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# TORT RECOVERY FOR LOSS OF A CHANCE

*David A. Fischer\**

*“Loss of a chance” is a novel theory of causation commonly used by courts in the United States in medical misdiagnosis cases. Yet, the theory has a vastly broader potential application than this. In fact, it could be applied in virtually every case of questionable causation. While this Article asserts that the doctrine could legitimately be expanded and applied in a variety of additional situations, the Article cautions that it would be unwise to apply the doctrine so broadly that it routinely supplants traditional causation rules. The Article searches for a principled basis for limiting the theory within proper bounds by comparing the differing applications of the loss of a chance doctrine in British Commonwealth cases and United States cases. The Article concludes that current rationales for the doctrine do not provide an adequate limiting principle, but that a case by case policy analysis can appropriately limit the theory.*

## I. INTRODUCTION

Tort lawyers in the United States often think of “loss of a chance” as a theory of “probabilistic causation” that only applies to medical malpractice misdiagnosis cases.<sup>1</sup> The theory is that if a physician negligently fails to diagnose a curable disease, and the patient is harmed by the disease, the physician should be liable for causing the “loss of a chance” of a cure. We shall see that if the chance of a cure is less than 50 percent, the plaintiff cannot prove by

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1. *E.g.*, Margaret T. Mangan, Comment, *The Loss of Chance Doctrine: A Small Price to Pay For Human Life*, 42 S.D. L. REV. 279, 283 (1997); Kevin Joseph Willging, Note, *Falcon v. Memorial Hospital: A Rational Approach to Loss-of-Chance Tort Actions*, 9 J. CONTEMP. HEALTH L. & POL'Y 545, 545-46 (1993).

a preponderance of evidence that the negligence caused the harm, and would recover no damages under the traditional "all or nothing" rule. Loss of a chance becomes a theory of "probabilistic causation" if we use it to hold the physician liable for the patient's harm but reduce any award by the chance that the harm would have occurred even with proper diagnosis and treatment. If, for example, the chance of a cure was 40 percent, under a "probabilistic causation" rule, the physician would be liable for 40 percent of the patient's harm because the physician deprived the patient of a 40 percent "chance" of avoiding the harm.

In reality, the loss of a chance theory can have an exceedingly broad application. We shall see in Part II of this Article that the theory has two formulations, a narrow one and broad one. Even in its narrow formulation the theory potentially applies to several very large categories of cases, including legal malpractice cases, and cases involving failures to rescue, to warn, to provide safety devices, and to give informed consent to medical procedures. In its broad formulation, the theory can apply to all cases where a tortfeasor creates a risk of harm and it is uncertain whether the harm has already occurred or will occur in the future. In this broad formulation, the "loss of a chance" theory provides a basis for largely substituting "probabilistic causation" for the traditional "all or nothing" approach to causation.

Some scholars argue for the greatly expanded use of probabilistic causation in tort cases,<sup>2</sup> while others disagree.<sup>3</sup> No court, however, has been willing to expand greatly the use of probabilistic causation. On the other hand, many courts and scholars accept the limited use of probabilistic causation by applying the loss of a chance theory in a narrowly selected range of cases.<sup>4</sup> Yet, it is unclear that there is any non-arbitrary way to restrict the theory to discrete categories of cases. Therefore, courts employing the limited use of the "loss of a chance" theory are faced with a dilemma. They must either find a principled basis for limiting its application, or they create the risk that the loss of a chance "exception" to the traditional all or nothing rule will swallow the

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2. *E.g.*, Samuel D. Estep, *Radiation Injuries and Statistics: The Need for a New Approach to Injury Litigation*, 59 MICH. L. REV. 259 (1960); Daniel A. Farber, *Toxic Causation*, 71 MINN. L. REV. 1219 (1987); William M. Landes & Richard A. Posner, *Tort Law as a Regulatory Regime for Catastrophic Personal Injuries*, 13 J. LEGAL STUD. 417 (1984); John Makdisi, *Proportional Liability: A Comprehensive Rule to Apportion Tort Damages Based on Probability*, 67 N.C. L. REV. 1063 (1989); Glen O. Robinson, *Probabilistic Causation and Compensation for Tortious Risk*, 14 J. LEGAL STUD. 779 (1985); David Rosenberg, *The Causal Connection in Mass Exposure Cases: A "Public Law" Vision of the Tort System*, 97 HARV. L. REV. 851 (1984).

