judgment of the risk and benefits will likely reflect bias toward the new information. Jury deliberations, which occur in a group setting, may exacerbate this phenomenon. Thus, in the distinctive context of laying blame and liability for failure to do something that may have ultimately prevented an injury, hindsight bias presents an acute danger to defendants who acted, or declined to act, without the benefit of hindsight.

B. Hindsight Bias and the Law

1. "[J]udgments tainted by hindsight bias can have serious consequences for decision makers and for those who depend on them."⁵⁴

Psychologists and legal scholars have expressed concern at the adverse impact hindsight bias may have on defendants in negligence cases.⁵⁵ Because hindsight bias makes outcomes seem more predictable in hindsight than they were *ex ante*, prior conduct tends to be judged more harshly than it would be if the individual were unaware of the outcome.⁵⁶ Specifically, the presence of hindsight bias in the courtroom presents three challenges to the legal system: first, a psychological jurisprudential system demands a full understanding of the roles of psychology and the law in order to affect the best or "right" outcome; second, hindsight bias can result in the negligence standard being converted to a strict liability system, creating economic inefficiencies; and third, punitive damages awards or inordinately high

⁵³ In the context of evidence of a subsequent remedial measure, this "correct" judgment is a measure taken after the injury occurs, not the injury itself.

⁵⁴ Therese A. Louie, *Decision Makers' Hindsight Bias After Receiving Favorable and Unfavorable Feedback*, 84 J. APPLIED PSYCHOL. 29 (1999).

⁵⁵ See, e.g., Diamond & Vidmar, *supra* note 32; Rachlinski, *supra* note 23. But see Galen V. Bodenhausen, *Second-Guessing the Jury: Stereotypic and Hindsight Biases in Perceptions of Court Cases*, 20 J. APPLIED SOCIAL PSYCHOL. 1112 (1990) (finding that no hindsight bias was evident in judgments of cases involving stereotyped criminal defendants).

⁵⁶ Peters, *supra* note 13, at 1277.

damages awards resulting from hindsight bias may wrongly compensate for a defendant's otherwise reasonable behavior.

a. Psychological Jurisprudence

The study of psychological jurisprudence seeks to provide a normative theory of the manner in which the social sciences and psychology interact with the law and our legal processes.⁵⁷ Scholars have suggested that psychology and the social sciences provide a unique lens through which to view the application of the law and its effects on society and the promotion of our nation's values.⁵⁸

By understanding the impact of psychological phenomena like hindsight bias, the legal system can correct flawed processes in order to effect the correct or fair outcome. However, in order to achieve this goal, the effects of legal doctrine on the behavior of individuals and the manner in which legal consciousness is acquired must be considered.⁵⁹ In the context of hindsight bias and the subsequent remedial measures rule, this means that, before evidence of a subsequent remedial measure is introduced, the attorneys presenting and defending against the evidence as well as the judge presiding over the admission of the evidence must be aware of the impact of the evidence on the jurors' cognitive functions. Although social psychologists and legal scholars have devoted enormous efforts to understanding and explaining why people attribute causality and fault to the actions of other individuals,⁶⁰ the general lack of understanding or acknowledgement of the impact of hindsight bias, particularly the negative impact on the jury's perception of the defendant's conduct, presents a significant challenge to our legal system in negligence cases.

b. Economic Inefficiencies

Hindsight bias makes it incredibly difficult for tort defendants to convince judges and juries that their actions fell within the standard of reasonable care.⁶¹ As a result of hindsight bias, the application of a negligence standard—which asks jurors to consider the defendant's conduct in light of the standard of reasonable care and foreseeabil-

⁵⁷ Richard L. Wiener, *Social Analytic Jurisprudence and Tort Law: Social Cognition Goes to Court*, 37 ST. LOUIS U. L.J. 503, 508 (1993).

⁵⁸ *Id.*

⁵⁹ *Id.* at 508-09.

⁶⁰ *Id.* at 523.

⁶¹ Jeffrey J. Rachlinski, *Regulating in Foresight Versus Judging Liability in Hindsight: The Case of Tobacco*, 33 GA. L. REV. 813, 825 (1999) (discussing hindsight bias's challenges in product liability cases).

ity—may result in a kind of strict liability.⁶² The application of a strict liability standard, or the threat of a quasi-strict liability standard, may lead to inefficient excesses of precaution.⁶³ When the bias is sufficiently pronounced,⁶⁴ a quasi-strict liability system may over-deter subsequent remedial measures by raising costs of acting to prohibitive levels.⁶⁵

If jurors are subject to hindsight bias, defendants may be found negligent in situations where they acted in the most socially efficient manner, or with reasonable care, but were struck by bad luck.⁶⁶ This provides potential defendants “with a private incentive to take an inefficiently high amount of precaution,” possibly at a prohibitively high cost.⁶⁷ The resulting inefficiencies create a regime that is economically inefficient from both a legal and social perspective.

c. Unwarranted Damages Awards

The most pronounced challenge presented by hindsight bias in the courtroom is that of unwarranted or unfair damages awards or the imposition of punitive damages on defendants who acted reasonably but, because of hindsight bias, were adjudicated to have been negligent. Cass Sunstein and her associates have examined the general effect of hindsight bias on punitive damages awards.⁶⁸ Sunstein’s studies showed generally that mock jurors exhibited a “variety of irrationalities regarding risk that would distort their judgment in assessing liability and awards in safety and environmental tort.”⁶⁹ In a railroad accident case study, two thirds of mock jurors who were asked to make *ex ante* foresight predictions of risk probability and decisions regarding the implementation of safety measures approved the fictitious request to allow the railroad to continue its operations as-is.⁷⁰ But two thirds of the *ex post* jurors, who were given the same description of the problem but were also told that an accident had occurred, determined that the railroad’s behavior was reckless and

⁶² *Id.*

⁶³ Kyron Huigens, Review Essay, *Law, Economics, and the Skeleton of Value Fallacy Behavioral Law and Economics*, 89 CAL. L. REV. 537, 563 (2001).

⁶⁴ This may be the case in those jurisdictions where the threat of admission of subsequent remedial measures is significantly higher due to a loose definition of “feasible.”

⁶⁵ Huigens, *supra* note 63, at 563.

⁶⁶ Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1096 (2000).

⁶⁷ *Id.* at 1097.

⁶⁸ CASS R. SUNSTEIN ET AL., *PUNITIVE DAMAGES: HOW JURIES DECIDE* (2002).

⁶⁹ *Id.* at 24.

