

HARMFUL PRECAUTIONS

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INTRODUCTION

According to the conventional definition of reasonableness, commonly known as the Hand formula, a person acts unreasonably (hence negligently) toward another if they fail to take precautions whose cost for the actor is lower than the expected loss for the other that these precautions can prevent.¹ While law-and-economics theorists have advocated and courts have often embraced adjustments to both sides of this algebraic formulation,² the idea that the expected loss must be compared with the cost of precautions *for the potential injurer* has remained mostly uncontested.³ This Article unveils an overlooked yet fundamental flaw in the orthodox understanding and application of the Hand formula, namely the exclusion of the negative externalities of risk-reducing precautions from the analysis. Simply put, precautionary measures that potential injurers can take to reduce the risk of harm to potential victims might expose the latter or others to different risks or deprive them of certain benefits. Caselaw and academic literature have mostly ignored these harmful repercussions. This Article advocates their inclusion in the analysis of reasonableness and explains how and to what extent this can be achieved.

To understand the proposed contribution to tort law and theory, consider the following example: *D* drives a bus from a train station to a local hospital at fifty miles per hour, subjecting pedestrians along the way to a risk of injury. *D* can reduce the speed to thirty miles per hour for \$50,⁴ thereby reducing the expected harm to pedestrians by \$500. The cost of precaution for the potential injurer is lower than the ensuing reduction in expected harm to potential victims ($\$50 < \500), so failing to take it is unreasonable under the traditional definition. Now assume that the passengers on the bus are qualified medical practitioners. Slowing down the bus will delay their arrival at the hospital and reduce the supply of medical services, a reduction roughly valued at \$480. The traditional definition ignores this negative externality. Thus, failing to reduce the speed remains legally unreasonable. Yet the true social cost of the speed reduction is $\$50 + \$480 = \$530$, which is greater than the benefit for pedestrians in terms of risk reduction (\$500), making this precaution socially undesirable. Imposing liability for failure to reduce speed will lead the driver to take the undesirable

1 See, e.g., *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947); RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 (AM. L. INST. 2010).

2 See *infra* Section II.B.

3 See *infra* Part I.

4 For example, if *D* is paid by the number of rides completed per day, *D* will earn less by driving slower.

precaution because its cost for the driver (\$50) is lower than the personal benefit (escaping the expected liability of \$500).

This overlooked shortcoming of the conventional view has far-reaching implications. Precautionary measures aimed at risk reduction might have negative externalities in all contexts covered by tort law. Lowering a vehicle's speed may reduce the risk to pedestrians but delay crucial services or deliveries (consider emergency vehicles). Using a ventilator to maintain the life of a patient suffering from a serious respiratory disease might deny this scarce equipment from another patient with a higher probability of survival at the same hospital. Denying tourists the opportunity to take part in risky activities may reduce the likelihood of physical injury but make the trip less enjoyable, educational, and empowering. Using certain equipment or processes to mitigate noise or pollution from a factory increases operating costs and might lead to layoffs (harming employees) or price rises (harming consumers). Avoiding the publication of unconfirmed details about alleged swindlers on news platforms may reduce the risk of defaming innocent parties but at the same time increase the risk that others will be victimized by active offenders.

The predominant view is that liability for negligence (unreasonable conduct) as defined by the Hand formula aims to incentivize efficient conduct.⁵ Under this assumption, caselaw and legal scholarship have endeavored to adjust the formula to ensure a more comprehensive and accurate analysis of the relevant costs and benefits of alternative courses of action.⁶ In stark contrast, one finds exceptionally few signs of judicial willingness to consider the negative externalities of precautions and scant mention of this matter in academic literature. Judge Posner acknowledged the problem in a succinct obiter dictum more than two decades ago.⁷ But he offered neither theoretical foundations nor practical guidelines for its resolution because the defendant in the particular case did not even imply that the precautionary measure in question could have a negative impact on others.⁸ The exceptionally few cases that considered the cost of precautions for people other than the defendant in the analysis of reasonableness have done so perfunctorily, without a conscious acknowledgment of the underlying legal adjustment, not to mention a theoretical defense.⁹ Secondary

5 See *infra* subsection II.A.2.

6 See *infra* Section II.B.

7 *Halek v. United States*, 178 F.3d 481, 485 (7th Cir. 1999) (“A factor often neglected in the analysis of negligence is the propensity of a precaution against one type of accident to increase the probability of another type. That effect is properly regarded as a cost of the precaution.”).

8 *Id.*

9 See *infra* notes 133–59 and accompanying text.

legal resources generally ignore the negative impact of precautions on people other than the defendant,¹⁰ with very few budding exceptions.¹¹ This Article explains and defends the necessary legal transformation.

The analysis unfolds as follows. Part I presents the origins of the traditional definition of reasonableness and demonstrates its entrenchment in legal practice and scholarship. It focuses on and highlights the overlooked feature that has characterized this definition from its very naissance through a nearly century-long lifespan. In assessing reasonableness, courts and scholars have consistently compared potential victims' expected harm with the cost of prevention for the *potential injurer*, regardless of the negative impact of each precautionary measure on others. Part II lays the theoretical foundations for the proposed legal modification. It first ascertains the most compelling normative rationale for the traditional definition of reasonableness, namely economic efficiency. It then shows that courts and scholars have regularly endorsed or advocated adjustments to the traditional definition when they realized that it would better serve its underlying goal as a result. Part III argues that the legal reality depicted in Part I must be changed in accordance with the insights outlined in Part II. It explains that ignoring the costs that precautionary measures impose on people other than the defendant in the assessment of reasonableness might lead to overdeterrence. The economic rationale thus calls for their inclusion in the analysis, as an additional adjustment to the Hand formula. Part III then clarifies whose costs must be considered, explains how these costs should be handled on the legal-conceptual level, and contends that they should be taken into account only if reasonably foreseeable. Part IV shows that the negative externalities of precautions pose a much greater challenge under strict liability regimes, where traditional tools cannot

10 See *infra* notes 77–83 and accompanying text.

11 Ariel Porat has been persistently advocating consideration of overlooked risks and benefits associated with different behavioral choices. However, as far as the negative externalities of precautions are concerned, he focuses on the scope of damages rather than on the standard of care and does not separately address negligence and strict liability. See Ariel Porat & Eric Posner, *Offsetting Benefits*, 100 VA. L. REV. 1165 (2014); Ariel Porat, *Offsetting Risks*, 106 MICH. L. REV. 243 (2007). I discuss Porat's work more thoroughly in Sections II.B, III.E, and IV.C below. Kenneth Simons (currently at University of California, Irvine School of Law) has graciously shared that he has been teaching the concept of negligence in a way similar to that proposed here. Larry Alexander and Kimberly Ferzan make an argument comparable to mine with respect to the concept of recklessness, which is a form of culpability in criminal law, but aver that negligence (at least in its criminal-law sense) is not culpable (and hence not subject to their analysis of culpability). See LARRY ALEXANDER & KIMBERLY KESSLER FERZAN, *REFLECTIONS ON CRIME AND CULPABILITY: PROBLEMS AND PUZZLES* 2–4 (2018); LARRY ALEXANDER & KIMBERLY KESSLER FERZAN WITH STEPHEN MORSE, *CRIME AND CULPABILITY: A THEORY OF CRIMINAL LAW* 23–80 (2009).

ensure their internalization by potential injurers, and more radical solutions are required.

I. THE CONVENTIONAL DEFINITION OF REASONABLENESS

A. *Origins*

A cost-benefit definition of reasonableness, whereby failing to take precautions whose cost is lower than the expected harm they can prevent is unreasonable, emerged, or at least crystallized, in a series of prominent cases decided by Judge Hand in the 1930s and 1940s.¹² It has been widely endorsed and applied in common-law jurisdictions around the world, as shown below.¹³ This Section, however, has a more limited purpose. It focuses only on the seminal decisions and demonstrates that in speaking about the cost of precautions, which is compared with the expected harm, Judge Hand probably had only the cost for the potential injurer in mind. This constraint is evident from the language he used and from the actual application of the principle to the facts, which seem to have set the tone for subsequent caselaw.

In the first of these cases, *Gunnarson v. Robert Jacob, Inc.*, a shipmaster died in a gas tank explosion on a yacht, and his widow brought a wrongful death action against the yacht owner.¹⁴ Judge Hand explained that in assessing the defendant's conduct "the gravity of the harm, if it comes, multiplied into the chance of its occurrence, must be weighed against the expense, inconvenience and loss of providing against it."¹⁵ Even though the court did not specify which harms and prevention costs must be considered, the fact that only the two parties were mentioned implies that the relevant harm was the wrongful death (or a less severe physical injury to the shipmaster), and the relevant expense was the burden that the yacht owner could have incurred to prevent such harm.

12 Posner argued that Judge Hand's formulation "never purported to be original but was an attempt to make explicit the standard that the courts had long applied." Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 32 (1972); see also WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 85–86 (1987) (reiterating the statement). Indeed, the idea that negligence is based on balancing of interests predated Judge Hand. See, e.g., Henry T. Terry, *Negligence*, 29 HARV. L. REV. 40, 42–44 (1915). But the claim that the Hand formula itself captures prior caselaw has been questioned. See, e.g., Richard W. Wright, *Hand, Posner, and the Myth of the "Hand Formula"*, 4 THEORETICAL INQUIRIES L. 145, 183–92 (2003) [hereinafter Wright, *The Myth*]; Richard W. Wright, *Negligence in the Courts: Introduction and Commentary*, 77 CHI.-KENT L. REV. 425, 427 & n.9 (2002) [hereinafter Wright, *Negligence in the Courts*]. Even if Posner's observation was correct, Judge Hand's clear formulation was undoubtedly pivotal in the development of negligence law and theory.

13 See *infra* notes 34–38 and accompanying text.

14 94 F.2d 170, 171 (2d Cir. 1938).

15 *Id.* at 172.

Judge Hand was clearer in *Conway v. O'Brien*.¹⁶ A passenger sued the car driver for injuries sustained in a head-on collision in which the car was involved before entering a bridge.¹⁷ The driver's liability depended on proof of gross negligence, but to determine whether this condition was met the court discussed the fundamental concept of negligence.¹⁸ Judge Hand held that in assessing a person's level of care, three factors must be considered: "the likelihood that his conduct will injure others, taken with the seriousness of the injury if it happens, and balanced against the interest which he must sacrifice to avoid the risk."¹⁹ To be negligent, "the interest which he would have had to sacrifice [must] be less than the risk to which he subjects others."²⁰ Put differently, the comparison is between the expected harm to others and the personal sacrifice that the actor would have made in avoiding it. In this case, failing to increase the level of care (by not cutting the curve before the bridge) generated a small risk but "saved him [i.e., the defendant] trouble," so it could not be grossly negligent.²¹

In the prominent maritime case of *United States v. Carroll Towing Co.*, a barge broke away from its mooring, collided with another vessel, and consequently sank.²² The owner of the cargo on the barge sought damages.²³ Judge Hand opined that in deciding whether the absence of a bargee could make the barge owner liable for such loss, three variables must be considered: "(1) The probability that [the barge] will break away; (2) the gravity of the resulting injury, if she does; (3) the burden of adequate precautions."²⁴ In algebraic terms, if the probability of harm is P , the severity of harm is L , and the burden of precautions needed to eliminate the risk of harm is B , "liability depends upon whether B is less than L multiplied by P : i.e., whether $B < PL$."²⁵

The application of this formula was admittedly somewhat confusing. Judge Hand compared the risk to other vessels (the likelihood that a barge would break from her fasts and the damage that this might cause) with the burden for the bargee of staying aboard ("the barge

16 111 F.2d 611 (2d Cir. 1940).

17 *Id.* at 611-12.

18 *Id.*

19 *Id.* at 612.

20 *Id.*

21 *Id.* at 613.

22 159 F.2d 169, 170-71 (2d Cir. 1947).

23 *Id.* at 171.

24 *Id.* at 173.

25 *Id.*; see also *Moisan v. Loftus*, 178 F.2d 148, 149 (2d Cir. 1949) (using a similar formula).

must not be the bargee's prison").²⁶ As commentators correctly observed, Judge Hand essentially assessed the reasonableness of the bargee's conduct (his absence from the barge for a long time during working hours), even though the question at hand was whether the barge owner, not the bargee, was negligent in allowing the moored barge to be left unattended.²⁷ This analytical shift could have been justified had the court considered the barge owner's vicarious liability for the bargee's alleged negligence, as in some of the earlier cases cited by the court.²⁸ However, Judge Hand had to decide whether the barge owner itself was negligent in not having a bargee aboard the vessel (and ultimately concluded that it was).²⁹ The shift remains baffling but does not alter the underlying principle: the reasonableness of a person's conduct requires a comparison of the risk it imposes on others with the burden that this person must bear to eliminate the risk.

B. Subsequent Caselaw

State courts, as well as federal courts applying state or federal law, have frequently endorsed the Hand formula in assessing reasonableness.³⁰ Many explicitly referenced the original decisions of the Second Circuit, *Carroll Towing* in particular.³¹ Others emphasized the three

26 *Carroll Towing*, 159 F.2d at 173.

27 Richard A. Epstein, *A Theory of Strict Liability*, 2 J. LEGAL STUD. 151, 154–55 (1973); Patrick J. Kelley, *The Carroll Towing Company Case and the Teaching of Tort Law*, 45 ST. LOUIS U. L.J. 731, 739–40 (2001).

28 See, e.g., *The P.R.R. No. 216*, 56 F.2d 604, 604 (2d Cir. 1932) (finding the bargee who left the vessel unattended negligent); *The E. Indian*, 62 F.2d 242, 244 (2d Cir. 1932) (same).

29 *Carroll Towing*, 159 F.2d at 174.

30 See Stephen G. Gilles, *The Invisible Hand Formula*, 80 VA. L. REV. 1015, 1015–16, 1016 n.4 (1994).

31 See, e.g., *Belbachir v. Cnty. of McHenry*, 726 F.3d 975, 981–82 (7th Cir. 2013) (applying 42 U.S.C. § 1983 (2012)); *Mesman v. Crane Pro Servs.*, 409 F.3d 846, 849 (7th Cir. 2005) (applying Indiana law); *Halek v. United States*, 178 F.3d 481, 484–85 (7th Cir. 1999) (applying Illinois law); *Bammerlin v. Navistar Int'l Transp. Corp.*, 30 F.3d 898, 902 (7th Cir. 1994) (applying Indiana law); *Bhd. Shipping Co. v. St. Paul Fire & Marine Ins.*, 985 F.2d 323, 327 (7th Cir. 1993) (applying admiralty law); *Braun v. Soldier of Fortune Mag., Inc.*, 968 F.2d 1110, 1115 (11th Cir. 1992) (applying Georgia law); *Eimann v. Soldier of Fortune Mag., Inc.*, 880 F.2d 830, 834–35 (5th Cir. 1989) (applying Texas law); *McCarty v. Pheasant Run, Inc.*, 826 F.2d 1554, 1556–57 (7th Cir. 1987) (applying Illinois law); *Doe v. United States*, 533 F. Supp. 245, 251 (S.D. Fla. 1982) (applying Florida law), *rev'd*, 718 F.2d 1039 (11th Cir. 1983); *Sharp v. W.H. Moore, Inc.*, 796 P.2d 506, 509–10 (Idaho 1990); *Stevens v. Fleming*, 777 P.2d 1196, 1199 (Idaho 1989); *Dobson v. La. Power & Light Co.*, 567 So. 2d 569, 574–75 (La. 1990); *Washington v. La. Power & Light Co.*, 555 So. 2d 1350, 1353 (La. 1990); *Levi v. Sw. La. Elec. Membership Coop.*, 542 So. 2d 1081, 1087 n.2 (La. 1989); *Lowe v. Est. Motors, Ltd.*, 410 N.W.2d 706, 715 (Mich. 1987); *Md. Cas. Co. v. City of Jackson*, 493 So. 2d 955, 960 n.3 (Miss. 1986); *Thompson v. Ohio Fuel Gas Co.*, 224 N.E.2d 131, 136

underlying variables (*P*, *L*, and *B*) without citing Judge Hand.³² Either way, the dominance of the “expected harm versus cost of precautions” test in U.S. caselaw seems clear (even though its practical significance might be limited due to its absence from jury instructions).³³ Moreover, similar definitions have been adopted and applied in many foreign common-law jurisdictions, including Australia,³⁴ Canada,³⁵ England,³⁶ Ireland,³⁷ and Israel.³⁸

(Ohio 1967); *Raab v. Utah Ry. Co.*, 221 P.3d 219, 232 n.51 (Utah 2009); *Dellapenta v. Dellapenta*, 838 P.2d 1153, 1161 (Wyo. 1992).