3. *See, e.g.*, David A. Fischer, *Proportional Liability: Statistical Evidence and the Probability Paradox*, 46 VAND. L. REV. 1201, 1205 (1993).

4. *See* discussion *infra* Parts IV and V of this Article.

rule, with probabilistic causation completely supplanting the traditional rule.

This Article will explore the loss of a chance theory with a view to examining and evaluating the bases for limiting application of the theory. In doing so, the Article will compare British Commonwealth cases with United States cases. This comparison is useful in illustrating the bases for limiting the doctrine because the Commonwealth cases and the United States cases have taken the doctrine in dramatically different directions.

In its search for a principled basis for limiting application of loss of a chance, this Article will proceed by discussing the nature of the problem in Part II and the major rationales for the use of loss of a chance in Part III. The Article will apply those rationales to cases where traditional damage is present in Part IV and cases where traditional damage is not present in Part V. The Article concludes that the current rationales provide an insufficient basis for limiting loss of a chance. In Part VI the Article examines case-specific policy considerations, and concludes that these concerns provide a more useful basis for limiting the doctrine.

## II. BACKGROUND

The “loss of a chance” doctrine is best understood in terms of how it relates to the burden of proving both causation of damage and causation of harm. Damage is an element of the tort of negligence and several other torts, such as deceit, that arose out of the ancient writ of Trespass on the Case.<sup>5</sup> Damage requires an actual loss,<sup>6</sup> but not all losses are sufficient. Furthermore, certain losses qualify as damage for some torts but not others. Physical harm to person or property qualifies as damage in negligence actions, but some forms of pure mental distress and most forms of pure economic loss do not.<sup>7</sup> Yet, in a deceit action, pure economic loss is damage.<sup>8</sup> Harm, on the other hand, is a broader concept than damage because it encompasses all loss or detriment.<sup>9</sup> It follows that harm can occur without damage, as where one carelessly blocks traffic and causes economic loss without physical injury. When a

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5. W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 30, at 165 and § 7, at 31 n.18 (5th ed. 1984).

6. *Id.*

7. DAN B. DOBBS, THE LAW OF TORTS: HORNBOOK SERIES § 308, at 836 & § 446, at 1259 (2001) [hereinafter DOBBS, THE LAW OF TORTS]. Courts are in the process of liberalizing the traditional ban on recovery for pure mental distress and pure economic loss—particularly the ban on recovery for pure mental distress—but even the most liberal jurisdictions engage in line drawing that excludes certain types of mental and economic harm from qualifying as damage. *Id.*

8. *Id.* § 470, at 1345.

9. RESTATEMENT (SECOND) OF TORTS § 7(2) (1965) (defining harm as any “loss or detriment in fact of any kind to a person resulting from any cause”).

tort is actionable because damage has occurred, however, plaintiff can usually recover for additional harm (such as lost wages in a personal injury case) even though it does not qualify as damage.<sup>10</sup>

Traditionally, plaintiff must prove each element of the action, including damage, by a preponderance of evidence.<sup>11</sup> To prove that a thing is true by a preponderance of evidence, plaintiff must show that it is more likely than not true.<sup>12</sup> Writers and judges often state the matter in probabilistic terms; plaintiff must convince the jury that there is a greater than 50 percent chance that the proposition is true.<sup>13</sup> While this is a useful short-hand reference, use of percentages is misleading if not properly understood.<sup>14</sup> Not all evidence showing that “mathematically the chances somewhat favor [the] proposition” is sufficient to prove the proposition.<sup>15</sup> The evidence must be sufficient to cause the jury to “believe” that the proposition is true.<sup>16</sup> Evidence, for example, that most serious automobile accidents are alcohol related is not sufficient to cause a jury to believe that a particular serious automobile accident was alcohol related. The jury would need more evidence to form a belief on the subject.