⁷⁰ *Id.* at 189.

that the railroad should be held liable for punitive damages.⁷¹ This discrepancy appears to corroborate Judge Easterbrook's characterization that "[the] *ex post* perspective of litigation exerts a hydraulic force that distorts judgment."⁷²

Sunstein's findings are not inconsistent with the results of analogous studies, including mock-jury studies of the judgment of negligence. A study by Kim A. Kamin and Jeffrey J. Rachlinski specifically addressed hindsight bias in jury settings, noting that decision-making in a legal context differs from non-legal decision making. While common sense might indicate that the increased complexity of legal decision making might lower the prevalence of hindsight bias, the Kamin and Rachlinski study suggested that "neither the attitudinal variables⁷³ nor the complexity of legal decisions appears to mitigate the bias' effect."⁷⁴

Kamin and Rachlinski postulated that hindsight bias in the jury room "ensures that some reasonable defendants will feel ambushed by adverse liability judgments after an accident has occurred."⁷⁵ They suggested that the presence of hindsight bias in the jury room may be interpreted as "a pervasive flaw in the deterrence model of torts,"⁷⁶ where requiring negligent defendants to compensate plaintiffs forces them to internalize the social costs of their actions, thereby encouraging them to make socially correct choices about the costs and benefits of precaution.⁷⁷ The severe implications of hindsight bias are even more clear in the deterrence model of the subsequent remedial measures rule, where evidence is generally excluded in order to encourage *ex post* safety precautions, preventing would-be defendants from spending more on safety precautions than a cost-benefit analysis would justify in foresight.⁷⁸

⁷¹ *Id.* at 190. The railroad case study also compared jurors' exhibited hindsight bias with judges' exhibited hindsight bias. The study found that "[judges'] attitudes change very little across the foresight and hindsight cases, whereas there was a stark increase in citizens/jurors' antirailroad sentiment in the hindsight case."

⁷² *Id.* at 188 (quoting *Carroll v. Otis Elevator*, 896 F.2d 210, 215 (7th Cir. 1990)).

⁷³ "Attitudinal variables" may include factors such as the respondent's gender, race, age, socioeconomic status, occupation, overall life satisfaction, political orientation, personal beliefs on the subject matter being discussed, religious attachments, educational background or personal history. See, e.g., M. Juliet Bonazzoli, Note, *Jury Selection and Bias: Debunking Invidious Stereotypes Through Science*, 18 QUINNIPIAC L. REV. 247, 248 (1998); Social Sciences Data Collection, *European Communities Studies, 1970-1992: Cumulative File*, available at <http://ssdc.ucsd.edu/ssdc/icp09361.html> (listing various attitudinal variables at play in courtrooms and in sociological studies, respectively).

⁷⁴ Kim A. Kamin & Jeffrey J. Rachlinski, *Ex Post ≠ Ex Ante: Determining Liability in Hindsight*, 19 LAW & HUM. BEHAV. 89, 91 (1995).

⁷⁵ *Id.* at 101.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.* at 101-02.

For instance, in *Kenny*, the transit authority was justified to be nervous that the jurors would “update” their perception of the reasonableness of installing the fluorescent lighting, based on the transit authority’s subsequent installation of the fluorescent lighting four days after the rape. If Kamin and Rachlinski are correct, any precaution taken after the fact could ultimately give rise to liability, even if that precaution could not reasonably have been justified before the injury occurred.⁷⁹ Jurors were likely to perceive that the transit authority should have known that having one end of the platform darker than the center of the platform could result in that darkened area being used for a crime, even though the transit authority was not privy to the benefit of hindsight. As such, jurors were more likely to assess liability, no matter how careful or reasonable the defendant’s actions may, in reality, have been or how feasible the defendant had concluded the safety measure was before the accident occurred. It is therefore clear that such a bias can have a significant effect not only on punitive damages awards, but on the simple determination of negligence.⁸⁰

2. *The Reasonable Person Standard and the effect of Hindsight Bias’s Effect on the Traditional Model of Negligence*

Hindsight bias may also cause jurors to impose a reasonable person standard that is unreasonable and unachievable by the average person.⁸¹ While an underestimation of cognitive abilities presents few dangers to a defendant, the jury’s overestimation of a defendant’s cognitive abilities presents a significant problem for the defendant and the legal system as a whole.⁸² An overestimation of cognitive abilities creates an idealistic, unachievable *ex post* reasonable person, which does not necessarily reflect an individual’s actual abilities.⁸³

⁷⁹ See *id.* at 101.

⁸⁰ It is of some note that legal scholars are already addressing the effect of hindsight bias on the litigation that has arisen as a result of the 9/11 tragedy. See Neal R. Feigenson, *Emotions, Risk Perceptions and Blaming in 9/11 Cases*, 68 BROOK. L. REV. 959 (2003). Feigenson noted “[i]f we presume that jurors may believe that practically no precaution would be deemed too great in the face of such a serious risk [as a terrorist attack], jurors may well believe that a party who failed to do more to avoid that risk should be blamed for not having done so.” *Id.* at 995. Feigenson dubbed this outcome “increased blaming via the hindsight bias,” and stated that, in the 9/11 cases, measures must be taken to mitigate the effects of hindsight bias on already emotional juries. *Id.* at 995-97.

⁸¹ See Jeffrey J. Rachlinski, *Misunderstanding Ability, Misallocating Responsibility*, 68 BROOK. L. REV. 1055, 1056-57 (2003) (discussing recent research that indicates “people commonly overestimate cognitive abilities” leading juries to compare a tort defendant’s conduct to that of a superhero rather than that of a reasonable person).

⁸² *Id.* at 1071.

⁸³ See *id.* at 1075.

“[O]verstating people’s ability to avoid accidents generally leads judges and juries to brand as negligent conduct that was reasonable.”⁸⁴ Such overestimation of the defendant’s *ex ante* abilities, developed in light of *ex post* information provided during trial, may be unjust or worse still, may cause the traditional model of negligence to more closely resemble a system of negligence per se, or de facto strict liability.⁸⁵ Rachlinski suggests that this conversion could minimize or eliminate many of the legal incentives created by tort law, and could ultimately affect tort law’s “ability to promote corrective justice.”⁸⁶

While strict liability does not generate undesirable incentives with respect to the standard of care actors are required to take, it generates a different set of incentives that, economically, contradict the incentives of traditional negligence.⁸⁷ A traditional or de jure negligence scheme permits someone who takes all reasonable precautions against causing an injury to save money by avoiding liability, thereby lowering the cost of the activity. Additional measures that are not justified by the cost-benefit analysis inefficiently impose costs on the actor without conferring any benefit.⁸⁸ Strict liability, on the other hand, imposes liability for all harm the actor’s activities cause, whether he takes reasonable precautions or not. The actor is rewarded for his safety measures by fewer accidents, and fewer judgments of liability.⁸⁹ However, when a system of strict liability is unintended, or where strict liability supplants traditional negligence after the fact, the cost of the underlying activity is raised *ex post*, and the economic benefit of traditional negligence theory—reducing the costs of activities—is eliminated.⁹⁰

Because hindsight bias research suggests that people commonly update and revise the probability and likelihood of events based on outcome knowledge and overestimate cognitive abilities, jurors in negligence cases are at risk of producing decisions that are inconsistent with ordinary notions of fairness and justice.⁹¹ Such a systematic error can prejudice defendants and undermine the legal system’s ability to induce potential defendants to take precautions against injuring others.⁹² One place where hindsight bias may prove particularly trou-

⁸⁴ *Id.*

⁸⁵ *See id.*

⁸⁶ *Id.*

⁸⁷ *See id.* at 1076.

⁸⁸ *See id.*

⁸⁹ *Id.*

⁹⁰ *Id.* at 1077.

⁹¹ *Id.* at 1057.

⁹² Rachlinski, *supra* note 23, at 596.

blesome is in the feasibility exception to the subsequent remedial measures rule of evidence.