32 See, e.g., *Griggs v. BIC Corp.*, 981 F.2d 1429, 1435–36 (3d Cir. 1992) (applying Pennsylvania law); *Crane v. Smith*, 144 P.2d 356, 362 (Cal. 1943); *Orr v. First Nat’l Stores, Inc.*, 280 A.2d 785, 796 (Me. 1971); *Moran v. Faberge, Inc.*, 332 A.2d 11, 15 (Md. 1975); *Gilhooley v. Star Mkt. Co.*, 508 N.E.2d 609, 610–11 (Mass. 1987); *Mounsey v. Ellard*, 297 N.E.2d 43, 52–53 (Mass. 1973); *Mang v. Eliasson*, 458 P.2d 777, 780–81 (Mont. 1969); *Wright v. Schum*, 781 P.2d 1142, 1147 (Nev. 1989); *Weinberg v. Dinger*, 524 A.2d 366, 374 (N.J. 1987); *Quinlan v. Cecchini*, 363 N.E.2d 578, 581 (N.Y. 1977); *Micallef v. Michle Co.*, 348 N.E.2d 571, 577–78 (N.Y. 1976); *O’Leary v. Coenen*, 251 N.W.2d 746, 751 (N.D. 1977); *Smith v. Johnston*, 591 P.2d 1260, 1262–63 (Okla. 1978); *Fuhrer v. Gearhart-by-the-Sea, Inc.*, 760 P.2d 874, 878 (Or. 1988); *Dodge v. Par. of the Church of the Transfiguration*, 259 A.2d 843, 847 (R.I. 1969); *McCall v. Wilder*, 913 S.W.2d 150, 153 (Tenn. 1995); *Thoreson v. Thompson*, 431 S.W.2d 341, 344 (Tex. 1968); *Bodin v. City of Stanwood*, 927 P.2d 240, 245 (Wash. 1996).

33 See *infra* note 72.

34 See JOHN G. FLEMING, *THE LAW OF TORTS* 113–18 (5th ed. 1977) (“[Negligence is] determined by balancing the magnitude of the risk, in the light of the likelihood of an accident happening and the possible seriousness of its consequences, against the difficulty, expense or any other disadvantage of desisting from the venture or taking a particular precaution.” *Id.* at 114.); FRANCIS TRINDADE & PETER CANE, *THE LAW OF TORTS IN AUSTRALIA* 438–39, 440–45 (3d ed. 1999) (explaining that in setting the standard of care, courts consider the seriousness of possible consequences, their probability, and the expense, difficulty, and inconvenience of taking alleviating action, in addition to the importance of the risky activity).

35 See ALLEN M. LINDEN, BRUCE FELDTHUSEN, MARGARET ISABEL HALL, ERIK S. KNUTSEN & HILARY A.N. YOUNG, *CANADIAN TORT LAW* 165–76 (12th ed. 2022) (identifying a four-variable test for negligence, including the Hand variables and the purpose or object of the act in question).

36 See *Morris v. W. Hartlepool Steam Navigation Co.* [1956] AC 552 (HL) 574 (appeal taken from Eng.) (“[I]n considering whether some precaution should be taken against a foreseeable risk, [the potential injurer must] weigh, on the one hand, the magnitude of the risk, the likelihood of an accident happening and the possible seriousness of the consequences if an accident does happen, and, on the other hand, the difficulty and expense and any other disadvantage of taking the precaution.”); R.F.V. HEUSTON & R.A. BUCKLEY, *SALMOND & HEUSTON ON THE LAW OF TORTS* 225–31 (21st ed. 1996) (discussing the variables considered in assessing reasonableness); W.V.H. ROGERS, *WINFIELD & JOLOWICZ ON TORT* 253–59 (17th ed. 2006) (same).

37 See JOHN HEALY, *PRINCIPLES OF IRISH TORTS* 98–101 (2006) (discussing the variables considered in assessing reasonableness).

38 See Ronen Perry, תאוריה פוזיטיבית וביקורת נורמטיבית בעולת הרשלנות: יסוד ההתרשלות בעולת הרשלנות [The *Notion of Reasonableness in Negligence: A Positive Theory and a Normative Critique*], 38 HEBREW U. L.J. 351, 354–65 (2008).

The key point that this Section seeks to establish is that in endorsing the cost-benefit formula, with or without an explicit reference to Judge Hand, most courts made it clear that the cost of precautions, namely the burden that must be compared with the expected harm, is the cost *for the defendant*. This is evident from the explicit language that courts used in defining reasonableness, from the way they applied the cost-benefit test (ignoring all costs of precautions but the defendant's), or from both. With regard to language, courts were often unequivocal about the relevant costs. For example, in *Shanklin v. Norfolk Southern Railway Co.*, the Sixth Circuit (applying Tennessee law) held that a decision about reasonableness hinges on “a balancing of the burden *on the defendant* in acting more carefully against the probability of harm multiplied by the magnitude of harm if the defendant does not so act.”³⁹ Similar language, emphasizing the centrality of the cost *for the defendant* in determining negligence, can be found in numerous cases.⁴⁰

As regards application, a few representative examples of cases decided by state courts, as well as federal courts applying state or federal law, will suffice.⁴¹ In *Crane v. Smith*, decided in the Hand era, a three-

39 369 F.3d 978, 997 (6th Cir. 2004) (emphasis added) (citing *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947)).

40 See, e.g., *Braun v. Soldier of Fortune Mag., Inc.*, 968 F.2d 1110, 1115 (11th Cir. 1992) (applying Georgia law) (“[L]iability depends upon whether the burden on the defendant of adopting adequate precautions is less than the probability of harm from the defendant’s unmodified conduct multiplied by the gravity of the injury that might result from the defendant’s unmodified conduct.” (citing *Carroll Towing*, 159 F.2d at 173)); *Ward v. K Mart Corp.*, 554 N.E.2d 223, 226–27, 232 (Ill. 1990) (focusing on the duty element, emphasizing the importance of “the magnitude of the burden of guarding against the injury, and the consequences of placing that burden upon the defendant,” *id.* at 232); *Trusiani v. Cumberland & York Distribs., Inc.*, 538 A.2d 258, 264 (Me. 1988) (“[The risk-benefit] method of analysis requires a balancing of the importance of the societal interest and the probability and burden of potential injury to a plaintiff against the burden placed on a defendant if he were required to take precautions to prevent injury.”); *McCall v. Wilder*, 913 S.W.2d 150, 153 (Tenn. 1995) (“A risk is unreasonable . . . if the foreseeable probability and gravity of harm posed by defendant’s conduct outweigh the burden upon defendant to engage in alternative conduct that would have prevented the harm.”); *UDR Tex. Props., L.P. v. Petrie*, 517 S.W.3d 98, 107 (Tex. 2017) (“The reasonableness determination considers, indeed balances, the burden on the defendant of preventing the harm against the severity and likelihood of the injury the plaintiff faces . . .”).

41 See *Kotler v. Am. Tobacco Co.*, 926 F.2d 1217, 1231 n.15 (1st Cir. 1990) (applying Massachusetts law and explaining that a failure to warn of a risk was negligent because “the cost of producing some warning is virtually nil” and the expected harm that could be avoided was not negligible); *Orr v. First Nat’l Stores, Inc.*, 280 A.2d 785, 796 (Me. 1971) (discussing “the relative ease, inconvenience and inexpensiveness” with which the defendant could have eliminated the danger to the plaintiff); *Dodge v. Par. of the Church of the Transfiguration*, 259 A.2d 843, 847 (R.I. 1969) (“[T]he burden which the owner assumes

year-old child was injured when she placed her finger in a grinder used at a coffee shop and brought an action against the owner.⁴² In discussing whether placing the grinder in the aisle and not behind the counter was negligent, the Supreme Court of California explained that “the reasonable character of the [required] care depends upon whether *the interference with the actor’s own affairs* is warranted by the other’s danger.”⁴³ It then added that “the extent of the chance that the actor’s interest can be adequately advanced or protected by another and less dangerous course of conduct must be considered.”⁴⁴ The court concluded that placing the grinder upon the aisle did not advance any of the owner’s interests, while placing it behind the counter would have been equally beneficial for it.⁴⁵ The risk to young children of placing the machine in the aisle outweighed the benefit to the owner, making this choice unreasonable.⁴⁶ Simply put, the court unambiguously stated that the only relevant burden in the analysis was the possible interference with the defendant’s affairs. The defendant did not even consider invoking the burden on others (such as the possible discomfort or danger to employees from placing the machine behind the counter). I do not argue that considering such costs would have changed the outcome, only that they were not deemed relevant at all.

Federal courts applying state law followed the same path. For example, in *Stockberger v. United States*, a diabetic employee at a federal prison did not feel well and while driving back home was involved in a fatal car accident.⁴⁷ His widow brought a wrongful death action claiming that his coworkers were negligent in allowing a person known to be in a hypoglycemic condition to drive.⁴⁸ The court, applying Indiana law, held that the coworkers were negligent because the burden *for them* of delaying his departure was less than the risk of a serious accident.⁴⁹ The court focused on the cost of precautions for the defendants, ignoring possible externalities, such as the impact that exerting efforts to restrain a recalcitrant coworker might have on prison security and public safety or on prisoners’ well-being. Perhaps taking

for taking this simple precaution in terms of cost and maintenance is insignificant when compared to the injuries and personal misfortune that can be avoided.”).

42 144 P.2d 356, 359 (Cal. 1943).

43 *Id.* at 362 (emphasis added).

44 *Id.*

45 *Id.*

46 *Id.*

47 332 F.3d 479, 480 (7th Cir. 2003).

48 *Id.* at 479.

49 *Id.* at 483 (“[T]he burden to Stockberger’s coworkers of delaying his departure was less than the risk of a serious accident.”). The claim was denied, however, because none of the exceptions to the rule of no liability for negligent omissions applied. *Id.*

such externalities into account would not have changed the conclusion, but neither the defendants nor the court considered them relevant.

Lastly, federal courts applying admiralty law adopted the same approach. In *In re City of New York*, the Staten Island Ferry crashed into a maintenance pier when the sole pilot lost conscious awareness.⁵⁰ Many passengers were killed or injured, the pilot was convicted of criminal negligence, and tort actions were brought against his employer, the ferry owner.⁵¹ The court, applying federal admiralty law, had to determine whether allowing the ferry to operate with only one pilot was reasonable.⁵² Citing the *Carroll Towing* algebraic formulation, the court explained that the potential harm from crashing was devastating, the probability of harm was very small, and the “burden to the [defendant] of taking adequate precautions,” namely having a second person around the pilothouse, was relatively small.⁵³ The burden was not the cost of hiring an additional person, because the defendant already employed two captains on the ferry as required by applicable regulations. Rather, the burden equaled the value of the alternative activity that the second captain performed for the defendant and would have had to forgo to be in the pilothouse.⁵⁴ Finding it hard to compare the expected harm and the burden, the court considered relevant regulations and concluded that the defendant was indeed negligent.⁵⁵ Again, the court was clear that only the burden on the defendant was relevant in assessing the cost of precautions and applied the Hand formula accordingly.

Similarly, in *In re Frescati Shipping Co.*, an oil tanker struck an abandoned anchor which pierced its hull, causing a considerable amount of oil to spill into the Delaware River.⁵⁶ The legal procedure concerned the allocation of the cleanup costs among several parties.⁵⁷ In implementing the Hand formula under federal admiralty law, the court considered the cost for the defendant wharfinger of a sonar scan that could allegedly detect navigational hazards and prevent the allision against the expected harm from oil spills.⁵⁸ The court doubted that the cost of using this precaution for the defendant was indeed lower than the subsequent reduction in expected harm, mainly

50 522 F.3d 279, 280–81 (2d Cir. 2008).

51 *Id.* at 281.

52 *Id.* at 279–80.

53 *Id.* at 284.

54 *Id.*

55 *Id.* at 285–87.

56 886 F.3d 291, 295 (3rd Cir. 2018).

57 *Id.*

58 *Id.* at 307.

because the risk was relatively small (the tanker was single-hulled, and such vessels were no longer permitted to operate in U.S. waters) and it was unclear whether the specific precaution could detect the anchor and eliminate the risk.⁵⁹ The court only considered the cost of precautions for the defendant.

A few highly exceptional cases considering the negative impact of precautionary measures on people other than the defendant will be discussed below.⁶⁰ In addition, there is one limited context in which courts have frequently deviated from the general tendency to disregard such impact. According to some courts, the expected harm from the defendant's activity must be compared with its utility, in addition to the comparison between the expected harm and the cost of precautions or in its stead.⁶¹ "Utility" is understood as social (aggregate) utility.⁶² Under this view, the negative impact of a particular risk-reducing measure on people other than the defendant is considered when the most extreme measure of totally refraining from the activity is on the line. The cost of more mundane precautions for others is generally ignored.

59 *Id.* at 307–08. A conclusion on the reasonableness of the defendant's conduct was not necessary, however, given its contractual liability. *Id.* at 308 n.23.

60 *See infra* notes 133–59 and accompanying text.

61 *See, e.g.,* Weirum v. RKO Gen., Inc., 539 P.2d 36, 40 (Cal. 1975) ("[A conduct is unreasonable] if the gravity and likelihood of the danger outweigh the utility of the conduct involved."); Knodle v. Waikiki Gateway Hotel, Inc., 742 P.2d 377, 385 (Haw. 1987) ("[A]gainst this probability, and gravity, of the risk, must be balanced in every case the utility of the type of conduct in question." (quoting W. PAGE KEETON, DAN B. DOBBS, ROBERT E. KEETON & DAVID G. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 31, at 171 (5th ed. 1984))); Johnson v. Mun. Univ. of Omaha, 187 N.W.2d 102, 103 (Neb. 1971) ("[T]he risk is unreasonable and the act is negligent if the risk is of such magnitude as to outweigh what the law regards as the utility of the act or of the particular manner in which it is done."). This formulation was endorsed by the RESTATEMENT (SECOND) OF TORTS § 291 (AM. L. INST. 1965).

62 *See, e.g.,* Delmarva Power & Light Co. v. Burrows, 435 A.2d 716, 719 (Del. 1981) ("[T]he social utility of the activity must be balanced against the risk . . ."); Styles v. Eblen, 436 S.W.2d 504, 505 (Ky. 1969) (stating that "the inherent danger [in operating power lines] is weighed against the social utility of their maintenance" so if social utility exceeds the risk the activity is not negligent, and in contrast, "when the utility of the instrumentality is extremely low and when the risk involved is so much greater, . . . then further maintenance of the instrumentality constitutes negligent conduct"); Moning v. Alfonso, 254 N.W.2d 759, 770 (Mich. 1977) ("The balancing of the magnitude of the risk and the utility of the actor's conduct requires a consideration by the court and jury of the societal interests involved." (emphasis omitted)); RESTATEMENT (SECOND) OF TORTS § 292 (AM. L. INST. 1965).