II. NEGLIGENCE ACTIONS AND THE SUBSEQUENT REMEDIAL MEASURES RULE

A. *The Definition of "Negligence" and the Limits of Foresight*

In actions for negligence, a plaintiff must prove that the defendant owed him a duty of care, that the defendant breached that duty, and that the breach of duty caused the damage or injury to the plaintiff.⁹³ In determining whether the defendant was negligent, jurors must decide whether the defendant's actions were reasonable at the time, and whether the defendant should have reasonably foreseen the result of his actions.⁹⁴ While jurors struggle to separate the defendant's actions before the injury (*ex ante*) from his actions after the injury (*ex post*) in making their final determination of negligence, it is clear that courts disfavor the use of hindsight to determine whether a resulting injury was foreseeable.

For example, one Tennessee court, faced with a school-time injury, addressed the question of whether the school should have foreseen that a student would assault another student, causing a serious injury.⁹⁵ The school administration's knowledge of the danger was directly at issue. The court concluded that while "hindsight is 20/20,"⁹⁶ "the law defines negligence by the standard of foreseeability, not that of hindsight."⁹⁷ Similar language can be found in a New York negligence case: "proof that goes to hindsight rather than foresight most often is entirely irrelevant and, at best, of low probative value."⁹⁸

When evidence of a subsequent remedial measure is introduced at trial, the jury is already aware that an accident or injury has occurred, an outcome that inherently generates hindsight bias in the jury. The jury is also made aware of the allegation that this remedial measure, if it had been taken prior to the injury in question, may have prevented the accident. In order for this evidence to be presented to the jury

⁹³ RESTATEMENT (SECOND) TORTS, §§ 281-83, 285, 298 (1965).

⁹⁴ *Id.* at § 283 (1965).

⁹⁵ *Denson v. Benjamin*, 1999 WL 824346, No. 01A019810CV00571 (Tenn. Ct. App. Aug. 12, 1999). This case did not address any evidence of subsequent remedial measures, and is used only as an example of the general tendency of courts to eschew use of hindsight in determinations of negligence.

⁹⁶ *Id.* at *6.

⁹⁷ *Id.*

⁹⁸ *Maria E. v. 599 West Assocs.*, 726 N.Y.S.2d 237, 242 (N.Y. Sup. Ct. 2001).

under the feasibility exception, the defendant and plaintiff must essentially disagree as to the feasibility of the measure – a position that, given the successful implementation of the measure after the injury, places the defendant at odds with his own *ex post* actions. Evidence of the subsequent remedial measure therefore exacerbates the already existing hindsight bias by presenting a new outcome speaking directly to the defendant's actions prior to the injury.⁹⁹ In deliberations, the jury is required to make an *ex post* determination of what the defendant could have or should have done before the injury occurred.¹⁰⁰ In order to decide liability without prejudice, jurors must find a way to make this determination without considering the negative inference that goes hand in hand with evidence of the subsequent remedial measure; they must determine the defendant's liability based solely on before-the-fact probabilities and knowledge.¹⁰¹

Jurors are regularly asked to put themselves in the defendant's shoes at the time of the allegedly negligent conduct. Those same jurors are also told that, in some cases, a horrible accident has occurred, supposedly as a result of the defendant's conduct, and that something the defendant did after the injury, if done before the injury, could have prevented it. While research has repeatedly suggested that people cannot ignore a known outcome when assessing the likelihood of an event,¹⁰² the standard of negligence as applied in practice *requires* that jurors make determinations of reasonableness from the perspective of the defendant at the time the precautions were taken, without permitting their knowledge of subsequent events to influence their determination.¹⁰³ But where evidence of subsequent remedial measures is introduced and admitted at trial, hindsight bias inherent in negligence cases will only be aggravated by the juror's knowledge of subsequent events, resulting in systematic unfairness to defendants.¹⁰⁴

B. *The Rule Itself*

In a seeming appreciation of the hindsight bias problem, the common law developed the rule that evidence of subsequent remedial measures was to be excluded as an admission of fault.¹⁰⁵ The common-law rule rejected the general notion that "because the world gets

⁹⁹ See *supra* notes 48-52.

¹⁰⁰ Kamin & Rachlinski, *supra* note 74, at 90.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ Rachlinski, *supra* note 23, at 571.

¹⁰⁴ Peters, *supra* note 13, at 1277.

¹⁰⁵ FED. R. EVID. 407 advisory committee's note.

wiser as it gets older, therefore it was foolish before."¹⁰⁶ The Federal Rules of Evidence, enacted in their original form in 1975, codified the common-law rule by prohibiting admission of subsequent remedial measures to prove negligence. Rule 407 rejects the inference that fault is admitted by implementation of a subsequent remedial measure,¹⁰⁷ indicating at least a minimal awareness of the phenomenon that would come to be known as "hindsight bias." Subsequent remedial measures are those that, if taken previously, would have made the injury or harm less likely to occur. "[E]vidence of the subsequent measures is not admissible to prove negligence, [or] culpable conduct"¹⁰⁸ Therefore, to be admitted, the evidence must be introduced for a purpose other than to show negligence, such as to establish ownership, control, or feasibility.¹⁰⁹ Admission under these guises is not automatic, though; evidence of a subsequent remedial measure to show ownership, control, or feasibility is only admissible when one of these are controverted, such as when the defendant disputes the plaintiff's theory of ownership, control, or feasibility.

When Congress enacted the subsequent remedial measures rule, they articulated two reasons for the general exclusion of subsequent remedial measures in cases of negligence.¹¹⁰ The advisory committee followed a common-law assumption that evidence of a subsequent remedial measure should not generally be construed as an implied admission of fault, because "the conduct is equally consistent with injury by mere accident or through contributory negligence."¹¹¹ Congress recognized that there could be a myriad of explanations for implementing a subsequent remedial measure, reasons that may have nothing to do with any perception or admission of negligence; one might enact a remedial measure as an emotional reaction to the injury or simply to prevent another similar accident from happening, which may be indicative of either contributory negligence or a post hoc abundance of caution on the defendant's part.¹¹²

¹⁰⁶ *Hart v. Lancashire & Yorkshire Ry. Co.*, 21 L.T.R. 261, 263 (Ex. Ch. 1869). See FED. R. EVID. 407 advisory committee's note.

¹⁰⁷ "[T]he conduct is equally consistent with injury by mere accident or through contributory negligence." FED. R. EVID. 407 advisory committee's note.

¹⁰⁸ FED. R. EVID. 407.

¹⁰⁹ FED. R. EVID. 407 advisory committee's note.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² The evidence must, of course, be relevant to the case as determined under Federal Rule of Evidence 401, and must pass the court's application of Federal Rule of Evidence 403 as to unfair prejudice, confusion of issues or misleading the jury. See FED. R. EVID. 407 advisory committee's note.

Furthermore, the exclusionary rule was intended to encourage people to take such measures for the future safety of others.¹¹³ The advisory committee's notes to the Federal Rule of Evidence 407 indicate that Congress felt that limited admissibility would promote the social policy of encouraging people to take, or at least not be discouraged from taking, steps in furtherance of added safety.¹¹⁴ It was Congress's concern that without the rule, potential defendants would not implement remedial safety measures due to their fear of the measures being construed as an implied admission of fault by the jury's inference that the measure's enactment indicated the defendant's awareness of fault. "A major purpose of Rule 407 is to promote safety by removing the disincentive to make repairs (or take other safety measures) after an accident that would exist if the accident victim could use those measures as evidence of the defendant's liability."¹¹⁵ In other words, Congress felt that the rule was needed to avoid the harmful social consequences that would result from an absence of such a rule.¹¹⁶

In spite of Congress's concern that admissibility would ultimately discourage people from taking subsequent remedial measures for fear of how such a measure would be perceived in court, it declined to make the rule absolute, and determined that subsequent remedial measures should be admissible in limited instances. Perhaps believing that clever attorneys would never exploit the "if controverted" language of the rule, or even knowing full well that that would be the result, the committee allowed evidence of remedial measures when ownership, control, or feasibility was genuinely at issue. In such cases, the trial court's discretion under Rule 403, invoking considerations of unfair prejudice, misleading the jury, confusion of the issues and waste of time, was to act as a check on the admission to ensure fairness for the opponent of the evidence.¹¹⁷

Clearly, though, many attorneys did notice the weakness in the "if controverted" language of the rule and have sought to exploit the vagueness of the text.¹¹⁸ Attorneys have continued to find more and

¹¹³ FED. R. EVID. 407 advisory committee's note.

¹¹⁴ *Id.*

¹¹⁵ *Flaminio v. Honda Motor Co.*, 733 F.2d 463, 469 (7th Cir. 1984).

¹¹⁶ However, it has been noted that, in some cases, the mere possibility that the evidence may be used against the defendant at all inhibits subsequent repairs or improvements. See David Wadsworth, Casenote, *Forma Scientific v. Biosera and the Admissibility of Evidence of Subsequent Remedial Measures in Strict Products Liability Actions*, 71 U. COLO. L. REV. 757, 773 (2000).

¹¹⁷ FED. R. EVID. 407 advisory committee's note.

¹¹⁸ See, e.g., *Anderson v. Malloy*, 700 F.2d 1208 (8th Cir. 1983) (noting that "'feasible' means not only 'possible,' but also means 'capable of being . . . utilized, or dealt with successfully'"); *Ray v. Am. Nat'l Red Cross*, 696 A.2d 399 (D.C. 1996) (applying a broad definition of

more ways to admit evidence of subsequent remedial measures, perhaps with the underlying purpose of demonstrating the defendant's negligence by inference. And one of the easiest ways to do that is under the feasibility exception.¹¹⁹

C. *The Meaning of "Feasibility"*

The ownership and control exceptions tend to facilitate an answer to the question, "Who is the appropriate defendant?" Based in property and employment law, definitions of ownership and control are fairly well-settled, and evidence related to ownership or control can help to determine if the plaintiff has named the correct defendant in the action at bar. In such cases, a defendant's implementation of a remedial measure may indicate that the defendant owned or was in control of the instrumentality of harm before the accident, thereby indicating that he is the appropriate defendant in the action.¹²⁰ On the other hand, the feasibility exception of the subsequent remedial measures rule essentially answers the question "why wasn't the subsequent remedial measure implemented before the injury occurred?" The issue of feasibility pertains directly to the defendant's actions both before and after the injury occurred; definitions of feasibility run the gauntlet from narrow to broad, and may help spring open the doors to admissibility.¹²¹

Unless the definition of "feasible" differs significantly and discernibly from "reasonable," the exception runs the risk of swallowing the rule¹²² because the defendant must be able to successfully controvert the allegation that his actions were unreasonable. Merriam-Webster's dictionary primarily defines "feasible" as "capable of being done or carried out," secondarily defining it as "capable of being used or dealt with successfully."¹²³ Presenting a problem for defendants,

"feasible" to include what the defendant "could have learned"); *City of Indianapolis v. Swanson*, 439 N.E.2d 638 (Ind. Ct. App. 1982) (defining feasibility based on the potential effectiveness of the measure); *Brookshire Bros. v. Lewis*, 911 S.W.2d 791 (Tex. App. 1995) (defining "feasible" as "economically feasible").

¹¹⁹ ABA, *EMERGING PROBLEMS UNDER THE FEDERAL RULES OF EVIDENCE* 67 (Gregory P. Joseph et al. eds., 3d ed. 1998).

¹²⁰ *See Lee v. E. I. Dupont De Nemours & Co.*, 249 F.3d 362, 365-66 (5th Cir. 2001) (evidence of remedial measure admitted to prove that the defendant owner of a chemical plant was in de facto control of the worksite at the time of the injury, thus allowing the defendant to be held liable); *Woolard v. Mobil Pipe Line Co.*, 479 F.2d 557, 563 (5th Cir. 1973) (evidence of remedial measure admissible to resolve dispute as to whether the defendant controlled the premises in question).

¹²¹ ABA, *supra* note 119, at 67.

¹²² *See* cases cited *supra* note 10.

¹²³ MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 458 (11th ed. 2003).

however, “feasible” is also defined, in a third option, as “reasonable” or “likely.”¹²⁴ But there are varying definitions of “feasibility” in the courts, particularly when used in reference to whether a defendant has controverted the feasibility of an alleged subsequent remedial measure. While a few courts employ a narrow definition of “feasibility” consistent with the primary dictionary definition, making it relatively difficult for a plaintiff to present evidence of the subsequent remedial measure,¹²⁵ a greater number of circuits, and many state courts, employ broader definitions, in some cases going well beyond the dictionary’s secondary definition of “capable of being used or dealt with successfully.”¹²⁶

As noted earlier, the Third Circuit’s definition of “feasibility” in *Kenny* is by far the broadest definition of all, opening the door to evidence of a subsequent remedial measure when the defendant claims that “all reasonable care was being exercised at the time,”¹²⁷ a definition that essentially encompasses the defensive position in virtually all negligence actions in which negligence itself is controverted. Under the Third Circuit’s construction, the plaintiff may respond to the defendant’s contention that his actions were reasonable under the circumstances by showing that later repairs or actions taken were inconsistent with the pre-injury actions.¹²⁸

The Third Circuit’s construction is the most amenable to admission of the remedial measure and places defendants in a legal Catch-22: if a defendant in a negligence case denies that his actions were unreasonable, he runs the risk that the subsequent remedial measure will be admitted on the basis of controverted feasibility; if he fails to deny negligence, the measure may not be admitted, but he will have conceded that his actions were not reasonable, satisfying one of the elements of negligence.¹²⁹ Quite literally, in the Third Circuit, by

¹²⁴ *Id.*

¹²⁵ *See, e.g.,* Brookshire Bros. v. Lewis, 911 S.W.2d 791, 796 (Tex. App. 1995) (applying Texas Rule of Evidence 407 to conclude that a clear controversion of the possibility, economic feasibility, or efficacy of the measure is required before evidence of the measure can be admitted).

¹²⁶ *See, e.g.,* Espeaignnette v. Gene Tierney Co., Inc., 43 F.3d 1, 13 (1st Cir. 1994) (defining “feasible” as “possible and practical”); Anderson v. Malloy, 700 F.2d 1208, 1213 (8th Cir. 1983) (defining “feasible” as “not only possible, but also meaning capable of being . . . utilized, or dealt with successfully”).