C. *Secondary Resources*

Most tort law treatises, textbooks, primers, and academic articles on negligence acknowledged the centrality and importance of the cost-benefit definition of reasonableness.⁶³ So much so, that the *Restatement (Third) of Torts (Third Restatement)* expressly embraced it.⁶⁴ Section 3 provides that a person acts negligently if they do not exercise reasonable care under all the circumstances. It then explains that the “[p]rimary factors to consider in ascertaining whether the person’s conduct lacks reasonable care are the foreseeable likelihood that the person’s conduct will result in harm, the foreseeable severity of any harm that may ensue, and the burden of precautions to eliminate or reduce the risk of harm”—the three variables in the Hand formula.⁶⁵ Indeed, section 3 refers to these variables as “primary” (implying that there may be others) and does not use an algebraic formulation

63 See, e.g., DAN B. DOBBS, *THE LAW OF TORTS* §§ 144–146, at 337–48 (2000) (discussing the Hand formula and its shortcomings); RICHARD A. EPSTEIN & CATHERINE M. SHARKEY, *CASES AND MATERIALS ON TORTS* 170–78 (11th ed. 2016) (same); WARD FARNSWORTH & MARK F. GRADY, *TORTS: CASES AND QUESTIONS* 140–58 (2d ed. 2009) (same); JOHN C.P. GOLDBERG, ANTHONY J. SEBOK & BENJAMIN C. ZIPURSKY, *TORT LAW: RESPONSIBILITIES AND REDRESS* 198–210 (3d ed. 2012) (same); JOHN FABIAN WITT, *TORTS: CASES, PRINCIPLES, AND INSTITUTIONS* 161–82 (2d ed. 2016) (same); DAVID W. ROBERTSON, WILLIAM POWERS, JR., DAVID A. ANDERSON & OLIN GUY WELLBORN III, *CASES AND MATERIALS ON TORTS* 81–82 (3d ed. 1989) (same); VICTOR E. SCHWARTZ, KATHRYN KELLY & DAVID F. PARTLETT, *PROSSER, WADE AND SCHWARTZ’S TORTS: CASES AND MATERIALS* 141–44 (11th ed. 2005) (same); see also KEETON ET AL., *supra* note 61, at 173, 453–54 (“[T]he standard of conduct . . . is usually determined upon a risk-benefit form of analysis The unreasonableness of the risk . . . [involves] weighing the importance of the interest he is seeking to advance, and the burden of taking precautions, against the probability and probable gravity of the anticipated harm”); WILLIAM L. PROSSER, *LAW OF TORTS* § 31, at 148–49 (4th ed. 1971) (discussing the importance of comparing the magnitude of the risk with the cost of precautions that can eliminate it as part of a broader discussion of the risk-utility test; stating that the risk must be balanced against the value of the interest which the actor is seeking to protect).

64 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 (AM. L. INST. 2010); see also EPSTEIN & SHARKEY, *supra* note 63, at 173–74 (“The Third Restatement . . . takes a ‘balancing approach’ to negligence.”); Stephen G. Gilles, *On Determining Negligence: Hand Formula Balancing, the Reasonable Person Standard, and the Jury*, 54 VAND. L. REV. 813, 849–50 (2001) (discussing the endorsement of the Hand formula in the Discussion Draft of the *Restatement (Third) of Torts*); Stephen R. Perry, *Cost-Benefit Analysis and the Negligence Standard*, 54 VAND. L. REV. 893, 893–94 (2001) (explaining that section 4 enumerates the same three variables “that figure in the Learned Hand formula,” *id.* at 894); Kenneth W. Simons, *The Hand Formula in the Draft Restatement (Third) of Torts: Encompassing Fairness as Well as Efficiency Values*, 54 VAND. L. REV. 901, 902 (2001) (“[Section 4] employs a version of the Learned Hand formula.”); Benjamin C. Zipursky, *Sleight of Hand*, 48 WM. & MARY L. REV. 1999, 2001 (2007) (“[The *Restatement*] expressly embraces a version of the Hand Formula, but stops short of a fully economic interpretation of it.”).

65 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 (AM. L. INST. 2010).

($B < PL$),⁶⁶ but the comments make the necessary clarifications. According to comment e, the section adopted a “cost-benefit test” for negligent conduct, where the “cost” is that of the precautions and the “benefit” is the reduction in risk those precautions would achieve.⁶⁷ Conduct is negligent “if its disadvantages outweigh its advantages, while [it] is not negligent if its advantages outweigh its disadvantages.”⁶⁸ Comment f ties the section to the algebraic relation. It holds that even if the probability of harm from the actor’s conduct is small, the actor can be held negligent if the possible harm is severe and the burden of precautions is limited.⁶⁹ Similarly, even if the foreseeable harm is not very severe, “the person can be negligent if the likelihood of harm is high and the burden of risk prevention limited.”⁷⁰

Around the adoption of the *Third Restatement*, some scholars questioned the centrality of the Hand formula in U.S. tort practice, arguing that it is rarely cited or applied by the courts⁷¹ and has not become a standard jury instruction in negligence cases.⁷² Under this premise, section 3 “dramatically overstates the role of . . . cost-benefit analysis in

66 See Richard W. Wright, *Justice and Reasonable Care in Negligence Law*, 47 AM. J. JURIS. 143, 159 (2002) (explaining why section 3 seems to retreat from the Hand formula); Wright, *Negligence in the Courts*, *supra* note 12, at 428 (noting that section 3 “lists the three Hand-formula factors as primary rather than exclusive factors to be considered”).

67 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 cmt. e (AM. L. INST. 2010).

68 *Id.*

69 *Id.* § 3 cmt. f.

70 *Id.*

71 See, e.g., Ronald J. Allen & Ross M. Rosenberg, *Legal Phenomena, Knowledge, and Theory: A Cautionary Tale of Hedgehogs and Foxes*, 77 CHI.-KENT L. REV. 683, 699, 700–01, 708–16, 719 (2002) (arguing that the Hand formula is rarely used in courts); Steven Hetcher, *Non-Utilitarian Negligence Norms and the Reasonable Person Standard*, 54 VAND. L. REV. 863, 868–69 (2001) (concluding that the Hand formula is not prevalent in caselaw); Wright, *The Myth*, *supra* note 12, at 151–52 (“[T]he Hand formula continues to be rarely mentioned in all but two United States jurisdictions: the state of Louisiana and . . . the U.S. Court of Appeals for the Seventh Circuit.”); Wright, *supra* note 66, at 145 (noting that the Hand formula “is not actually employed by the courts to determine whether specific conduct was negligent”); Wright, *Negligence in the Courts*, *supra* note 12, at 427, 449–54 (concluding that court decisions referencing the Hand formula are very rare); Zipursky, *supra* note 64, at 2002, 2005, 2013 (arguing that the Hand formula does not adequately capture the standard of U.S. negligence law).

72 See FARNSWORTH & GRADY, *supra* note 63, at 143 (stating that jurors are not normally instructed to apply the Hand formula or perform a cost-benefit analysis of reasonableness); JOHN C.P. GOLDBERG & BENJAMIN C. ZIPURSKY, *THE OXFORD INTRODUCTIONS TO U.S. LAW: TORTS* 150 (2010) (same); Allen & Rosenberg, *supra* note 71, at 699–700, 705–06 (same); Gilles, *supra* note 30, at 1016–17 (same); Hetcher, *supra* note 71, at 868, 875–79, 891 (same); Wright, *Negligence in the Courts*, *supra* note 12, at 427, 432 (same); Zipursky, *supra* note 64, at 2003 (same).

the reasonable person standard, and . . . dramatically understates the role of [other] norms in this standard.”⁷³ By failing to restate existing law, it arguably diverged from the traditional position of the American Law Institute that “*Restatements* are predominantly positive and only incrementally normative.”⁷⁴ However, these arguments seem at the very least exaggerated. As shown above, the cost-benefit test has been cited and used by many courts even before its endorsement by the *Third Restatement*. Perhaps it was not the only definition in use, but it was surely prominent and influential.

Furthermore, even if the criticism was well founded, it would not undermine this Article’s thesis. First, even if the formula was rarely cited and applied before the *Third Restatement*, its endorsement by section 3 more than a decade ago made it sufficiently important and influential for academic examination. Put differently, one can criticize an alleged shift from a positive to a normative mission (although it is not revolutionary, as the history of the *Restatement* projects demonstrates),⁷⁵ but cannot contest the importance deriving from the inclusion of this formula in the most up-to-date *Restatement* and any subsequent reliance thereon. Second, the Hand formula has been considered one of the primary definitions of reasonableness in legal literature and has been frequently mentioned, analyzed, defended, criticized, applied, and taught.⁷⁶ The profound academic debate makes it a central object for research, and a proposed adjustment to the original formulation is highly relevant. Third, even if the Hand formula were a one-off thought experiment, its characteristics would merit academic attention given its very compelling rationale to be discussed below.

More importantly for purposes of this Article, the predominant position in secondary legal resources, including law-and-economics literature, is that the cost of precautions compared with the expected harm they can prevent in analyzing reasonableness is the cost for the defendant. For example, Jules Coleman explained that under the Hand formula, “a defendant is negligent only if the cost *to him* of taking

73 Hetcher, *supra* note 71, at 864, 864–65, 868; see also Gregory C. Keating, *Reasonableness and Rationality in Negligence Theory*, 48 STAN. L. REV. 311, 360–61 (1996) (“[T]he Hand Formula itself does not seem to dominate American negligence practice . . .”).

74 Gilles, *supra* note 64, at 814.

75 Section 402A of the RESTATEMENT (SECOND) OF TORTS (AM. L. INST. 1965) “did not ‘restate’ the dominant common law rule in America circa 1964; rather it reflected the judgment of the [American Law Institute] as to what the law should be.” Stephen D. Sugarman, *A Restatement of Torts*, 44 STAN. L. REV. 1163, 1163 (1992).

76 See Michael D. Green, *Negligence = Economic Efficiency: Doubts >*, 75 TEX. L. REV. 1605, 1606 (1997) (“[The Hand formula] is found in virtually all contemporary torts casebooks . . .”); Zipursky, *supra* note 64, at 1999 (“[T]he ‘Hand Formula’ . . . is perhaps the most central idea of many first-year torts classes today.”); *supra* note 63.

precautions is less than the harm to the victim discounted by the probability of the harm's occurrence."⁷⁷ John Goldberg and Benjamin Zipursky wrote that "[b]y this 'formula,' an actor will be deemed at fault if he fails to take a precaution that imposes *on him* a burden of lesser magnitude than the losses expected to flow from that failure, multiplied by the probability that the losses will occur."⁷⁸ Keith Hylton maintained that "the reasonable person examines both the burden *to himself* and the foreseeable harm, to himself and to others, in determining whether to take care and how much care to exercise."⁷⁹ Similar statements and analyses abound.⁸⁰ Dobbs was unique in succinctly stating that the cost of precaution "includes any cost the defendant might have to incur to make things safe enough, but it also includes costs that would be inflicted upon others or upon society at large."⁸¹ The *Third Restatement* endorsed Dobbs's position in one explanatory comment,⁸²

77 Jules L. Coleman, *Mistakes, Misunderstandings, and Misalignments*, 121 YALE L.J. ONLINE 541, 544 (2012) (emphasis added).

78 GOLDBERG & ZIPURSKY, *supra* note 72, at 149 (emphasis added).

79 KEITH N. HYLTON, *TORT LAW: A MODERN PERSPECTIVE* 106 (2016) (emphasis added).

80 57A AM. JUR. 2D *Negligence* § 151 (2023) (explaining that the relevant burden in the Hand formula is "the burden on the defendant"); LINDEN ET AL., *supra* note 35, at 165 ("[T]he cost or the burden to the actor to eliminate the hazard."); Russell Brown & Annalise Acorn, *Beware of Tiger: The Logic of Justice Jean E.L. Côté's Tort Law*, 56 ALBERTA L. REV. 1235, 1242 (2019) ("[T]he other side of the ledger . . . is, what of the burden on the defendant of taking precautions . . .?"); Robert Cooter & Ariel Porat, *Does Risk to Oneself Increase the Care Owed to Others? Law and Economics in Conflict*, 29 J. LEGAL STUD. 19, 20 (2000) ("In conventional legal applications of the Hand Rule, courts balance the burden of precaution to the injurer and the risk of harm to the victim."); Luigi Alberto Franzoni, *Efficient Liability Law When Parties Genuinely Disagree*, 39 J.L. ECON. & ORG. (forthcoming Nov. 2023) (manuscript at 14) ("The efficient standard of care balances the cost of precaution borne by the injurer with the risk borne by the victim."); Keith N. Hylton, *Fee Shifting and Incentives to Comply with the Law*, 46 VAND. L. REV. 1069, 1089 (1993) (explaining that the relevant cost in the analysis is "the cost to a potential injurer of taking care"); Christopher Brett Jaeger, *The Empirical Reasonable Person*, 72 ALA. L. REV. 887, 905 (2021) ("Under the Hand Formula, determining whether a litigant's behavior is negligent requires decision makers to balance three considerations: . . . (3) the cost to the litigant of taking precautions to prevent the accident from happening." (emphasis added)); Gary T. Schwartz, *Mixed Theories of Tort Law: Affirming Both Deterrence and Corrective Justice*, 75 TEX. L. REV. 1801, 1819–20 (1997) ("[T]he burden of risk prevention is borne . . . by the defendant."); Stephen D. Sugarman, *Rethinking Tort Doctrine: Visions of a Restatement (Fourth) of Torts*, 50 UCLA L. REV. 585, 604 (2002) (interpreting the burden of precautions in the Hand formula as "the burden on the defendant").

81 DOBBS, *supra* note 63, § 145, at 341.

82 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 cmt. e (AM. L. INST. 2010) ("[T]he overall level of the foreseeable risk created by the actor's conduct [should be compared to] the advantages that the actor or others gain if the actor refrains from taking precautions. . . . In certain situations, if the actor takes steps to reduce one set of injury risks, this would involve the burden or disadvantage of creating a

but in addition to being inconsistent with another comment,⁸³ this remarkable deviation from the mainstream of legal thought has been generally ignored in subsequent literature and caselaw.

II. EVOLUTION IN LIGHT OF THE UNDERLYING RATIONALE

A. *The Rationale*

1. Corrective Justice

Academic literature offered two major justifications for the Hand definition of reasonableness. The more common rationale, which underlies this Article's thesis and will be discussed in detail below, is efficient deterrence.⁸⁴ Yet some scholars supported the same definition "for reasons of fairness or corrective justice."⁸⁵ Initially, even Ernest Weinrib, one of the forefathers of corrective justice theory of private law, opined that the Hand formula was a manifestation of the Kantian imperative to value the interests of others as if they were one's own (the principle of equal worth).⁸⁶ If the defendant treated the plaintiff's interests in compliance with this imperative, the defendant would balance the cost of precaution against the risk it would eliminate, even though the risk was imposed on another.⁸⁷ Gary Schwartz similarly concluded that if the defendant failed to take a precaution whose cost is lower than the expected harm it could prevent, "the defendant's choice shows that he attaches a greater weight to his own interests than to the interests of others."⁸⁸ Such conduct is ethically

different set of injury risks, and these other risks are included within the burden of precautions.").

83 *Id.* § 6 cmt. d ("An actor who permits conduct to impose a risk of physical harm on others that exceeds the *burden the actor would bear* in avoiding that risk impermissibly ranks personal interests ahead of the interests of others." (emphasis added)).

84 *Infra* subsection II.A.2.

85 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 reporters' note cmt. d (AM. L. INST. 2010); *see also id.* § 6 cmt. d ("One justification for imposing liability for negligent conduct that causes physical harm is corrective justice . . ."); Simons, *supra* note 64, at 902 (contending that the Hand formula "accommodate[s] both economic and fairness accounts of negligence law").

86 Ernest J. Weinrib, *Toward a Moral Theory of Negligence Law*, 2 LAW & PHIL. 37, 52–53 (1983).

87 *Id.*; *cf.* The Nitro-glycerine Case, 82 U.S. (15 Wall.) 524, 538 (1873) ("[T]he measure of care . . . is that which a person of ordinary prudence and caution would use if his own interests were to be affected, and the whole risk were his own."); Heathcock v. Pennington, 33 N.C. (11 Ired.) 640, 643 (1850) ("Ordinary care is that degree of it, which in the same circumstances a person of ordinary prudence would take of the particular thing, were it his own.").

88 Schwartz, *supra* note 80, at 1819–20.

wrong because the actor ranks “his own welfare as more important than the welfare of others.”⁸⁹ Gregory Keating made a related though somewhat different argument, whereby the Hand formula balances the defendant’s freedom of action against the plaintiff’s security so as to maximize individual freedom.⁹⁰

If the Hand formula truly followed a corrective justice pattern and focused on balancing the interests of the specific plaintiff and the specific defendant, treated as equally deserving of protection, it would be formally impossible to incorporate the interests of other parties into the calculus.⁹¹ Such interests could perhaps play a role in other legal doctrines that transcend the bilateral structure (such as self-defense as extended to third parties),⁹² but not in a corrective justice version of the Hand formula. Indeed, all corrective justice accounts of the Hand formula interpret the cost of precautions as the cost for the defendant. The theoretical argument that courts should consider the negative impact of precautions on people other than the defendant entails a different normative commitment. Before turning to the alternative, let us examine why corrective justice theory—which might undermine this Article’s thesis—should be put aside.

Corrective justice interpretations of the Hand formula have weaknesses on both the positive and normative levels. On the positive level, they misread the formula as exclusively incorporating the interests of the specific plaintiff and the specific defendant. Judge Hand and many of his disciples on the bench used more inclusive language and applied a more comprehensive test. For instance, in *Conway v. O’Brien*, Judge Hand spoke about the likelihood of injuring others generally, rather than a specific plaintiff.⁹³ Similarly, even though some of the comments to sections 3 and 6 of the *Third Restatement* mention both efficient deterrence and corrective justice as possible underpinnings of the Hand formula,⁹⁴ comment e to section 3 forcefully devitalizes

89 *Id.* at 1820; see also RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 6 cmt. d (AM. L. INST. 2010) (explaining that a person who exposes another to a risk that exceeds the burden he would have to bear in avoiding it “impermissibly ranks personal interests ahead of the interests of others,” and thereby violates an ethical norm of equal consideration); David G. Owen, *Philosophical Foundations of Fault in Tort Law*, in PHILOSOPHICAL FOUNDATIONS OF TORT LAW 201, 225 (David G. Owen ed., 1995) (“If A should know that B’s security from risk is more valuable than the interests . . . that A’s action likely will promote, A’s choice to sacrifice B’s greater interests denies B’s equal worth, and so is wrongful in moral theory.”).

90 Keating, *supra* note 73, at 360–64.

91 See Kenneth W. Simons, *Tort Negligence, Cost-Benefit Analysis, and Tradeoffs: A Closer Look at the Controversy*, 41 LOY. L.A. L. REV. 1171, 1194–95 (2008).

92 See RESTATEMENT (SECOND) OF TORTS § 76 (AM. L. INST. 1965).

93 111 F.2d 611, 612 (2d Cir. 1940).

94 *Supra* note 85.

the dual-justification pretense. It provides that the risk considered “is the overall level of the foreseeable risk created by the actor’s conduct” (not only the risk to the plaintiff), and explains that a defendant’s conduct “is negligent if its disadvantages outweigh its advantages” and “not negligent if its advantages outweigh its disadvantages.”⁹⁵

On the normative level, even a narrow interpretation of the Hand formula, which considers only the risk to the plaintiff and the cost of precautions for the defendant, can hardly be defended in terms of interpersonal justice. A person who, for personal gain, imposes on another a substantial risk that the former would not be willing to bear, is not adequately deferential to the equal dignity and autonomy of the latter, even if the cost of prevention exceeds the expected loss.⁹⁶ Unsurprisingly, therefore, some courts—not committed to the Hand formula—found such behavior negligent.⁹⁷ In the same vein, it is unfair to oblige one person to bear a considerable burden to save another from a danger the former did not create, even if the burden is less than the expected benefit from a rescue attempt.⁹⁸ On these grounds, Weinrib himself retreated from his initial view that the Hand formula is consistent with corrective justice theory.⁹⁹ To conclude, the Hand formula does not and cannot hinge on interpersonal justice,¹⁰⁰ so any constraints that a corrective justice account would have imposed on its evolution need not hinder us here.

2. Efficient Deterrence

The alternative and dominant understanding of the Hand formula is an aggregative consequentialist one.¹⁰¹ Some scholars, most

95 RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 cmt. e (AM. L. INST. 2010).

96 See Perry, *supra* note 64, at 896–97 (explaining that exposing others to substantial risks is unjust, regardless of the ensuing benefit); Wright, *Negligence in the Courts*, *supra* note 12, at 427–28 (same); Zipursky, *supra* note 64, at 2030 (same).

97 See Bolton v. Stone [1951] AC 850 (HL) 865–66 (Lord Reid) (appeal taken from Eng.) (cataloguing then-recent English caselaw finding such behavior negligent).

98 See Wright, *Negligence in the Courts*, *supra* note 12, at 428 (“[E]ven though it is morally praiseworthy for a person voluntarily to impose significant burdens or risks upon herself in order to attempt to rescue another from a dangerous situation that she did not create, it is not just to legally require her to do so, even if the risk to her seems to be substantially less than the expected utility of the rescue attempt.”).

99 ERNEST J. WEINRIB, *THE IDEA OF PRIVATE LAW* 147–52 (1995).

100 See Wright, *supra* note 66, at 171, 191 (“[T]he aggregate-risk-utility test cannot be reconciled with the concept of justice.” *Id.* at 171.).

101 See Hetcher, *supra* note 71, at 864–66 (explaining that the *Restatement* adopted a utilitarian test for negligence); Heidi M. Hurd, *The Deontology of Negligence*, 76 B.U. L. REV. 249, 250, 266 (1996) (describing the Hand formula as “patently . . . consequentialist,” *id.* at

notably Richard Posner and his followers, advocate the view that the Hand formula aims to maximize wealth.¹⁰² However, wealth maximization is a problematic normative goal,¹⁰³ and many scholars adopt a more comprehensive economic paradigm—welfare maximization.¹⁰⁴ This Article favors the more comprehensive approach but makes an argument that is equally valid under different aggregative consequentialist theories and uses monetary examples for simplicity.

Negligence law purports to prevent inefficient conduct by (1) equating unreasonableness (breach of the standard of care) with inefficiency, and (2) providing adequate incentives to avoid unreasonable conduct.¹⁰⁵ The Hand formula takes the first step, defining reasonableness in terms of efficiency: a person's conduct is deemed unreasonable if that person failed to take cost-justified precautions, namely the socially optimal level of care.¹⁰⁶ Imposing liability for harm caused by unreasonable conduct *ex post* is the mechanism used to generate the appropriate avoidance incentives. It forces potential injurers to internalize the externalities of their inefficient conduct *ex ante*, that is, at or before the creation of the risk; this aligns the individual and social cost-benefit calculations at any suboptimal level of care and induces potential injurers to take the socially desirable course of action.¹⁰⁷

250); Wright, *supra* note 66, at 161 (“[T]he draft [*Restatement*] explicitly adopts an almost totally unconstrained, reductionist, cost-benefit test of reasonableness in negligence law.”).

102 See Posner, *supra* note 12, at 32–33 (explaining the Hand formula in terms of wealth maximization). For a more general discussion of wealth maximization as a positive and normative goal, see LANDES & POSNER, *supra* note 12, at 16; Richard A. Posner, *Wealth Maximization and Tort Law: A Philosophical Inquiry*, in PHILOSOPHICAL FOUNDATIONS OF TORT LAW, *supra* note 89, at 99; Richard A. Posner, *The Value of Wealth: A Comment on Dworkin and Kronman*, 9 J. LEGAL STUD. 243 (1980).

103 See, e.g., Ronald M. Dworkin, *Is Wealth a Value?*, 9 J. LEGAL STUD. 191 (1980) (criticizing the use of wealth maximization as a normative goal); Simons, *supra* note 91, at 1190–91 (same).

104 See Louis Kaplow & Steven Shavell, *Fairness Versus Welfare*, 114 HARV. L. REV. 961, 968, 977–80 (2001) (describing welfare economics as accommodating all factors relevant to individuals' well-being, not just wealth). There are many critical appraisals of this perspective. See, e.g., Jules L. Coleman, *The Grounds of Welfare*, 112 YALE L.J. 1511 (2003) (critically reviewing LOUIS KAPLOW & STEVEN SHAVELL, *FAIRNESS VERSUS WELFARE* (2002)); David Dolinko, *The Perils of Welfare Economics*, 97 NW. U. L. REV. 351 (2002) (same); Michael B. Dorff, *Why Welfare Depends on Fairness: A Reply to Kaplow and Shavell*, 75 S. CAL. L. REV. 847, 862–88 (2002) (criticizing Kaplow and Shavell).

105 Yehuda Adar & Ronen Perry, *Negligence Without Harm*, 111 GEO. L.J. 187, 214–15 (2022).

106 *Id.* at 214; Alan D. Miller & Ronen Perry, *The Reasonable Person*, 87 N.Y.U. L. REV. 323, 328 (2012).

107 See, e.g., DOBBS, *supra* note 63, § 146, at 344; Adar & Perry, *supra* note 105, at 215; Robert D. Cooter, *Three Effects of Social Norms on Law: Expression, Deterrence, and Internalization*, 79 OR. L. REV. 1, 16 (2000); John C.P. Goldberg, *Twentieth-Century Tort Theory*, 91 GEO.

Assuming complete information and perfect enforcement, a potential injurer knows that failing to take precautions at a cost of B where $B < PL$ will be deemed unreasonable and result in liability should harm ensue. Because the probability of harm (caused by inefficient conduct) is now the probability of liability, and the extent of harm determines the scope of liability, the risk of harm to another (PL) turns into an equivalent risk of liability for the perpetrator. A potential injurer who needs to decide whether to take precautions that cost B , or bear the expected harm, PL , will rationally choose the former whenever $B < PL$.¹⁰⁸ For example, if the probability of harm is 0.1, its magnitude is \$1,000, and the cost of precautions that can prevent its occurrence is \$50, failing to take these precautions would be inefficient, hence unreasonable under the Hand formula. Imposing liability for negligently caused harm would force the potential injurer to choose between taking the necessary precautions for \$50 and preventing the harm, or failing to take them and bearing the expected harm of \$100. A rational person would choose to take the cost-justified precautions.

B. *The Consequent Evolution*

If negligence law is indeed intended to prevent inefficient conduct, the standard of care must be accurately set and effectively enforced.¹⁰⁹ Assuming perfect enforcement, all costs and benefits arising from each course of action must be included in the assessment of reasonableness. For example, if taking precautions for \$50 can eliminate a risk of \$45 to $P1$ and an additional risk of \$10 to $P2$, failing to take them is inefficient ($\$50 < \$45 + \$10$). Ignoring the risk to $P2$ would lead to the conclusion that such conduct is reasonable because the cost of precautions is greater than the risk considered ($\$50 > \45). Courts and scholars have realized that the rudimentary Hand formula did not accurately capture the true costs (and benefits) of each of the alternative courses of action and proposed several adjustments. A few prominent examples will suffice.

First, the Hand formula compared the expected harm to the plaintiff with the cost of precautions for the defendant. Yet from an

L.J. 513, 545 (2003); Keith N. Hylton, *Punitive Damages and the Economic Theory of Penalties*, 87 GEO. L.J. 421, 421 (1998); Miller & Perry, *supra* note 106, at 328; A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 873 (1998).

108 Adar & Perry, *supra* note 105, at 215.

109 Enforcement raises various challenges that lie outside the scope of this Article. See, e.g., Ronen Perry & Elena Kantorowicz-Reznichenko, *Income-Dependent Punitive Damages*, 95 WASH. U. L. REV. 835, 846 (2018) (discussing possible reasons for underenforcement); Gary T. Schwartz, *Empiricism and Tort Law*, 2002 U. ILL. L. REV. 1067, 1071 (same).

economic perspective, if the expected harm is PL , the cost of precautions is B , and $PL > B$, failing to take these precautions would necessarily be inefficient (hence unreasonable) only if taking them can *eliminate* the risk. If taking these precautions only *reduces* the risk it may well be that, while $PL > B$, the reduction in risk is lower than the cost of precautions and taking them is inefficient. For example, assume that there is a 10% chance that D 's conduct would cause P a \$1,000 loss and that D can take precautions that reduce the probability of injury to 6% for \$50. The cost of precautions is lower than the expected harm ($\$50 < \100), but failing to take them is not inefficient because they do not eliminate a risk of \$100. They only reduce the risk by \$40 at a cost of \$50. Few precautions (except for giving up the risk-creating activity) can eliminate activity-related risks. If the precautionary measure in question only reduces the probability of harm, its cost must be compared with the respective *reduction* in expected harm.¹¹⁰ Section 3 of the *Third Restatement* explicitly endorsed this refinement.¹¹¹

Second, the Hand formula seems to compare two *total* values: the total cost for the defendant of the specific precaution in question and the total benefit for the plaintiff from using this precaution.¹¹² However, the potential injurer can normally take different precautions. A higher level of care is usually more costly and results in a lower probability of harm, but the marginal benefit of investing in precautions in terms of reduction in expected harm is typically diminishing. Thus, comparing total expected harm with the total cost of precautions might generate inefficient results.¹¹³ For example, assume that D 's conduct generates a risk to P , estimated at \$200. D can take precautions that cost \$20 and reduce P 's expected harm to \$50 or precautions that cost \$100 and eliminate the risk (expected harm \$0). If the court tests the reasonableness of each level of care by comparing total

110 See Miller & Perry, *supra* note 106, at 332.

111 Section 3 refers to "the burden of precautions to eliminate or reduce the risk." RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 (AM. L. INST. 2010); see also *id.* § 3 cmt. i ("[T]he party alleging negligence need not prove that the precaution would have entirely eliminated the risk of harm. The party can instead prove that the precaution . . . would have reduced that risk.").

112 LANDES & POSNER, *supra* note 12, at 87 ("The formula is not explicit about whether accident costs and benefits are to be considered in the correct marginal rather than total terms.").

113 See *id.* at 87, 99–100, 108 (discussing the importance of considering marginal values); see also EPSTEIN & SHARKEY, *supra* note 63, at 175; FARNSWORTH & GRADY, *supra* note 63, at 147–48; STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW 6–9 (1987) (same); Peter Z. Grossman, Reed W. Cearley & Daniel H. Cole, *Uncertainty, Insurance, and the Learned Hand Formula*, 5 LAW PROBABILITY & RISK 1, 2 n.4 (2006) (same); Miller & Perry, *supra* note 106, at 332–33 (same).

expected harm with the total cost of precautions, failing to take the higher level of care might seem unreasonable because the cost of prevention (\$100) is lower than the expected harm that can be prevented (\$200). But compelling *D* to take this level of care would be inefficient because its social cost (\$0 + \$100) is higher than that of the lower level of care (\$20 + \$50 = \$70). To achieve efficient outcomes, the marginal cost of any increase in the level of care (e.g., from \$20 to \$100 in the hypothetical) must be compared with the marginal reduction in expected harm (from \$50 to \$0). In algebraic terms, the standard of care must be set at the highest level x that satisfies $(P_{x-1} - P_x)L > B_x - B_{x-1}$. The reporters for the *Third Restatement* explained that courts do not normally use marginal values and section 3 did not endorse this adjustment.¹¹⁴ Yet normative commitment to efficiency necessitates a conceptual change. Law-and-economics scholars have long argued that the Hand formula should be reinterpreted as applying to marginal values.¹¹⁵

Third, the Hand formula compares *the potential victim's* expected harm with the potential injurer's cost of precautions. However, the defendant's conduct might also put the defendant at risk, and self-imposed risk is part of the aggregate cost of failing to take precautions. For example, speeding drivers put not only passengers and pedestrians at risk but also their own life, limb, and property. In an article published more than two decades ago, Robert Cooter and Ariel Porat argued that courts generally neglect the fact that precautions can reduce not only the risk to others but also the risk to the potential injurer and, therefore, set the standard of care too low.¹¹⁶ They opined that if different precautions can reduce the risk to potential victims and to the potential injurer, both risks should be taken into account in determining the required level of care.¹¹⁷ This can be done within the Hand formula by redefining the cost of precautions as the net cost for the potential injurer—burden minus benefit.¹¹⁸ Courts should subtract the reduction in risk to the potential injurer attained by using certain

114 See RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 reporters' note cmt. i (AM. L. INST. 2010) (noting that courts "typically allow the plaintiff to identify the precaution the defendant might have taken, and then to compare the situation of the defendant's actual conduct to what the situation would have been had the defendant implemented the proposed precaution"). But see LANDES & POSNER, *supra* note 12, at 99–102 (arguing that "[c]ourts apply the formula in marginal rather than total terms," *id.* at 102).