¹²⁷ *Kenny v. Southeastern Penn. Transp. Auth.*, 581 F.2d 351, 356 (3d Cir. 1978). Note that, under the rule developed in *Kenny*, it would appear as though the defendant must articulate his belief in the reasonableness of his actions on the stand, at which point the evidence may be used for impeachment purposes—specifically, to impeach the witness on his statement about the feasibility, or reasonableness, of the measure. Surely, under this construction, the exception wholly swallows the rule.

¹²⁸ *Id.*

¹²⁹ By failing to deny negligence in his answer, a defendant would be deemed to have judi-

denying on the stand that his actions were unreasonable, a defendant runs a palpable risk that any subsequent remedial measures taken will be admitted to show feasibility, the definition of which is consistent with "reasonableness," a fact that the jury is supposed to determine. As a consequence, feasibility and the admitted evidence of the subsequent remedial measure speak directly to negligence, a result that is expressly barred by the language of the rule.

Rule 407 specifically prohibits admission of evidence to prove negligence or culpable conduct. However, the Third Circuit uses the impeachment exception in combination with a broad definition of "feasibility" to get around this limitation, permitting the plaintiff to admit the evidence when the defendant asserts on the stand that his actions were reasonable.¹³⁰ At this point, the opponent of the evidence is left to rely on Rules 402 and 403 to keep evidence of the subsequent remedial measure out, arguing that the evidence is irrelevant¹³¹ or that it is unfairly prejudicial, risks a confusion of the issues, misleads the jury, or wastes time.¹³²

By giving a broad definition to the term "feasibility," courts have lowered the bar on the degree of dispute required to allow admission. As a result, the avenues to admission of evidence of subsequent remedial measures are widening. To be sure, some disputes of the feasibility of a remedial measure are vigorous, and in some of those cases, the issue of admissibility is clear. But a defense witness or the defendant himself may also unwittingly open the door to the admission of the remedial measure by testifying that he did not believe the measure was practical or that he believed the measures in effect at the time of the accident were the best available.¹³³ Where broad definitions of "feasible" are used, a comment on the stand that the defendant's actions were reasonable under the circumstances, as in the *Kenny* case, or an inadvertent statement by a manager or executive that the decision-makers looked at the measure and determined that

cially admitted negligence, a response that would be binding at trial. A stipulation to negligence would be similarly binding.

¹³⁰ By defining "feasible" in such a way as is consistent with "reasonableness," by the term's very definition, the evidence should be excluded. See *Kenny*, 581 F.2d at 356.

¹³¹ FED. R. EVID. 402 ("Evidence which is not relevant is not admissible.").

¹³² 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.").

¹³³ ROGER C. PARK, TRIAL OBJECTIONS HANDBOOK ch. 2, tit. III, § 2:45, 2-111 (2d ed. 2001).

other options were better, may bring feasibility into controversy and facilitate admitting of evidence of the subsequent remedial measure.

While the Federal Rules of Evidence purport to curb the danger by admitting evidence of subsequent remedial measures only on a limited basis, such as when ownership, control, or feasibility is controverted, such exceptions, due in part to varying definitions of "feasible," are in danger of becoming the rule. The application of varying definitions exposes defendants to the danger that the jury will misconstrue the evidence in light of the maxim that "hindsight is 20/20," and that jurors will conclude that if the measure were possible, practical, or prudent after the accident, then it was possible, practical, or prudent before the accident. Such a conclusion is precisely what the rule expressly forbids: using evidence of an *ex post* subsequent remedial measure to prove negligence *ex ante*. Yet this is precisely what hindsight bias's effect on jurors' perceptions of evidence of a subsequent remedial measure achieves.

III. THE EFFECT OF HINDSIGHT BIAS ON THE JURY'S PERCEPTION OF A SUBSEQUENT REMEDIAL MEASURE

At trial, evidence of a subsequent remedial measure provides the jury with information about an *ex post* outcome that, but for the limited exceptions of the rule, would be relevant but inadmissible.¹³⁴ The evidence acts as a post-script to the story; under the feasibility exception, such evidence is only admissible to show that the measure was in fact possible, practical, or reasonable, depending on the applicable definition. In cases where the definition of "feasibility" is broad, the question of feasibility considerably exacerbates the already-existing hindsight bias problem.¹³⁵ "Admitting such evidence would not only leave the defendant subject to the ordinary version of hindsight bias . . . but it would also tempt the jury with more detailed evidence of the consequences of the defendant's initial decision."¹³⁶

Where evidence of a subsequent remedial measure is admitted as a result of the defendant's controversion of the plaintiff's assertion of feasibility, the jury is made aware of an *ex post* outcome—the defendant's judgment that the subsequent remedial measure is advisable—that the law would otherwise prohibit as evidence of *ex ante* negligence.¹³⁷ Knowing that an outcome has occurred tends to increase its perceived *ex ante* likelihood, necessity, or reasonableness.

¹³⁴ See FED. R. EVID. 402; FED. R. EVID. 403.

¹³⁵ Rachlinski, *supra* note 23, at 618.

¹³⁶ *Id.*

¹³⁷ FED. R. EVID. 407.

Events that have already occurred are perceived to be inevitable, and this perceived inevitability is often believed to have been apparent with foresight as well as with the benefit of hindsight. Thus, evidence of a subsequent remedial measure is likely to increase a juror's perception that the defendant knew the measure was more necessary, more possible, more practical, or more reasonable, *before* the injury.

The increased perception of likelihood can be likened to the perception of reasonableness in the context of subsequent remedial measures. Specifically, there is a danger that jurors will too readily perceive that if the measure was possible, practical, or reasonable after the accident, it was possible, practical, or reasonable before the accident. If jurors perceive the implementation of the subsequent remedial measure *ex post* to be reasonable, they may be too likely to infer that the failure to implement the measure *ex ante* was unreasonable. This inference is reinforced by the fact that the injury or harm that the defendant now seeks to avoid by implementation of the measure *did* occur.

Consistent with hindsight bias's effect on jurors' perceptions of the reasonable person, there is a significant risk that the jury will perceive that the defendant had the overestimated cognitive ability to perceive the measure as necessary, practical, or reasonable. A jury's application of an overestimated cognitive ability with regard to the remedial measure's necessity or reasonableness may itself be unreasonable or unachievable.¹³⁸ Because the defendant has demonstrated, by the act of implementing the measure, that it was at some point practical, possible, or reasonable is precisely why he will be perceived by the jury to have known, or had the ability to know, that the measure was practical, possible or reasonable *ex ante*. This misperception reflects the jury's possible overestimation of the defendant's cognitive ability as a result of hindsight bias. A jury's determination of the defendant's *ex ante* reasonableness (or lack thereof) based on knowledge and information acquired by the defendant after the injury is in direct conflict with the language of the subsequent remedial measures rule. The jury's determination of the defendant's foresight capabilities through the integration of a hindsight perspective is also out of sync with the law of negligence¹³⁹ that requires juries to make an objective determination of reasonableness from the perspective of the defendant at the time the precautions were or were not taken, *excluding ex post* knowledge of subsequent events as they pertain to negligence.¹⁴⁰

¹³⁸ Rachlinski, *supra* note 81, at 1071.

¹³⁹ RESTATEMENT (SECOND) TORTS § 283 (1965).

¹⁴⁰ Rachlinski, *supra* note 23, at 571.

The effect of hindsight bias on evidence of a subsequent remedial measure effectively raises the bar for reasonableness after the injury or harm occurs, converting the announced negligence rule into a form of strict liability at trial. This conversion from ordinary negligence to strict liability makes *ex ante* decision making and risk analysis difficult, if not impossible.¹⁴¹ The conversion also creates inefficiencies, because, in some cases, businesses and individuals, presented with the possibility of evidence of a subsequent remedial measure being introduced against them at trial, may take preventative steps before an injury that are not financially justified or necessary.¹⁴²

The shift in perception of the subsequent remedial measure from evidence admitted for the limited purpose of showing feasibility to evidence tending to weigh into the determination of reasonableness has concerned courts for some time, and in fact formed part of the basis for the rule itself.¹⁴³ Courts and Congress were concerned that juries would overreact to the defendant's implementation of subsequent remedial measures, the result being that defendants would defer implementing remedial measures until after the trial, or in some cases, completely.¹⁴⁴

Admitting evidence of a subsequent remedial measure, combined with the effects of hindsight bias on the jury's perception of that evidence, may also be unfairly prejudicial to the defendant. Under the Federal Rules of Evidence, relevant evidence may, according to the court's discretion, "be excluded if its probative value is substantially outweighed by the danger of unfair prejudice."¹⁴⁵ Hindsight bias causes the jury to determine liability based on hindsight rather than foresight as the law requires; such a determination, however, is not the proper basis for apportioning liability in a negligence suit.¹⁴⁶ Therefore, any evidence that suggests the jury should make its decision on such a basis should be subjected to a court's Federal Rule of Evidence 403 analysis and excluded on the basis of unfair prejudice.

As a result of the adverse effect of hindsight bias on our legal system, many legal scholars have suggested means for eliminating or

¹⁴¹ See Rachlinski, *supra* note 81.

¹⁴² Peters, *supra* note 13, at 1284.

¹⁴³ Rachlinski, *supra* note 19, at 618.

¹⁴⁴ *Id.* ("If juries do overreact to the defendant taking subsequent remedial measures, then defendants will be loath to undertake them. The increased probability of paying for the accident that already occurred might overwhelm the benefits to the defendant of reducing the prospects of future liability, at least until the trial is over.").

¹⁴⁵ FED. R. EVID. 403.

¹⁴⁶ See FED. R. EVID. 403 advisory committee's note. ("'Unfair prejudice' within [the context of the rule] means an undue tendency to suggest decision on an improper basis, commonly, though not necessarily, an emotional one.").

preventing the bias likely to occur in a variety of different cases, including medical malpractice.¹⁴⁷ Because “[r]easonableness must be determined from the perspective of the defendant at the time that the precautions were taken, but the hindsight bias ensures that subsequent events will influence that determination,”¹⁴⁸ scholars have suggested the use of limiting jury instructions and suppression of evidence, as well as changes in the standard of persuasion.¹⁴⁹

IV. POSSIBLE SOLUTIONS

What can be done to mitigate the effects of hindsight bias on evidence of subsequent remedial measures? Legal scholars and psychologists have suggested a variety of methods to mitigate hindsight bias in general, from suppressing evidence to including warnings in defense counsel’s closing arguments. However, one thing seems clear: if the evidence is going to be admitted, for debiasing techniques to succeed, the decision-maker must be made aware of the influence of hindsight bias, motivated sufficiently to correct the bias, aware of the magnitude and direction the bias will take him, and psychologically capable of adjusting his response appropriately.¹⁵⁰

A. *Elimination of or Amendment to the Feasibility Exception*

For the most part, attempts to eliminate hindsight bias through debiasing techniques have failed.¹⁵¹ The most clear and absolute solution appears to be the suppression of evidence that may be significantly colored by hindsight bias. This could be achieved by eliminating the feasibility exception to the subsequent remedial measures rule. Eliminating the feasibility exception would effectively allow admission of evidence of subsequent remedial measures only if ownership and control are controverted—where there is a question whether this is the correct defendant—and prohibit evidence of subsequent remedial measures when it is offered to show feasibility, which directly or indirectly implies negligence.

Under the current construction of the rule, the definition of feasibility used by the majority of federal and state courts allows admission of evidence of subsequent remedial measures even when that

¹⁴⁷ SUNSTEIN, *supra* note 68, at 227.

¹⁴⁸ Rachlinski, *supra* note 23, at 572.

¹⁴⁹ *Id.* at 602-03.

¹⁵⁰ Feigenson, *supra* note 80, at 996.

¹⁵¹ Arkes et al., *supra* note 19, at 305 (pointing out that both Fischhoff and Wood failed to eliminate or reduce the effects of hindsight bias through the use of warnings and explanations of the process).

evidence is being used by the jury to infer negligence. Such admission is directly contrary to the language and stated purpose and policies of the rule. A 1997 amendment to clarify the rule's text, while eliminating one problem presented by the older language of the rule, failed to address the vagueness and ambiguity of the "if feasible" language, leaving the definition of this term for the courts to decide.¹⁵² The result has been a definition of the phrase that allows admission of the evidence to show feasibility, but secondarily to show negligence, particularly in circuits and states like the Third Circuit, where "feasibility" is likened to "reasonableness."

Eliminating the feasibility exception would not only address the varying definitions of the term, but also congressionally recognize the adverse effects of hindsight bias. Recognizing the effects of hindsight bias in the jury room and eliminating the exception that predictably gives rise to hindsight bias would result in a significant reduction in unfair prejudice to defendants, and would ultimately serve the purposes and policies behind the rule. Eliminating the debate over feasibility and mitigating the effects of hindsight bias would encourage not only the very remedial measures addressed in the rule, perhaps improving safety overall, but would also mitigate or eliminate many pre-trial disputes over whether the feasibility of the measure is actually in dispute. Dispensing with this debate would reduce the overall cost of litigation and may even open new channels of dialogue between plaintiffs and defendants, leading to the resolution of more suits by settlement.¹⁵³

However, the difficulties of eliminating the feasibility exception are patently obvious, as it would certainly come up against harsh criticism by plaintiffs' attorneys and possibly judges in the circuits favoring broader definitions. Most certainly, it would create a legal gap when a defendant takes the stand and states that it was impossible to implement a measure, knowing full well that he successfully implemented the measure shortly after the injury.¹⁵⁴ The public may

¹⁵² The 1997 amendment to Rule 407 added language clarifying that the rule applies only to changes made after the occurrence that produced the injury and limited the admissibility of subsequent remedial measures in products liability cases. FED. R. EVID. 407 advisory committee's note.

¹⁵³ It should be noted that eliminating the exception in its entirety may, in some cases, tip the balances in favor of the defendant. However, given the fact that evidence of subsequent remedial measures to show feasibility almost invariably reflects on the defendant's actions *ex ante*, elimination of an *ex post* factor should not unfairly hinder the plaintiff.