115 See *supra* note 113.

116 Cooter & Porat, *supra* note 80, at 20; see also EPSTEIN & SHARKEY, *supra* note 63, at 175.

117 Cooter & Porat, *supra* note 80, at 20.

118 *Id.* at 20–21.

precautions from the cost of these precautions for that person.¹¹⁹ A few courts have already acknowledged and applied this insight,¹²⁰ but it has not become the mainstream position.

Fourth, the Hand formula focuses on defendants' *levels of care* and ignores their *levels of activity*. Under a traditional negligence regime, potential injurers can escape liability by taking a reasonable level of care. They might therefore raise their level of activity above the optimum to the extent that the marginal benefit for them from such an increase is greater than the marginal cost of reasonable precautions that they need to bear to avoid liability.¹²¹ Admittedly, there is scarce judicial acknowledgment of this fundamental problem in U.S. caselaw.¹²² Two possible adjustments were proposed to address it. A conceptually simple solution is to consider the reduction in activity level as a possible (extreme) precaution, whose cost equals the utility of the forgone marginal activity for the defendant.¹²³ This does not entail any modification of the formula, only a somewhat creative application. An alternative solution, discussed in academic literature,¹²⁴ partly acknowledged by the *Third Restatement*,¹²⁵ but only rarely

119 *Id.* at 28–29.

120 *See, e.g.*, CivA 3510/99 Valas v. Egged, 55(5) PD 826, 844 (2001) (Isr.).

121 *See* ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 348–49 (5th ed. 2008) (explaining the prospect of excessive activity levels under a negligence regime); EPSTEIN & SHARKEY, *supra* note 63, at 169 (same); LANDES & POSNER, *supra* note 12, at 66–73 (same); STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 196 (2004) (same); SHAVELL, *supra* note 113, at 23–25, 66–71 (same); John C. Coffee, Jr., *Gatekeeper Failure and Reform: The Challenge of Fashioning Relevant Reforms*, 84 B.U. L. REV. 301, 347 (2004) (same); A. Mitchell Polinsky, *Strict Liability vs. Negligence in a Market Setting*, 70 AM. ECON. REV. 363, 366–67 (1980) (same); David Rosenberg, *The Judicial Posner on Negligence Versus Strict Liability*: Indiana Harbor Belt Railroad Co. v. American Cyanamid Co., 120 HARV. L. REV. 1210, 1212 (2007) (quoting *Ind. Harbor Belt R.R. Co. v. Am. Cyanamid Co.*, 916 F.2d 1174, 1177 (7th Cir. 1990)) (same); Steven Shavell, *Strict Liability Versus Negligence*, 9 J. LEGAL STUD. 1, 2–3 (1980) (same); Alan O. Sykes, *Strict Liability Versus Negligence in Indiana Harbor*, 74 U. CHI. L. REV. 1911, 1919–20 (2007) (same).

122 *See* *Bethlehem Steel Corp. v. EPA*, 782 F.2d 645, 652 (7th Cir. 1986) (distinguishing between taking more care and reducing the amount of activity in a regulatory context).

123 *Levi v. Sw. La. Elec. Membership Coop.*, 542 So. 2d 1081, 1087 (La. 1989) (“The cost of prevention is what Hand meant by the burden of taking precautions against the accident. It may be the cost of installing safety equipment or otherwise making the activity safer, or the benefit foregone by curtailing or eliminating the activity.”); Gilles, *supra* note 64, at 844 (“[S]omeone applying the Hand Formula approach can treat ‘refraining from the activity’ as the relevant precaution to be evaluated.”).

124 *See, e.g.*, SHAVELL, *supra* note 113, at 25; Steven P. Croley & Jon D. Hanson, *What Liability Crisis? An Alternative Explanation for Recent Events in Products Liability*, 8 YALE J. ON REG. 1, 71 (1990) (“In an ideal negligence regime, courts would alter the activity levels of potential injurers by taking activity levels into account in their negligence determinations.”).

125 *See* RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 cmt. j (AM. L. INST 2010) (“On some occasions, the party might claim that the

endorsed by the courts,¹²⁶ is to redefine unreasonableness as taking suboptimal precautions *or* engaging in supraoptimal activity levels. Both methods are facing the challenges of identifying the optimal level of activity and establishing the defendant's actual level.¹²⁷

Other solutions lie outside the law of negligence. A partial solution is to opt for strict liability: according to economic theory, strict liability induces potential injurers to choose not only the efficient level of care but also the efficient level of activity.¹²⁸ The problem is that strict liability, even when accompanied by a contributory negligence defense to secure potential victims' optimal level of care, might lead potential victims to engage in excessive activity.¹²⁹ Preferring strict liability to negligence may be defensible if the risk of potential injurers' excessive activity is a more troubling concern in the particular context than the risk of potential victims' excessive activity and vice versa.¹³⁰ Finally, the risk of excessive activity can be addressed "through licensing or other types of direct regulation."¹³¹

III. REDEFINING REASONABLENESS

A. *The Problem of Harmful Precautions*

Part I presented existing law: the dominant definition of reasonableness is the Hand formula, which compares the magnitude of the risk created by the defendant with the cost of precautions that can eliminate or reduce the risk; and the cost of precautions is that borne by the potential injurer. Part II extracted the underlying rationale for this definition and explained that the need to better align the means with the end has already spawned several adjustments. This Part argues that focusing on the cost of precautions for the defendant is inconsistent with the same rationale and might result in excessive care.

actor's very decision to engage in a particular activity created an unreasonable risk of harm."). The comment focuses on the actor's "entire activity" and the "decision to engage in [a particular] activity." *Id.* It does not explicitly discuss a decision to increase the activity level, namely, to engage in a particular activity again or further.

126 See, e.g., CivA 6296/00 Kibbutz Malkiya v. State of Israel, 59(1) PD 16, 21–22 (2004) (Isr.) (relying on Shavell, *supra* note 113, at 46, and concluding that the defendant's level of activity was not unreasonable).

127 See LANDES & POSNER, *supra* note 12, at 69–71; A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 53 (3d ed. 2003); SHAVELL, *supra* note 113, at 25–26.

128 SHAVELL, *supra* note 113, at 23.

129 *Id.* at 27–28.

130 POLINSKY, *supra* note 127, at 54; SHAVELL, *supra* note 113, at 29; Shavell, *supra* note 121, at 19; see also COOTER & ULEN, *supra* note 121, at 349.

131 Kyle Logue & Ronen Avraham, *Redistributing Optimally: Of Tax Rules, Legal Rules, and Insurance*, 56 TAX L. REV. 157, 241 n.256 (2003).

Therefore, an additional adjustment is necessary. The cost of each precaution for people other than the defendant¹³² must be added to the burden on the defendant and the risks arising from the defendant's activity at each level of care to produce the total cost of the interaction. The standard of reasonable care should then be set, as per the economic rationale, at a level that minimizes this total cost, and liability should be imposed when unreasonable conduct materializes in harm. Section A lays down the justification for the proposed change, and the following Sections provide guidelines for its implementation.

Assume that *D* engages in an activity that may result in a \$100,000 harm to *P*. *D* needs to choose among three levels of care: no precautions at all, where the probability of harm to *P* is 10%; medium level of care at a cost of \$4,000 for *D*, where the probability of harm to *P* is 5%; and high level of care at a cost of \$11,000 for *D*, where the risk to *P* is eliminated. This hypothetical is straightforward. The total cost of the interaction is \$10,000 at the low level of care (expected harm \$10,000, cost of precautions \$0), \$9,000 at the medium level (expected harm \$5,000, cost of precautions \$4,000), and \$11,000 at the highest level (expected harm \$0, cost of precautions \$11,000). The total cost of the interaction is minimal at the medium level of care, so this is the efficient and hence reasonable level, and *D* should be liable in negligence if they fail to comply with the ensuing standard. Table 1 depicts this scenario.

TABLE 1: ONLY INJURER'S COST OF PRECAUTION CONSIDERED

Level of care	Cost of care	Expected harm	Total cost
Low	0	10,000	10,000
Medium	4,000	5,000	9,000
High	11,000	0	11,000

Now assume that taking precautions might have a negative impact on people other than the potential injurer. The cost for others may be a newly imposed burden or a lost advantage, and it may be certain or uncertain (so its *ex ante* value would equal the product of its magnitude and probability). But its existence necessarily changes the aggregate cost-benefit calculation and possibly also the socially optimal level of care. Let us tweak the above case so that taking the medium level of care denies *Q* a benefit estimated at \$1,500 and taking the

¹³² Courts should consider not only the societal cost of the extreme measure of refraining from the activity, as some already do, but also the negative externalities of *each* precautionary measure.

highest level of care denies *Q* a benefit estimated at \$2,000. This revised scenario shall hereinafter be referred to as “the hypothetical.” The total (social) cost of the interaction remains \$10,000 at the low level but increases to \$10,500 at the medium level (expected harm \$5,000, cost of precautions \$4,000 for *D* and \$1,500 for *Q*) and to \$13,000 at the highest level (cost of precautions \$11,000 for *D* and \$2,000 for *Q*). Under these circumstances, the social cost of the interaction is minimal at the lowest level of care. To the extent that the standard of reasonable care should be set at the socially optimal level, the low level is no longer unreasonable. Table 2 depicts this scenario.

TABLE 2: ALL COSTS OF PRECAUTION CONSIDERED

Level of care	Cost of care for injurer	Cost of care for others	Expected harm	Total cost
Low	0	0	10,000	10,000
Medium	4,000	1,500	5,000	10,500
High	11,000	2,000	0	13,000

Ignoring the lost benefit to *Q* would lead to the conclusion that a reasonable person must take the medium level of care (as per Table 1), which is in fact supraoptimal (as per Table 2). Taking the socially desirable level of care (low) would be deemed unreasonable and hence negligent. Imposing liability for negligence would then result in overdeterrence: *D* would rather take socially excessive precautions for \$4,000 and evade liability than fail to take these precautions and face an expected liability of \$10,000. To avoid this unwarranted outcome, the law must include the negative externalities of the available precautions in the cost-benefit assessment of reasonableness. This adjustment, just like those previously discussed, aims to better align the legal standard of reasonable care with the economically efficient level of care and ensure that risk-creators are not overdeterred by being severely penalized when acting efficiently. Through inclusion of the negative externalities of precautions in the legal analysis, negligence law can more accurately realize its underlying goal.

This compelling idea undoubtedly complicates the assessment of reasonableness. Three fundamental questions concerning its application must be addressed: (1) Whose benefits from failure to take precautions should be considered? (2) How should these costs be integrated into the legal analysis? (3) How far should the inclusion of negative externalities of precautions go? The following Sections answer these questions, concluding that courts must seek out and add to the cost-of-precaution side of the Hand formula all reasonably

foreseeable negative externalities, whether borne by those exposed to the risk that the specific precaution intended to reduce or by third parties.

B. *Potential Beneficiaries*

The first question in implementing the theoretical idea is where negative externalities of precautions can be found or, in other words, who can benefit from the defendant's failure to take precautions. The beneficiaries can include (1) the potential injurer (who ultimately becomes the defendant), (2) those exposed to the risk that the precautions in question aim to reduce (including the potential victim who ultimately becomes the plaintiff), and (3) third parties. The first type is easiest to tackle as it does not require any legal modification. Any cost that the potential injurer saves and any benefit that they acquire from failing to take a particular precaution constitute a cost of precaution *for the defendant* which is compared with the expected harm under the traditional Hand formula. For example, if by reducing speed a driver might be late for a musical, the lost enjoyment is unquestionably an integral part of the cost of this precaution.

Frequently, those who benefit from failure to take precautions against a particular risk are the potential victims of the same risk (including the future plaintiff). In other words, the precautionary measure reduces the risk to some people but at the same time subjects them to another risk or denies them a certain benefit. These effects should be taken into consideration in assessing reasonableness not only from an economic perspective but also from a corrective justice perspective because they reduce the expected harm to potential victims at lower levels of care. Obiter dicta in a couple of exceptional cases provide useful illustrations. In *Benson v. Penn Central Transportation Co.*, the plaintiff was injured in a road accident while traveling in the defendant's cab.¹³³ The Supreme Court of Pennsylvania found that the trial court erred in preventing the jury from considering whether the defendant was negligent in failing to install seatbelts in its cabs.¹³⁴ It pithily noted that a properly instructed jury could "conclude that the reduction of risk accomplished by the use of seatbelts did not merit the social cost of higher fares or reduced service that may accompany requiring the cab company to install seatbelts in all its cabs."¹³⁵ Put differently, the precautionary measure in question (installing seatbelts) could reduce the risk of physical injury to potential passengers

133 342 A.2d 393, 394 (Pa. 1975).

134 *Id.* at 397.

135 *Id.*

but at the same time deny them a benefit (the availability and affordability of cabs).

In *Munn v. Hotchkiss School*, the plaintiff contracted tick-borne encephalitis on an educational trip abroad organized by her school.¹³⁶ She argued that the school was negligent in failing to ensure that students took protective measures against foreseeable insect bites that could lead to serious illness.¹³⁷ In a concurring opinion, Judge Espinosa of the Supreme Court of Connecticut mentioned the possible costs of using precautions for the students (the group of potential victims to which the plaintiff belonged). Protective clothing would have caused great discomfort to the students who were engaged in physical activity at a very high temperature, and using strong chemical insecticides on one's body might cause discomfort at the least, if not real risk.¹³⁸ In addition to the costs of specific precautions against insect bites, students might suffer from the aggregation of precautions against multiple risks. Tourists are exposed to a multitude of risks, so if the school is required to protect the students from one it must take comparable precautions with respect to all.¹³⁹ Too many warnings and preparation against various risks might generate "information overload" that would divert students' attention from the more credible risks and reduce their effectiveness.¹⁴⁰ The aggregation of precautions might also be oppressive;¹⁴¹ too many precautions might deprive students of the benefits of engaging in activities that are not completely sanitized of risk, namely the opportunity for independence, experiential learning, overcoming challenges, and personal growth.¹⁴²

Lastly, those who benefit from the potential injurer's failure to take a particular precaution, whose benefits should be considered in the analysis of reasonableness in its economic sense, may be neither the potential injurer nor those exposed to the risk that this precaution is aimed to reduce (including the soon-to-be plaintiff). Taking precautions to reduce the risk to one group (or person) might expose people in a different group to a new or increased risk or deprive them of an existing benefit. For example, by reducing the speed of the bus presented in this Article's Introduction, the driver can reduce the expected harm to pedestrians but at the same time increase the risk to hospital patients in need of urgent treatment. The negative effects that taking precautions to protect some people might have on others are

136 165 A.3d 1167, 1172 (Conn. 2017).

137 *Id.*

138 *Id.* at 1207 (Espinosa, J., concurring).

139 *Id.* at 1205.

140 *Id.* at 1206.

141 *Id.* at 1208.

142 *Id.* at 1209.

relevant from an economic perspective (but not from a conventional corrective justice viewpoint, which considers only the parties to the interaction). Thus, their incorporation into the assessment of reasonableness is required for the Hand formula to serve its primary goal. An exceptionally small number of cases, some of them predating the emergence of the Hand formula, considered such externalities. They can now serve as illustrations of the proper analysis.