¹⁵⁴ Conceivably, though, this challenge could be addressed through the impeachment exception on cross-examination. However, admitting the evidence under the impeachment exception may lead to similarly confounding results as are present in the *Kenny* case.

also perceive it as anti-plaintiff, such that it may result in other rules intended to reduce the impact on plaintiffs.¹⁵⁵

On the other hand, a congressional amendment to the rule itself or an explanatory advisory committee note clarifying and limiting the term "feasible" to the narrower, primary dictionary definition of "capable of being done or carried out" may meet with less resistance.¹⁵⁶ While clarifying the term "feasible" would not directly reduce or eliminate the effects of hindsight bias by the jury, it would at least restrict the admissibility of evidence of subsequent remedial measures and raise the degree of controversion necessary to admit the evidence, eliminating the effects of hindsight bias on the jury's perception of the more frequently suppressed subsequent remedial measure.

One significant challenge of clarifying the term "feasible" in the subsequent remedial measures rule is that the majority of negligence cases are brought at the state level under state tort law and using state evidence law. As a result, any change to Rule 407 would only apply at the federal level, protecting defendants only in federal courts. A similar campaign for change would need to be undertaken at the state level in order to fully address the problem presented by the feasibility exception and the effect of the hindsight bias. Fortunately, many state legislatures have adopted rules of evidence similar to the federal rules, and a change at the federal level may inspire those states to make similar amendments to their own definitions of "feasible."

B. Jury Instructions

Studies of the effect of hindsight bias on juries have consistently shown that jury instructions, undertaken as a solitary measure of mitigating hindsight bias, are generally ineffective as a means of reducing its effects.¹⁵⁷ However, the Arkes study indicated that jury instructions, properly written, combined with jury interrogatories asking for consideration of alternative theories of liability, may significantly reduce hindsight bias.¹⁵⁸

¹⁵⁵ For instance, in response to the limitations on admission of prior bad acts, Congress enacted Federal Rules of Evidence 413-415, which allow admission of evidence of similar crimes in sexual assault and child molestation cases and evidence of similar acts in civil cases involving sexual assault or child molestation. FED. R. EVID. 413 Report of Judicial Conference of the United States (1995). See also FED. R. EVID. 413-415.

¹⁵⁶ The United States Supreme Court has already adopted the primary dictionary definition for the term "feasible" as it is used in the Occupational Safety and Health Act of 1970, 29 U.S.C. § 665(b)(5). *Am. Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 508-09 (1981).

¹⁵⁷ See, e.g., Kamin & Rachlinski, *supra* note 74, at 102; Arkes et al., *supra* note 19, at 305.

¹⁵⁸ Arkes et al., *supra* note 19, at 305.

Applying a procedure similar to that of Koriat, Fischhoff, and Lichtenstein,¹⁵⁹ Arkes and his partners discovered that having subjects list or generate reasons why other outcomes might have been expected reduced overconfidence in answers and reduced the number of subjects manifesting hindsight bias.¹⁶⁰ As a result of requiring subjects to at least consider alternative outcomes, juries viewed the "correct" answer as more informative¹⁶¹ and alternative theories were given their just due in consideration.¹⁶² This extension of the deliberation process resulted in higher accuracy of the *ex post* conclusion and countered premature tendencies to end the search for additional information by encouraging attempts to disconfirm alternate theories.¹⁶³

However, the Kamin and Rachlinski study, which provided mock jurors with jury instructions warning of the effects of hindsight bias and instructing them to "take a moment to think of all the ways in which the event in question may have happened differently or not at all,"¹⁶⁴ appears to contradict the outcome suggested by the Arkes study. Kamin and Rachlinski found that warnings of hindsight bias, given in jury instructions alone, were insufficiently intrusive to counteract its effects, and noted difficulty with other, more intrusive debiasing techniques suggested by psychologists.¹⁶⁵ They noted, however, that their study did not employ such techniques as accompanying instructions detailing the burden of proof or group deliberations, both of which may boost the effectiveness of passive jury instructions warning of the effects of hindsight bias.¹⁶⁶

Pre-evidence instructions to the jury, outlining the burden of proof in advance of any presentation of evidence and warning of the effects of hindsight bias, may help to mitigate the effects of hindsight bias by making jurors aware of the effects before these effects color the jurors' judgments.¹⁶⁷ Advising jurors of the burden of proof early in the

¹⁵⁹ See generally Asher Koriat et al., *Reasons for Confidence*, 6 J. EXPERIMENTAL PSYCHOL.: HUM. LEARNING & MEMORY 107 (1980).

¹⁶⁰ Arkes et al., *supra* note 19, at 306. Researchers presented subjects with two alternative questions. Subjects chose the answer they believed to be correct and indicated their confidence in their given answer. Subjects were also asked to state reasons why each of the two options maybe correct and why each of the two responses might not be correct before they indicated their confidence in the chosen answer. These subjects indicated significantly less overconfidence than did the control group subjects, who exhibited levels of confidence far greater than their actual accuracy.

¹⁶¹ As opposed to conclusive.

¹⁶² Arkes et al., *supra* note 19, at 306.

¹⁶³ *Id.*

¹⁶⁴ Kamin & Rachlinski, *supra* note 74, at 97.

¹⁶⁵ Rachlinski, *supra* note 23, at 603.

¹⁶⁶ Kamin & Rachlinski, *supra* note 74, at 100.

¹⁶⁷ Peters, *supra* note 13, at 1305.

trial encourages them to take each party's burden of proof more seriously, and juries who receive thorough pre- and post-evidence instructions are more likely to defer their decisions until after all of the evidence and closing arguments are presented.¹⁶⁸ Studies of criminal juries have produced results indicating that the effects of hindsight bias may be at least partly mitigated by pre-evidence instructions to the jury.¹⁶⁹

Kamin and Rachlinski devised and tested a pre-evidence instruction as well as a final jury instruction, both of which were intended to mitigate the overall effects of hindsight bias, without addressing any particular piece of evidence. Using their instructions as a foundation, a pre-evidence jury instruction could be developed that would address hindsight bias and subtly address the evidence of a subsequent remedial measure.¹⁷⁰ For example:

Deciding this case will eventually require you to make a determination about whether the defendant acted reasonably. Making such an assessment may be difficult since the plaintiff's injury has already occurred. While listening to the evidence, you should consider how the events that led up to the accident could have turned out differently, and what alternatives the defendant may have had at his disposal to avoid the injury.¹⁷¹

Similarly, a final jury instruction directly addressing both hindsight bias and the evidence of subsequent remedial measures might look like this:

Making a fair determination of feasibility in regard to the evidence may be difficult, and this may make a fair determination of the defendant's negligence even more challenging than it already is. As we all know, hindsight is always 20/20; it is extremely important that, before you determine the reasonableness of the defendant's actions before the injury occurred, you fully explore the possible alternative measures he could have taken to avoid that injury. Please take a moment

¹⁶⁸ *Id.* at 1306.

¹⁶⁹ *Id.*

¹⁷⁰ Kamin & Rachlinski, *supra* note 74, at 95. Evidence of the subsequent remedial measure should not be directly discussed in this pre-evidence jury instruction because there is always a chance that the evidence will not be presented at trial.