In *Cooley v. Public Service Co.*, decided several years before *Carroll Towing*, a power cable fell on a phone line during a storm, producing a loud explosive noise on the plaintiff's phone which resulted in physical injury.¹⁴³ The plaintiff argued that the risk of contact between the power cable and the phone line could have been prevented by the installation of wire-mesh baskets at crossover points.¹⁴⁴ The Supreme Court of New Hampshire concluded that these baskets would not have prevented such contact (so the risk might have been reduced but not eliminated) and that they might have kept live power cables hanging in the air, namely without grounding, putting people on the street at risk of electrocution and death.¹⁴⁵ The risk to people on the street from using the precautions in question was much greater than the risk to phone users from failing to use them, so the power company was not negligent.¹⁴⁶

In the more recent case of *Boykin v. Louisiana Transit Co.*, a pedestrian who crossed a highway was hit by a vehicle and sued the Department of Transportation and Development (DOTD) for failing to set the cycle for the traffic signal so as to afford pedestrians sufficient time to observe traffic and safely cross the road.¹⁴⁷ The trial judge and the court of appeal concluded that the accident would not have occurred had the traffic signal allowed pedestrians more time to cross.¹⁴⁸ The DOTD argued that it decreased the duration of the red light for vehicles to reduce the number of unnecessary stops of highway traffic and the likelihood of highway collisions.¹⁴⁹ The Supreme Court of Louisiana held that "[t]he determination of whether the DOTD violated its duty of reasonable care to pedestrians includes balancing the probability and seriousness of any expectable injury with the burden of taking adequate precautions against the risk of such injury *and any adverse consequences of such precautions.*"¹⁵⁰ In this case, the traffic light

143 10 A.2d 673, 674 (N.H. 1940).

144 *Id.* at 675.

145 *Id.* at 675–76.

146 *Id.* at 676–77.

147 707 So. 2d 1225, 1226 (La. 1998).

148 *Id.* at 1228–29.

149 *Id.* at 1229–30.

150 *Id.* at 1231 (emphasis added).

design “balanced the benefit to highway traffic safety against concerns for pedestrian safety. . . . The longer the red signal for highway traffic, the greater the number of vehicles stopped,” and hence “the greater the risk of a collision with a stopped vehicle.”¹⁵¹ Slightly enhancing the safety of a few pedestrians crossing the highway would come at the price of greater dangers for vehicles.¹⁵²

In *Eimann v. Soldier of Fortune Magazine, Inc.*, the son and mother of a murder victim brought a wrongful death action against a magazine for publishing a classified ad through which the victim’s husband hired the advertiser to kill her.¹⁵³ For the most part, the court followed the conventional path. Relying on *Carroll Towing*, it held that while the classified ads published by the magazine “presented more than a remote risk” of “serious harm,”¹⁵⁴ the burden of preventing the harm was onerous.¹⁵⁵ To eliminate the risk, the magazine would have to investigate its advertisers about the accuracy of the ads at a considerable cost or refrain from publishing ambiguous classified ads and lose revenue.¹⁵⁶ The court concluded that the expected harm did not outweigh the relevant burden, namely the burden for the defendant.¹⁵⁷ Between the lines, however, the court took into consideration the cost of precautions for others. It discussed the benefits of commercial speech (advertising) for advertisers and consumers, which might be lost if advertising were limited as suggested,¹⁵⁸ and stated: “Given the pervasiveness of advertising in our society and the important role it

151 *Id.* at 1232.

152 *Id.* A similar argument was made by the defendant but rejected by the court in *Bernier v. Boston Edison Co.*, 403 N.E.2d 391 (Mass. 1980). A pedestrian was injured by an electric light pole owned by the defendant which fell on him after being struck by a car. *Id.* at 394. The defendant argued that using stronger poles could have reduced the risk to pedestrians but would have increased the risk to motorists hitting the stronger poles. *Id.* at 397. The Supreme Judicial Court of Massachusetts concluded that the company paid scant attention to the safety of pedestrians and motorists alike and that the risk to pedestrians was at any rate much greater (implying that the risk to third parties is relevant). *Id.* In *Lucchese v. San Francisco–Sacramento Railroad Co.*, also predating the Hand formula, a train collided with a truck, and the truck’s passenger sued the railway company for his injuries. 289 P. 188, 188–89 (Cal. Dist. Ct. App. 1930). The court acknowledged that the train could stop more abruptly, arguably reducing the risk to the truck, but that this method could have caused injuries to its passengers. *Id.* at 189. This case is somewhat different from those discussed here because railroad companies owe their passengers a stricter duty to exercise the utmost care for their safety, and this duty trumps their duty to third parties, which is only a duty to exercise ordinary care. *Id.* But it illustrates the possible cost of using precautions for people other than the defendant.

153 880 F.2d 830, 831–32 (5th Cir. 1989) (applying Texas law).

154 *Id.* at 835.

155 *Id.* at 835–37.

156 *Id.*

157 *Id.* at 837.

158 *Id.* at 836–37.

plays, we decline to impose on publishers the obligation to reject all ambiguous advertisements for products or services that might pose a threat of harm.”¹⁵⁹

C. *The Mode of Integration*

How should the negative externalities of precautions be conceptually integrated into the Hand formula? The *expected harm* at each level of care, which is used to identify the standard of care, can include not only the risk that ultimately materializes but also the costs that people other than the potential injurer incur when the latter opts for the respective level of care. Adding these costs to the expected harm would ensure that the assessment of reasonableness is aligned with the total social cost. The structure of the Hand formula is preserved because the expected harm to others, which is now more inclusive, is balanced against the cost of precautions for the potential injurer. In the hypothetical presented in Section III.A, the expected harm to others would then be \$10,000 at the lowest level of care, \$5,000 + \$1,500 = \$6,500 at the medium level, and \$2,000 at the highest level. Table 3 represents this adjustment. Assigning the adjusted marginal values of *B* and *PL* to the Hand formula would lead to the conclusion that the lowest level of care is the efficient and hence reasonable one. If the level of care is increased from low to medium, the marginal reduction in expected harm would be \$10,000 – \$6,500 = \$3,500 whereas the marginal cost of precautions would be \$4,000, so a reasonable person should not take this course of action ($\$3,500 < \$4,000$ or $\Delta PL < \Delta B$).

TABLE 3: COSTS FOR OTHERS ADDED TO EXPECTED HARM

Level of care	Cost of care for injurer	Expected harm to victims	Total cost
Low	0	10,000 + 0	10,000
Medium	4,000	5,000 + 1,500	10,500
High	11,000	0 + 2,000	13,000

Alternatively, the cost of precautions that is compared with the expected harm can be redefined to include the costs of taking these precautions for all those affected. This is a conceptually different, yet algebraically identical, solution. In other words, it requires redefinition of one of the variables in the Hand formula but yields the same results. In the hypothetical above, the cost of precautions would be \$0

159 *Id.* at 838.

at the low level of care, $\$4,000 + \$1,500 = \$5,500$ at the medium level, and $\$11,000 + \$2,000 = \$13,000$ at the high level. Table 4 represents this adjustment. Assigning the adjusted marginal values of B and PL to the Hand formula would once again lead to the conclusion that the lowest level of care is the reasonable one. Comparing the marginal reduction in expected harm at the medium level of care ($\$10,000 - \$5,000 = \$5,000$) with the marginal cost of precautions ($\$5,500$) leads to the conclusion that a reasonable person should not take the additional precautions ($\$5,000 < \$5,500$ or $\Delta PL < \Delta B$).

TABLE 4: TOTAL COST OF PRECAUTIONS CONSIDERED

Level of care	Cost of care for everyone	Expected harm to victims	Total cost
Low	0	10,000	10,000
Medium	4,000 + 1,500	5,000	10,500
High	11,000 + 2,000	0	13,000

The alternative solution is conceptually neater. If reasonableness is assessed with a cost-benefit formula, that is, by comparing the disadvantages of the defendant's level of care with its advantages, all costs of a particular behavioral change must be tallied up and balanced against all benefits. The benefit of an increase in the level of care is its aggregate positive impact, which usually consists of the reduction in expected harm to potential victims. The cost is the aggregate negative impact, which may consist of any outlay, lost opportunity, discomfort, and aggravation incurred by any person—the defendant as well as others. The cost of precautions in the Hand formula should be redefined to include the cost for people other than the potential injurer, and the marginal cost of precautions for all must then be compared with the marginal reduction in expected harm.

D. *The Limits of Inclusion*

A relevant criterion in implementing the theoretical idea is the defendants' reasonable foreseeability of the benefits that their failure to take precautions may confer on others, either those exposed to the risk that these precautions aim to reduce or third parties. In some cases, the potential injurer *knows* that such failure benefits others. Whether these benefits are intended or unintended, the defendant has the ability and incentive to provide the necessary information about the negative impact of precautionary measures to the court. For example, in the Israeli case of *Estate of Doe v. State of Israel – Center for*

*Mental Health “Maale Hacarmel,”*¹⁶⁰ a patient in the open ward of a state psychiatric hospital committed suicide by hanging herself from an outdoor gutter and jumping off a picnic table, which was placed underneath that gutter.¹⁶¹ The deceased’s estate argued, inter alia, that the hospital staff should have taken precautionary measures, such as additional supervision or removal of picnic tables, trees, and gutters from the hospital yard.¹⁶² The court agreed with the defendant that failing to take these measures was not negligent because of the negative effect that denying access to a tranquil outdoor space might have on the welfare and recovery of all patients, including the deceased.¹⁶³ In other words, the defendant knew that maintaining an outdoor recreation area exposed the patients to a certain risk but at the same time contributed to their well-being. Similarly, the defendant in *Boykin v. Louisiana Transit Co.* argued that it intentionally failed to take the level of care demanded by the plaintiff (allowing pedestrians more time to cross) because such failure conferred a significant benefit on other groups, that is, drivers and their passengers.¹⁶⁴ In other cases, potential injurers do not know about the negative impact of taking precautions but can reasonably predict it ex ante and provide relevant evidence ex post.

Naturally, many of the benefits that failing to take precautions confers on others are unintended, unknown, and cannot be reasonably predicted by potential injurers. For example, a bus driver who lacks specific knowledge about the identities and circumstances of the passengers cannot reasonably foresee who might be harmed by slowing the bus to reduce the risks to pedestrians, other vehicles, or the passengers themselves. One passenger might miss a theatrical show, another might be late for an important meeting and lose a lucrative deal, a third might miss the last few words of a dying loved one, a medical professional might arrive too late to save a patient, and so on. In theory, these consequences are part of the cost of precautions that should be considered in assessing the reasonable level of care. However, negative externalities that are not reasonably foreseeable should be disregarded for two cumulative reasons.

First, the costs of information needed to incorporate these externalities into the judicial assessment of reasonableness are prohibitive. If the defendant had no prior knowledge or means of knowledge of the harm that others might incur when certain precautions are taken,

160 CivA 7276/18 Estate of Jane Doe v. State of Israel – Center for Mental Health “Maale Hacarmel,” Nevo Legal Database (Mar. 2, 2021) (Isr.) (Stein, J.).

161 *Id.* para. 1.

162 *Id.* para. 12 (Sohlberg, J.).

163 *Id.* para. 14 (Sohlberg, J.); *id.* para. 5 (Hendel, J.).

164 707 So. 2d 1225, 1229–30 (La. 1998).

the defendant would not normally acquire such information after the incident and would be unable to provide the necessary evidence to the court. Admittedly, where the harmful consequences of taking precautions can reduce the level of care owed to the plaintiff, the defendant might have an incentive to speculate about such consequences. However, courts cannot rely on speculation in deciding cases.¹⁶⁵ More importantly, if courts considered speculative consequences, plaintiffs would have an incentive to speculate that failure to take precautions might disadvantage other unknown parties. The speculated advantages of such failure would be canceled out by the speculated disadvantages. The net contribution of unforeseeable consequences of failure to take precautions to the total cost could be negligible and justifiably ignored.

If those exposed to the risk that the specific precaution in hand could reduce also benefitted, without the defendant's knowledge, from failure to take this precaution, the plaintiff may possess information that could help the court make a more accurate assessment of reasonableness. Nevertheless, the plaintiff has little incentive to disclose such information for an obvious reason. If it transpires, through the plaintiff's disclosure, that the social cost of the precautionary measure that the defendant could take was greater than its cost for the defendant, the court might conclude that failing to take this measure was reasonable, thereby undermining the plaintiff's claim.

Other parties (namely those not exposed to the same risk as the plaintiff) who benefitted, without the defendant's knowledge, from the failure to take precautions are not normally aware of the legal dispute in the absence of media coverage and therefore will not contribute relevant evidence. Even if they know about the dispute, they may be unaware of the benefit that the specific defendant's course of action conferred on them. Even if they are aware of the benefit, they have little incentive to get involved in someone else's case (unless their interaction with the defendant is continuous or recurring and they can benefit again from a similar choice of precautions). The cost and trouble of coming forward are not negligible, and the expected gain is nil because they did not incur any harm and were not exposed to any unreasonable risk. Consequently, the administrative cost of establishing the impact of failure to take precautions on people other than the defendant, when such an impact is not reasonably

165 See, for example, *Bernier v. Boston Edison Co.*, where the court found disingenuousness in the defendant's argument that had it taken precautions to protect the group to which the plaintiff belonged (pedestrians) it might have put other people (motorists) at greater risk: "the evidence shows [the defendant] paid scant attention . . . to the safety [of] either . . ." 403 N.E.2d 391, 397 (Mass. 1980).

foreseeable, might outweigh the benefit in terms of reducing the total cost of the interaction.

Second, in making behavioral choices people consider only the costs and benefits they can foresee.¹⁶⁶ Unforeseeable costs cannot affect behavior. Accordingly, incorporating unforeseeable benefits of failure to take certain precautions into the cost-benefit assessment of reasonableness (ex post) would generate a standard of care that is inconsistent with the standard that potential injurers candidly believe they must satisfy (ex ante).¹⁶⁷ For example, if the expected harm to P is \$100, and D can eliminate the risk for \$50, imposing liability for negligence would lead D to take these precautions because their cost is lower than the expected liability in case of failing to take them ($\$50 < \100). Now assume that taking said precautions denies Q a \$60 benefit that D cannot reasonably foresee. If courts take into account unforeseeable externalities, not taking these precautions will be deemed reasonable ex post by a fully informed court (because $B > PL$, $\$50 + \$60 > \$100$) but unreasonable ex ante by the potential injurer D (because $\$50 < \100). D will take the undesirable precautions. Judicial zeal would involve a considerable administrative cost but not make potential injurers' conduct more efficient.

In conclusion, courts should consider the negative impact of precautions on people other than the defendant only to the extent that the defendant can establish that such impact was reasonably foreseeable when deciding on the level of care.

E. Comments on Related Literature

As explained in detail above, courts and scholars tend to ignore the negative effects that taking additional precautions might have on people other than the defendant in setting the standard of care. This Article calls for a more inclusive assessment of reasonableness, in line with the underlying goal of the Hand formula. However, the literature has not been completely oblivious to the adverse effects that taking precautions to reduce the risk to some people might have on the same people or others (the benefits that people other than the defendant could derive from failure to take precautions). Ariel Porat arguably discusses such effects in *Offsetting Risks*¹⁶⁸ and, again, in *Offsetting*

166 Grossman et al., *supra* note 113, at 3 (“Parties will not modify their behaviour unless they comprehend the consequences of their actions in advance.”).

167 Ronen Perry, *Re-torts*, 59 ALA. L. REV. 987, 1004–06 (2008) (explaining that the standard of care that potential injurers believe they must satisfy might diverge from the optimal standard due to their lack of information).

168 See Porat, *supra* note 11.

Benefits (with Eric Posner).¹⁶⁹ But Porat's work remains quite exceptional and esoteric, and its scope, assumptions, method, and operative recommendations are different from mine.

In *Offsetting Risks*, Porat deals with cases in which the defendant negligently chose among several levels of risk, suggesting that risks avoided by the negligent choice should be deducted from the expected damages payable by the negligent actor. For example, if *D* chose course of action *A* which created a risk of 500 to *P*, rather than course of action *B*, which would have created a risk of 400 to *P* or to another person (the offsetting risk), *D*'s expected liability should not be 500 (as existing tort law mandates) but $500 - 400 = 100$.¹⁷⁰ The justification is that failure to reduce expected liability of negligent wrongdoers to match the expected social cost of their wrongdoing might result in overdeterrence.¹⁷¹ Risks generated by taking a superior precautionary measure (here 400) are, in my terminology, negative externalities of precautions, so Porat seemingly addresses the problem identified here. In fact, he does not.

First and foremost, Porat considers the positive externalities of wrongdoing rather than the negative externalities of precautions, consequently focusing on the scope of damages rather than the standard of care.¹⁷² In other words, he assumes negligent conduct and advocates a reduction in damages payable by the negligent wrongdoer in light of the risks avoided by the wrongdoing.¹⁷³ This stands in stark contrast to the readjustment of the standard of care proposed here, namely the incorporation of the negative externalities of precautions into the assessment of reasonableness. This Article inquires when a defendant should be held negligent, not what the scope of liability for negligence should be.¹⁷⁴ It considers the negative externalities of precautions in

169 See Porat & Posner, *supra* note 11.

170 See Porat, *supra* note 11, at 245–46, 251, 254, 275.

171 *Id.* at 245–46 (“Liability for either less or more than the harm inflicted by the injurer leads to underdeterrence or overdeterrence, respectively [E]xcessive liability results in overdeterrence . . .”).

172 *Id.* at 246.

173 *Id.* at 252, 253 (“[T]he negligent failure to secure the victim’s interests, which in turn materialized into a harm to the victim, is accompanied by a decrease in the risk to others’ interests. . . . [I]f the same negligence that increased one risk also decreased a separate risk, then both risks should be taken into account by courts when awarding damages. . . . Applying the ORP would result in lowering the damages . . .”).

174 Porat’s analysis of *Cooley v. Public Service Co.*, 10 A.2d 673 (N.H. 1940), highlights this difference. According to him, the Court could have imposed liability on the telephone company but reduced damages “commensurate with the decrease in the risk [of electrocution].” Porat, *supra* note 11, at 255. This analysis misses a critical point explained above: the defendant’s failure to take the precautionary measure that could reduce the risk to the phone users reduced a greater risk of electrocution to others, so this failure was not wrongful. There was no need to reduce the damages in light of the avoided risk of electrocution

lowering the required level of care, not in reducing the extent of damages payable by a negligent wrongdoer. Porat seems to presuppose that the standard of care is properly set,¹⁷⁵ a belief that I endeavor to refute, and thereby misses the more fundamental flaw in existing tort law and practice.

Moreover, Porat discusses the scope of liability for negligence. He does not address the negative externalities of increased levels of care under strict liability regimes.¹⁷⁶ The solution proposed below to the problem of negative externalities of precautions under strict liability, where changing the scope of damages is the only way to incentivize potential injurers to change their conduct,¹⁷⁷ is inevitably similar in nature to Porat's principle of reduced damages. Yet Porat does not consider strict liability at all, missing an opportunity to realize and explain that the differences between the two forms of liability require different responses to the negative externalities of precautions.

Offsetting Risks is also quite cautious, hence limited, in argumentation and conclusions. To begin with, even though Porat acknowledges the importance of the impact of precautions taken to reduce the risk to some people on the costs borne by third parties, he seems to ultimately limit the application of his idea to the positive impact of negligent conduct on those harmed by the same conduct (possibly because he paid some heed to corrective justice theories).¹⁷⁸ Furthermore, even though Porat occasionally mentions the possible applicability of the principle of reduced damages in nonmedical contexts,¹⁷⁹ he focuses primarily on and thoroughly defends the application of this principle in the context of medical malpractice.¹⁸⁰ Lastly, Porat explains that implementation of the theoretical idea

because the defendant's conduct, in avoiding that risk, was not negligent. See *supra* notes 143–46 and accompanying text.

175 The argument that courts do not but should consider the risk to the potential injurer in setting the standard of care, see Cooter & Porat, *supra* note 80, at 31, is a notable exception. For a discussion of this argument, see *supra* notes 116–19 and accompanying text.

176 Porat mentions strict liability in two paragraphs when considering alternatives to reduced damages in negligence, but neither identifies nor attempts to resolve the problem of negative externalities of precautions under strict liability regimes which is discussed in Part IV. Porat, *supra* note 11, at 273–74.

177 They cannot evade liability altogether as under negligence.

178 See, e.g., Porat, *supra* note 11, at 275–76 (concluding that his argument “holds for all cases in which the potential injurer must balance his victim’s interests and choose the course of action that is most beneficial to the victim” and that “cases in which the offsetting risks relate to third parties or society at large could require different treatment”).

179 *Id.* at 252–53, 276.

180 *Id.* at 246, 264–76 (“Medicine is particularly illustrative. . . . I focus on first-category instances, in particular medical malpractice cases” *Id.* at 246, 264.). Most examples given in the paper are within this realm.

entails *legislative* reform, partly because it deviates from the traditional law of damages and partly to simplify implementation,¹⁸¹ whereas this Article calls upon the *courts* to adjust and more accurately implement the judge-made standard of care.

In *Offsetting Benefits*, Porat and Posner discuss benefits that the victim or third parties obtain from wrongful conduct.¹⁸² They argue that these benefits may be deducted from the burden imposed on wrongdoers only if they are “social” rather than merely private¹⁸³ and “their likelihood of realization is increased by the wrongdoing”;¹⁸⁴ but even if these preconditions are met there may be good reasons to avoid deduction.¹⁸⁵ They consider inter alia the case in which a driver negligently injures a pedestrian while rushing another person to the hospital.¹⁸⁶ While *Offsetting Benefits* seems to have a more ambitious scope than *Offsetting Risks*, as it is neither limited to certain contexts or parties nor dependent on legislative reform, it shares the two constraints mentioned above. First, it also assumes wrongful conduct and focuses on the scope of damages.¹⁸⁷ Rather than incorporating the benefits generated by lower levels of care into the assessment of reasonableness, it discusses only cases in which negligence has already been established and considers whether benefits generated by the negligent conduct should be deducted from the wrongdoer’s overall burden. Second, *Offsetting Benefits* also overlooks the important distinction between fault-based and strict liability.¹⁸⁸ In addition, *Offsetting Benefits* encompasses all benefits arising from wrongful conduct (including, e.g., third-party donations to the restoration of a negligently burned building),¹⁸⁹ not only benefits resulting from the choice of precautionary measures. In this respect it lacks this Article’s specific focus and clarity.

As a side note, one can challenge Porat’s fundamental assumption that failure to adapt expected liability of negligent wrongdoers to the expected social cost of their wrongdoing might result in

181 *Id.* at 247, 273, 276 (“It is the task of the legislature to change the law to allow the courts . . . to reduce damages when offsetting risks are present.” *Id.* at 273.).

182 Porat & Posner, *supra* note 11, at 1166–67.

183 Namely benefits not cancelled out by losses to others. *See id.* at 1177, 1177–79.

184 *Id.* at 1177, 1177–81, 1196–98, 1200–01.

185 *Id.* at 1181–88, 1200–05.

186 *Id.* at 1190–91.

187 *Id.* at 1167, 1168, 1177 (“Our question is when the law should reduce the amount of money that a wrongdoer should pay because the wrongful act also produces benefits. . . . [W]rongful act[s] result[] in distinct harms and benefits to the victim Damages should equal the social, not private, loss caused by a wrongdoing.”).

188 *See infra* Part IV.

189 Porat & Posner, *supra* note 11, at 1175–77.

overdeterrence.¹⁹⁰ “If a negligence standard is applied correctly, the fact that a negligent party must bear a burden that exceeds expected [social cost] will not normally result in overdeterrence,” as potential injurers can evade “excessive liability” altogether by taking the reasonable level of care.¹⁹¹ At the same time, awarding undercompensatory damages to victims of negligent conduct might reduce their expected benefit from—and hence the likelihood of—bringing tort actions. Underenforcement reduces injurers’ expected burden and might result in underdeterrence.¹⁹²

IV. A POSTSCRIPT ON STRICT LIABILITY

A. *Noninternalizable Costs*

Hitherto, we have discussed the application of the theoretical idea to the law of negligence. Such application entails a modest adjustment to the conventional definition of reasonableness. Under the classical Hand formula, failing to take certain precautions is negligent when the expected harm in their absence is greater than their cost for the potential injurer. If courts ignore the cost of precautions for others, they systematically set the standard of care too high. Failure to take precautions might be deemed legally negligent, even though it is economically efficient, when the expected harm is greater than the cost of precautions for the defendant but lower than the total cost of precautions. Once the reasonably foreseeable cost of precautions for people other than the defendant is incorporated into the cost-benefit assessment of each level of care, the legally reasonable level of care will not exceed the efficient one. Following this adjustment, defendants

190 See *supra* note 171.

191 Adar & Perry, *supra* note 105, at 218. Porat admits it. See Porat, *supra* note 11, at 263 (“[I]n an ideal world without court error in setting the standard of care and injurer error in complying with that standard, a negligence rule leading to liability for more than the actual harm caused would not distort incentives for precautions.”). However, he argues that “[i]n our nonideal world . . . courts and injurers often make mistakes. . . . [So] threatening the potential injurer with greater liability than the harm actually produced by his negligence provides him with the incentive to take greater precautions than what is efficiently justified.” *Id.* He does not explain, however, why mistakes systematically result in false-positive determinations of negligence. If they do not (namely if false-negative determinations are as frequent), the argument collapses. Moreover, as Porat admits, law-and-economics literature recognizes a systematic failure which calls for liability in excess of harm. *Id.* at 271 (discussing the prevalence of underenforcement); Perry & Kantorowicz-Reznichenko, *supra* note 109, at 846 (same). Porat’s attempt to understate this concern is not persuasive. For example, he speculates with no empirical support that some positive externalities offset the negative externalities caused by underenforcement.

192 See Ronen Perry, *Getting Incentives Righter: A Comment on Getting Incentives Right*, 12 JERUSALEM REV. LEGAL STUD. 202, 210 (2015).

will not be found negligent when taking the socially desirable level of care and potential defendants will not be induced to take supraoptimal precautions. The structure of the tort of negligence, with the binary concept of reasonableness at its core, is easily adaptable to a more comprehensive cost-benefit analysis, even though the implementation may face administrative hurdles.

The application of the theoretical idea in the realm of strict liability poses a much greater challenge and might entail a radical change in the law of damages. Strict liability transfers the victim's harm to the actual injurer regardless of the reasonableness of the latter's conduct.¹⁹³ Assuming perfect information, the potential injurer will always internalize the victim's expected harm (the probability of strict liability ideally equals the probability of harm, and the extent of liability ideally equals the magnitude of the harm). In addition, the potential injurer bears the cost of precautions they choose to take. According to classical economic theory, potential injurers consider the sum of expected harm (which translates into expected liability) and the cost of precautions *for them* and rationally choose the level of care that minimizes the total personal cost, hence the social cost of accidents.¹⁹⁴ Alas, the total cost for the potential injurer under strict liability and the social cost are not truly aligned. The cost of precautions for people other than the potential injurer is neither directly borne by the latter nor internalized through the prospect of strict liability for harm. The total cost borne by the potential injurer at a supraoptimal level of care, which does not include the negative externalities of precautions, might be lower than the total cost borne at the optimal level. Consequently, the potential injurer might take excessive care. Put differently, strict liability, without a creative solution to the problem of unaccounted costs of precautions, might result in overdeterrence.

Recall the hypothetical presented in Section III.A. The potential injurer needs to choose among three levels of care as depicted in Table 5 below. The social cost of the interaction is \$10,000 at the low level of care (expected harm \$10,000; no cost of precautions), \$10,500 at the medium level (expected harm \$5,000; cost of precautions \$4,000 for the potential injurer and \$1,500 for others), and \$13,000 at the high level (risk eliminated; cost of precautions \$11,000 for the potential injurer and \$2,000 for others). The social cost is minimal at the low level of care (\$10,000), which is therefore the optimal level. However, under a strict liability regime, potential injurers bear only their own cost of precautions (by taking them) and potential victims' expected harm (through liability). The cost of precautions for others is

193 See *Strict Liability*, BLACK'S LAW DICTIONARY (10th ed. 2014).

194 COOTER & ULEN, *supra* note 121, at 339–40; SHAVELL, *supra* note 113, at 8, 11.

not internalized. The total cost for the potential injurer is minimal at the medium level of care (\$9,000), so they will be induced to take supraoptimal precautions. This problem cannot be solved through algebraic trickery.

TABLE 5: *D*'S ALTERNATIVES UNDER STRICT LIABILITY

Level of care	Cost of care for injurer	Cost of care for others	Expected harm	Social cost	Total cost for injurer
Low	0	0	10,000	10,000	10,000
Medium	4,000	1,500	5,000	10,500	9,000
High	11,000	2,000	0	13,000	11,000

B. Possible Solutions

The intuitive solution may be to allow those who benefit from failure to take certain precautions to sue the defendant for the lost benefit if these precautions are taken. This would align potential injurers' total cost at each level of care with the respective social cost and induce them to choose the socially desirable level. In the numerical example above, if potential injurers were subject to strict liability for the negative impact of precautions on others, their total cost would be \$10,000 (expected liability) at the low level of care, \$10,500 at the medium level (expected liability under existing regimes \$5,000, cost of precautions \$4,000, liability for lost benefits to others \$1,500), and \$13,000 at the high level (cost of precautions \$11,000, liability for lost benefits to others \$2,000). The potential injurer will be induced to take the low, socially optimal, level of care. However, strict liability regimes usually cover certain categories of victims against well-defined risks. Lost benefits to people not included in these categories will rarely be actionable, so the loss of benefits will not be internalized. For example, under product liability law, manufacturers are strictly liable for physical injuries caused to consumers by defective products.¹⁹⁵ They are not normally liable for losses incurred by others (e.g., employees, consumers, or suppliers) when they increase their level of care.

Alternatively, those who bear the negative externalities of precautions may be allowed to sue under a negligence rule, namely when the injurer's choice of precautions was unreasonable in the economic sense. In the example above, the low level of care is optimal, so the injurer may be held liable in negligence to those bearing the negative

195 RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (AM. L. INST. 1998).

externalities of precautions at higher—excessive—levels of care. Thus, potential injurers' total cost would be \$10,000 (expected strict liability) at the low level of care, \$10,500 at the medium level (expected strict liability \$5,000, expected liability in negligence for negative externalities of excessive precautions \$1,500, cost of precautions \$4,000), and \$13,000 at the high level (expected liability for negative externalities of excessive precautions \$2,000, cost of precautions \$11,000). Potential injurers would be induced to take the optimal level of care. Presumably, however, negligence actions for negative externalities of precautions might face practical obstacles.

A different solution, which is more radical in nature, focuses on the scope of damages awarded to victims already entitled to compensation under the strict liability regime. *Increasing* their expected damages by the cost of taken precautions for people other than the defendant is a simple and mathematically sound mechanism, which has a similar effect to strict liability for negative externalities of precautions. It is, however, impractical because defendants have no incentive to disclose information about the cost of precautions for others if this increases their liability,¹⁹⁶ and plaintiffs do not have the relevant information to request the necessary increase.¹⁹⁷

Reducing the potential injurer's expected liability by the benefit that each level of care confers on others serves the same goal and may be more practical because defendants have an incentive to disclose relevant information to reduce their liability. The benefit shall be defined as the highest possible loss for the beneficiary from an increase in the potential injurer's level of care. In the hypothetical, the benefit for others from choosing the low level of care is \$2,000, which is the highest possible loss from increasing the level of care (to "high"). The benefit from choosing the medium level of care is \$500. Reducing expected liability by the benefit for others, as defined above, maintains a perfect rank correlation between the total social cost and the total cost for the potential injurer.¹⁹⁸ It thereby ensures that the potential injurer will choose the optimal level of care, as Table 6 demonstrates.

196 Cf. Perry, *supra* note 192, at 223 (explaining that defendants do not have an incentive to prove and may even have an incentive to cover up information that might increase their expected costs).