¹⁷¹ *Id.*

to think of all the ways in which the event in question may have happened differently, or not at all.¹⁷²

Arkes and others have also indicated that a combination of debiasing techniques may be even more effective to mitigate hindsight bias. They have suggested that a jury instruction warning jurors of the effects of hindsight bias, combined with jury interrogatories designed to encourage jurors to consider all theories on the table, may more significantly reduce the effects of hindsight bias in the determination of negligence and liability.¹⁷³

C. Jury Interrogatories and Special Verdict Forms

While jury interrogatories and special verdict forms may be more intrusive on the jury's deliberations than simple jury instructions, special verdict forms that "break down the facts needed to support the cause of action or a defense" theoretically provide the jury with the framework to eliminate or mitigate hindsight bias.¹⁷⁴ Special verdict forms or jury interrogatories merely require yes or no responses from the jury, but the questions may be framed in such a way to encourage jurors to consider alternative accounts or to devise fault trees, which have been found to temper the effects of hindsight bias.

Faced with the admission of evidence of subsequent remedial measures, defense counsel might request a series of jury interrogatories regarding the presentation of evidence of subsequent remedial measures that are framed to encourage the jury to consider alternate outcomes. A specific question, aimed at assessing whether the jury used the evidence to do more than rebut the defendant's claim of infeasibility, may mitigate hindsight bias by encouraging the jury to consider the basis on which their negligence determination is made. For instance, a defense attorney might ask "would your verdict still be for the plaintiff if you had not heard *either* the defendant's denial of feasibility *or* the plaintiff's evidence of the defendant's subsequent remedial measure?" More generic questions, such as "did you consider ways in which the event in question may have happened differently or not at all?" may help to alleviate the effects of hindsight bias as it pertains to any evidentiary matters, including evidence of a subsequent remedial measure. Questions pertaining to the burden of proof and the standard of care applied by the jury in reaching its de-

¹⁷² *Id.* at 97.

¹⁷³ See Arkes et al., *supra* note 19, at 305-06; Peters, *supra* note 13 (suggesting that proper jury instructions combined with other efforts may mitigate or eliminate hindsight bias).

¹⁷⁴ Rachlinski, *supra* note 23, at 604.

termination may also be effective in mitigating the effects of hindsight bias or, in the alternative, may provide defendants with grounds for reversal or appeal if the jury applied an incorrect *ex post* standard of care.¹⁷⁵

Of course, the use of jury interrogatories and special verdict forms may be perceived by some in the legal community as intruding on the sanctity of the jury deliberations, and some may argue that such techniques present constitutional concerns. However, if done properly, jury interrogatories or special verdict forms, in combination with jury pre- and post-evidence instructions, may be highly effective at mitigating or eliminating hindsight bias as it affects the jury's perception of evidence of subsequent remedial measures.

D. Closing Arguments by Defense Counsel

At least one legal scholar has suggested that defense counsel can also significantly shape the jury's thinking and thought process. Philip Peters has proposed that defense counsel may be able to alleviate the effects of hindsight bias by employing careful debiasing rhetoric in voir dire, the opening statement, examination and presentation of witnesses and evidence, and the closing argument.¹⁷⁶

Peters has suggested that defense counsel take the opportunity presented in these instances to communicate to the jury why the plaintiff's injury did not necessarily seem inevitable at the time, and why it would be wrong to assume that bad outcomes are the result of culpable behavior.¹⁷⁷

Applying Peters' recommendation to the context of evidence of subsequent remedial measures, defense counsel may explain that implementing the subsequent remedial measure did not necessarily seem practical or necessary under the circumstances *ex ante*, and that it would be wrong to assume that the subsequent implementation of the measure is indicative of negligence or culpable conduct. Defense counsel may also present the jury with the ability to imagine alternatives that seemed possible *ex ante* by providing them with reasons why the defendant felt his choice not to implement the measure seemed reasonable at the time.

Defense counsel may also use language early in the case that reminds jurors that the plaintiff is asking them to be a "Monday-morning quarterback." This may be reiterated through witness testimony, particularly as it relates to the presentation of evidence of the

¹⁷⁵ Peters, *supra* note 13, at 1290.

¹⁷⁶ *Id.* at 1309.

¹⁷⁷ *Id.*

remedial measure, and closing arguments, highlighting for the jury the defendant's position that the plaintiff would prefer them to make their negligence determination on an *ex post* rather than the legally required *ex ante* basis. Other language may be used to indicate to the jury that implementing the measure may not necessarily have prevented the injury and that the question of whether it would have prevented the injury can never be answered completely because only hindsight, not foresight, is 20/20.¹⁷⁸

Defense counsel may also take the opportunity during closing arguments to explain the burden of proof as it relates to the subsequent remedial measure, and remind the jury that the plaintiff is required to prove that the defendant acted unreasonably *before* the injury. Counsel may remind the jury that this standard of negligence and the accompanying burden of proof, does not permit consideration of *ex post* events, like subsequent remedial measures, beyond their limited admissibility to show feasibility of precaution. Defense counsel should remind the jury not to assume that "because the world gets wiser as it gets older, therefore it was foolish before."¹⁷⁹

V. CONCLUSION

A significant problem in a negligence action is whether implementing a subsequent remedial measure should be admissible under the subsequent remedial measures rule. In many jurisdictions, defendants need only state that their actions were reasonable to have such evidence admitted. And once admitted, hindsight bias causes juries to consider the evidence well beyond the limited use of determining the measure's feasibility before the injury. As a result of hindsight bias, juries presented with evidence of a subsequent remedial measure are likely to make determinations of the defendant's negligence based on an *ex post*, rather than *ex ante*, standard, in direct contradiction of the language of the rule.

There is a strong need in civil courtrooms for a remedy to this problem and using various debiasing techniques in isolation has proven to be only minimally successful, if at all, at mitigating hindsight bias. This Note has suggested several alternatives for eliminating or mitigating the effects of hindsight bias on the jury's perception of evidence of subsequent remedial measures.

First, Congress may consider eliminating the feasibility exception altogether. While such action would eliminate the effects of hindsight

¹⁷⁸ *Id.* at 1311.

¹⁷⁹ *Hart v. Lancashire & York Ry. Co.*, 21 L.T.R. 261, 263 (Ex. Ch. 1869).

bias on the jurors' perceptions of the defendant's *ex post* actions in their entirety, such a drastic measure would meet with strong opposition and may unfairly tip the balances in favor of defendants. Congress might also consider an amendment or request an advisory committee note more narrowly defining "feasible" to reflect the primary dictionary definition of "capable of being done or carried out" rather than a broader definition, such as the Third Circuit's "reasonable."

Second, in the event that the evidence is admitted to show feasibility, counsel may want to request pre- and post-evidence jury instructions that inform the jury of the burden of proof, and that warn jurors of the negative effects that hindsight bias has on deliberation processes. While jury instructions on their own have not proven to be intrusive enough to significantly mitigate the effects of hindsight bias, when given in combination with other debiasing techniques, jury instructions may ultimately prove to be highly effective.¹⁸⁰

Third, jury interrogatories and special verdict forms may also prove to be highly effective at debiasing when used in combination with pre- and post-evidence jury instructions. Counsel should request a series of questions that reinforce the instructions and ensure that the jury applies an *ex ante* standard rather than the *ex post* standard required by law. Inconsistent responses from the jury may provide grounds for reversal or appeal.

Finally, defense counsel may also employ debiasing techniques throughout trial, from voir dire to closing arguments. Reminding the jury consistently and constantly of the burden of proof and the effects of hindsight bias, particularly as they relate to evidence of the subsequent remedial measures, may significantly improve juries' determinations of negligence in favor of their clients.

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¹⁸⁰ See Arkes, *supra* note 15.

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