197 Even if they obtain such information, they might not request an increase where the defendant's activity is continuous or repetitive because increased liability at supraoptimal levels of care would induce potential injurers to take lower levels of care, exposing the plaintiffs who disclosed the information to greater risks.

198 Note that consistently deducting only the *marginal* benefit (for others) of failing to increase the level of care might not have the same effect. Assume for example that the cost of precautions for others at the high level is \$3,500 (rather than \$2,000). The marginal benefit for others of failing to increase the level of care from low to medium and from medium to high is \$1,500 and $\$3,500 - \$1,500 = \$2,000$, respectively. Deducting the

TABLE 6: *D*'S ALTERNATIVES UNDER STRICT LIABILITY
WITH DEDUCTION

Level of care	Cost of care for injurer	Cost of care for others	Expected harm	Social cost	Total cost for injurer
Low	0	0	10,000	10,000	$10,000 - 2,000 = 8,000$
Medium	4,000	1,500	5,000	10,500	$4,000 + (5,000 - 500) = 8,500$
High	11,000	2,000	0	13,000	11,000

A reduction in expected liability can only be achieved through a reduction in actual liability when harm is caused. Courts can deduct the benefit conferred on others by the actual level of care, divided by the ex ante probability of harm, from the defendant's liability. In the hypothetical, the probability of the victim's harm at the low level of care is 10% and its magnitude is \$100,000. The benefit of choosing this level of care for people other than the defendant (\$2,000), divided by the probability of harm (10%), should be deducted from the defendant's liability at this level ($\$100,000 - \$20,000 = \$80,000$). The total cost for the potential injurer would be $10\% \times \$80,000 = \$8,000$. Similarly, the benefit of choosing the medium level of care for people other than the defendant (\$500), divided by the probability of harm (5%), should be deducted from the defendant's liability at this level ($\$100,000 - \$500 \div 5\% = \$90,000$). The total cost for the potential injurer would then be \$4,000 (cost of care) plus $5\% \times \$90,000$ (expected liability), that is, \$8,500.

As explained, the proposed reduction method maintains a perfect rank correlation between the total social cost and the total cost for the potential injurer and ensures efficient conduct. In some cases, however, it might deny victims any meaningful compensation. For example, if the cost of precautions for people other than the defendant were \$10,000 at the high level of care, the benefit for others (as defined above) from choosing the low level would be \$10,000. If deducted from expected liability (\$10,000), potential victims would receive nothing. To the extent that this scenario is prevalent and

marginal benefit from expected damages would make the total cost for potential injurers at the medium level ($\$4,000 + (\$5,000 - \$2,000) = \$7,000$) lower than the cost at the low level ($\$10,000 - \$1,500 = \$8,500$) and induce them to take the medium level, which is supraoptimal.

deemed problematic, a more modest solution can be employed. Instead of systematically reducing damages at each level of care, courts may reduce damages *only* if the defendant took optimal care. Because damages will be reduced only at the optimal level, the deduction can be smaller than that required under the previously discussed method, simply ensuring that the total cost for the potential injurer is lowest when taking optimal care. Thus, in the numerical example, deducting \$1,001 from expected damages at the low (optimal) level of care will suffice. A potential injurer's total cost will be $\$10,000 - \$1,001 = \$8,999$ at the low level, \$9,000 (expected liability \$5,000, cost of precautions \$4,000) at the medium level, and \$11,000 (cost of precautions) at the high level; they will therefore take optimal care. Conceptually, this model is tantamount to a partial "no-negligence" defense, whereby the scope of strict liability is reduced where the defendant can demonstrate they took the socially desirable level of care.

C. *Response to Criticism*

Deduction of the benefit that failure to take precautions confers on people other than the defendant from the defendant's liability might face two lines of criticism. First, tort damages are presumably intended to compensate victims for their harm (make them whole),¹⁹⁹ so subcompensatory damages seem to be a radical shift from tort conventions. Admittedly, the proposed solution might be an anomaly in modern tort law. Yet the idea that damages can be subcompensatory is not unheard of. To begin with, as John Goldberg ably demonstrated, the commitment to full compensation for harm caused is not an inevitable feature of tort law; the common law originally separated the wrong from the remedy and awarded, or was at least willing to award, "fair damages" considering the circumstances of each case rather than full compensatory damages.²⁰⁰ Moreover, tort law reform often caps damages, especially noneconomic, at a potentially subcompensatory level, when this is deemed appropriate from a public policy perspective.²⁰¹ Lastly, law-and-economics literature is already familiar with the

199 See Harry Kalven, Jr., *The Jury, The Law, and the Personal Injury Damage Award*, 19 OHIO ST. L.J. 158, 160 (1958) ("[T]he function of tort damages [is] to make the plaintiff whole . . .").

200 John C.P. Goldberg, *Two Conceptions of Tort Damages: Fair v. Full Compensation*, 55 DEPAUL L. REV. 435, 438–47 (2006).

201 Caps usually apply to noneconomic damages. In some states, noneconomic damages are capped generally. See, e.g., ALASKA STAT. § 09.17.010 (2022); COLO. REV. STAT. § 13-21-102.5 (2023); HAW. REV. STAT. § 663-8.7 (2016); IDAHO CODE § 6-1603 (2023); MD. CODE ANN., CTS. & JUD. PROC. § 11-108 (West 2011); OHIO REV. CODE ANN. § 2315.18 (LexisNexis Supp. 2022); *id.* § 2323.43 (LexisNexis 2017); TENN. CODE ANN. § 29-39-102 (2012). More frequently, noneconomic damages are capped in medical malpractice claims. See,

notion that subcompensatory damages may be needed to overcome an overdeterrence problem.²⁰² For example, Cooter and Porat argued that when an injurer incurs nonlegal sanctions that generate benefits for third parties (such as avoiding the injurer's incompetence), these benefits must be deducted from the injurer's liability to prevent overdeterrence.²⁰³ Cooter and Porat realized that this proposal undermined the compensatory goal of tort law, but opined that "the goal of compensation should diminish in importance for law as insurance expands" and that the availability of insurance frees liability law from the need to provide full compensation to victims.²⁰⁴ They noted that reducing damages under a strict liability regime also improves potential victims' incentives.²⁰⁵

A second possible criticism is that the proposed deduction undermines one of the main economic advantages of strict liability. According to conventional economic wisdom, strict liability may be preferable to fault-based liability from an administrative perspective.²⁰⁶ Under strict liability, courts only need to determine the extent of the plaintiff's loss, whereas under a negligence rule, they also need to determine the socially optimal level of care (based on an evaluation of the cost of precautions and the expected harm at each level) and the defendant's actual level of care.²⁰⁷ The modified version of strict

e.g., ALASKA STAT. § 09.55.549 (2022); CAL. CIV. CODE § 3333.2 (West Supp. 2023); MASS. GEN. LAWS ch. 231, § 60H (2010); 2012 Mich. Pub. Acts 2587; MO. REV. STAT. § 538.210 (Supp. 2022); MONT. CODE ANN. § 25-9-411 (2021); NEV. REV. STAT. ANN. § 41A.035 (2021); N.C. GEN. STAT. § 90-21.19 (2021); N.D. CENT. CODE § 32-42-02 (2021); S.C. CODE ANN. § 15-32-220 (2005); TEX. CIV. PRAC. & REM. CODE ANN. § 74.301 (West 2017); W. VA. CODE ANN. § 55-7B-8 (LexisNexis 2016); WIS. STAT. § 893.55 (2023). Several states imposed caps on total damages in medical malpractice cases. *See, e.g.*, COLO. REV. STAT. § 13-64-302 (2023); IND. CODE § 34-18-14-3 (2023); NEB. REV. STAT. § 44-2825 (2023); N.M. STAT. ANN. § 41-5-6 (2022); S.D. CODIFIED LAWS § 21-3-11 (Supp. 2023); VA. CODE ANN. § 8.01-581.15 (2015); WYO. STAT. ANN. § 1-39-110 (2023). In some jurisdictions, caps on damages were found unconstitutional. *See, e.g.*, *Moore v. Mobile Infirmary Ass'n*, 592 So. 2d 156, 170 (Ala. 1991); *Smith v. Dep't of Ins.*, 507 So. 2d 1080, 1095 (Fla. 1987); *Atlanta Oculoplastic Surgery, P.C. v. Nestlehurst*, 691 S.E.2d 218, 223 (Ga. 2010); *Best v. Taylor Mach. Works*, 689 N.E.2d 1057, 1081 (Ill. 1997); *Hilburn v. Enerpipe Ltd.*, 442 P.3d 509, 511 (Kan. 2019); *Brannigan v. Usitalo*, 587 A.2d 1232, 1233 (N.H. 1991); *Beason v. I. E. Miller Servs., Inc.*, 441 P.3d 1107, 1109 (Okla. 2019); *Lakin v. Senco Prods., Inc.*, 987 P.2d 463, 474 (Or. 1999); *Smith v. United States*, 356 P.3d 1249, 1258 (Utah 2015); *Sofie v. Fibreboard Corp.*, 771 P.2d 711, 728 (Wash. 1989).

202 *See supra* Section III.E.

203 ROBERT D. COOTER & ARIEL PORAT, *GETTING INCENTIVES RIGHT: IMPROVING TORTS, CONTRACTS, AND RESTITUTION* 188, 191–95 (2014).

204 *Id.* at 206.

205 *Id.* at 195, 197.

206 Strict liability, as opposed to negligence-based liability, also induces potential injurers not to engage in excessive levels of activity. SHAVELL, *supra* note 113, at 31.

207 *Id.* at 9.

liability proposed here requires judicial appraisal of the cost of precautions for people other than the defendant and the ex ante probability of harm at each level of care. These complications surely add to the administrative cost. However, they should not be overstated. Strict liability is usually accompanied by a contributory or comparative negligence defense, so implementation entails judicial determination of the actual and optimal levels of care for each party, and the probability of harm must be estimated regardless of the proposed adjustment.²⁰⁸ In addition, under the proposed model the cost of precautions for others should be considered only if it was reasonably foreseeable and can therefore be readily established.

CONCLUSION

This Article uncovered a fundamental flaw in the traditional definition of reasonableness, namely the exclusion of the negative externalities of precautions from the analysis, and proposed appropriate adjustments. Part I briefly presented existing law. The dominant definition of reasonableness is the Hand formula, which compares the magnitude of the risk created by the defendant with the cost of precautions that can eliminate or reduce that risk. According to the prevalent view in caselaw and legal literature, the relevant cost of precautions is that borne by the potential injurer.

Part II laid the theoretical groundwork for the main thesis. A corrective justice account of the conventional definition of reasonableness may be consistent with the exclusion of the negative externalities of precautions from the analysis. However, it lacks vigor on the positive and normative levels, so any constraints that it would have imposed on the evolution of the Hand formula could not hinder us here. The alternative, dominant, rationale for the Hand formula is economic efficiency. Negligence law purports to prevent inefficient conduct by equating unreasonableness with inefficiency and providing incentives to avoid unreasonable conduct. Once this is accepted, the standard of care must be accurately set and effectively enforced. Courts and scholars have realized that the rudimentary Hand formula did not accurately capture the true costs and benefits of each of the alternative courses of action and have already proposed several adjustments.

Against this backdrop, Part III demonstrated that focusing on the cost of precautions for the defendant is inconsistent with the economic rationale for the Hand formula and might result in excessive care. The standard of care should therefore be further adjusted to incorporate the cost of each precaution for society at large. In assessing

208 *Id.* at 16.

reasonableness, courts must seek out and add to the cost-of-precaution side of the Hand formula all reasonably foreseeable negative externalities of each precaution, whether borne by those exposed to the risk that the specific precaution intended to reduce or by third parties.

Part IV explained that a greater challenge arises under strict liability regimes. Potential injurers endeavor to minimize their individual costs, which consist of expected harm (internalized through liability) and the cost of precautions for them. The cost of precautions for other people is not directly borne by potential injurers and cannot be internalized by them through the prospect of strict liability. Thus, the total cost borne by potential injurers at supraoptimal levels of care might be lower than the cost borne at optimal levels, leading to excessive care. A possible solution is to reduce the potential injurer's expected liability by the benefit that each level of care confers on others.

A few concluding remarks are due at this juncture. First, in discussing the possible integration of the cost of precautions for others into the analysis of reasonableness, this Article focused on the defendant's conduct. Traditionally, the plaintiff's contributory negligence has been determined under the same standards as the defendant's negligence.²⁰⁹ Specifically, courts using the Hand formula applied it to the assessment of the plaintiff's conduct when comparative or contributory negligence defenses were invoked.²¹⁰ Presumably, the adjustment proposed here to the definition of reasonableness should apply *mutatis mutandis* to the question of the plaintiff's contributory negligence where relevant. For example, assume that pedestrian *PI* is injured by *D*'s negligent driving when jumping onto the road to save pedestrian *P2* from being hit. *PI* could increase their level of care by standing by, possibly warning *P2* of the approaching vehicle. While this course of action would reduce the risk to *PI*, it might also increase the risk to *P2*, and the additional risk to *P2* is part of the social cost of *PI*'s extra self-care.

Second, the cost of taking precautions for people other than the defendant is already incorporated into long-established legal defenses, such as defense of others or necessity, but these apply in relatively rare cases and cannot provide a general solution to the problem identified

209 RESTATEMENT (THIRD) OF TORTS: APPORTIONMENT OF LIABILITY § 3 & cmt. a (AM. L. INST. 2000).

210 See, e.g., *Lowe v. Est. Motors, Ltd.*, 410 N.W.2d 706, 715 (Mich. 1987) (explaining that the Hand formula is uniformly applied “whether considering a defendant’s conduct for purposes of liability or a plaintiff’s for purposes of reducing his recovery”); KEETON ET AL., *supra* note 61, at 453–54 (explaining that the unreasonableness of the risks incurred by the plaintiff is judged by “weighing the importance of the interest he is seeking to advance, and the burden of taking precautions, against the probability and probable gravity of the anticipated harm”).

here. For example, if *D* injures *P* to prevent the latter from intentionally injuring *C*,²¹¹ *D* may invoke the defense-of-others justification.²¹² According to this Article's thesis, the benefit for *C* of *D*'s failure to be more careful toward *P* must also be included in the analysis of *D*'s negligence (if sued by *P*). Similarly, if *D* enters or uses *P*'s property to save *C* or the public at large from imminent disaster, *D* can invoke the necessity privilege; but even in these rare circumstances, the need to protect *C* or the public would not always exempt *D* from liability for *P*'s harm.²¹³ Again, taking precautions to reduce or eliminate the risk to *P* might increase the risk to *C* or to the public, and such an increase is part of the cost of precautions that should be considered in assessing the reasonableness of *D*'s conduct if sued in negligence.²¹⁴

Finally, this Article neither advocates a precise mathematical cost-benefit calculation nor assumes its feasibility. Judge Hand sincerely acknowledged in *Moisan v. Loftus* that while it is possible to offer an algebraic definition of reasonableness, any attempt to accurately estimate the variables is illusory, so the main purpose of such formulation is "to center attention upon which . . . factors may be determinative in any given situation."²¹⁵ The proposed adjustment serves a similar goal, namely to highlight an overlooked variable that may be crucial in assessing reasonableness, with no pretense of scientific accuracy.

211 A concrete example would be a police officer who shoots and severely injures a bank robber threatening to kill an innocent teller.

212 See RESTATEMENT (SECOND) OF TORTS §§ 63, 65, 76–77, 79, 86–87, 100 (AM. L. INST. 1965) (discussing use of force to prevent violation of certain rights).

213 See *id.* §§ 196–197, 262–263 (discussing private and public necessity privileges).

214 Cf. *Watt v. Hertfordshire Cnty. Council* [1954] 1 WLR 835 (CA) at 837–38 (Eng.) (holding that the defendant fire department was not negligent in sending the plaintiff firefighter to save a woman trapped under a truck with rescue equipment that was not properly secured, because the expected benefit from doing so (saving the woman) was sufficiently high).

215 178 F.2d 148, 149 (2d Cir. 1949).