The rule requiring proof by a preponderance of evidence is not universal. There are important instances where courts permit an inference of causation even though plaintiff has not introduced enough evidence to support a finding of causation.<sup>17</sup> These instances are quite pertinent to our discussion, and will be discussed later in this Article.<sup>18</sup>

The loss of a chance doctrine arose in the English contracts case of *Chaplin v. Hicks*.<sup>19</sup> Plaintiff was one of fifty finalists in a beauty contest conducted by defendant who had, according to the rules of the contest, won the right to present themselves to a judge for the opportunity to win twelve valuable prizes.<sup>20</sup> Defendant breached the contract by failing to give plaintiff a reasonable opportunity to

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10. Jane Stapleton, *The Gist of Negligence* (pt. 1), 104 LAW Q. REV. 213 (1988).

11. DOBBS, *THE LAW OF TORTS*, *supra* note 7, § 360, at 992-96.

12. *Id.*

13. *Id.*

14. CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, *EVIDENCE* § 3.3, at 133 (1995) (“Yet jurors are to determine what actually happened and reveal truth in the verdict so the language of probability is not entirely congenial to the aims of the system.”).

15. *Smith v. Rapid Transit, Inc.*, 58 N.E.2d 754, 755 (Mass. 1945) (quoting *Sargent v. Massachusetts Accident Co.*, 29 N.E.2d 825, 827 (Mass. 1940)).

16. *Id.* at 755.

17. *E.g.*, *Thompson v. Sun City Cmty. Hosp.*, 688 P.2d 605 (Ariz. 1984); *Kallenberg v. Beth Israel Hosp.* 45 A.D.2d 177 (N.Y. 1974). *See* discussion *infra* Part IV.

18. *See* discussion *infra* Part IV.

19. 1911 K.B. 786 (Eng. C.A.).

20. *Id.* at 787.

present herself.<sup>21</sup> Plaintiff sued for breach of contract, seeking compensation for the loss of a chance to win one of the prizes. The jury assessed damages of one hundred pounds. Defendant appealed, arguing that damages were incapable of assessment because they were too speculative. The appellate court rejected the argument and affirmed the jury award, holding that the loss of the opportunity to win a prize was a valuable right, and assessment of damages was a question for the jury.<sup>22</sup> One judge reasoned that because there were fifty competitors for twelve prizes the average chance of success was approximately 25 percent, and the “doctrine of averages” could be used in assessing damages.<sup>23</sup> Note, however, that the jury award was considerably less than 25 percent of the value of the prize.

Damage is not an element of the cause of action for breach of contract.<sup>24</sup> *Chaplin v. Hicks* used the loss of a chance approach merely to value harm resulting from a cause of action that was fully established. Courts in both the United States and Commonwealth countries also sometimes use this technique for valuing harm in tort cases where all elements of the tort are established. Suppose, for example, that defendant clearly causes damage by negligently breaking plaintiff’s knee, but the extent of the harm is uncertain because the injury creates a risk that plaintiff will develop arthritis in the knee in the future. Courts often award damages for the risk of future harm by discounting the recovery for the harm by the chance that the harm will not occur. Such damages are, in effect, compensation for the loss of a chance to avoid future harm. Whether and when to use the doctrine for this limited purpose is a difficult question, and is discussed in Part IV of this Article.

The even more controversial use of the loss of a chance doctrine is in tort cases where causation of damage is an element of the cause of action, and plaintiff cannot prove by a preponderance of evidence that defendant caused traditional damage. Assume that defendant makes a fraudulent misrepresentation that causes plaintiff to refrain from entering into a business venture that had a 40 percent chance of making a profit. If plaintiff sued defendant for fraud, she would lose under the traditional approach. Plaintiff cannot prove that defendant caused damage (economic loss) because there is a 60 percent chance that there would have been no damage. A court might apply the loss of a chance theory by using a non-traditional definition of damage. It could do this by adopting the “chance has value theory” discussed in Part III. A of this Article. The court would re-characterize damage as the loss of a chance on the theory that the chance to make a profit is a thing of value, and the loss of

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21. *Id.* at 788.

22. *Id.* at 793.

23. *Id.* at 791.

24. Jane Swanton, *Concurrent Liability in Tort and Contract: the Problem of Defining the Limits*, 10 J. CONT. L. 21, 35-38 (1996).

that chance is economic harm that qualifies as damage. The court might then value the harm by multiplying the expected profit by the 40 percent chance that there would have been a profit. This use of loss of a chance is controversial, of course, because some see it as circumventing the traditional requirement that plaintiff prove damage by a preponderance of evidence.<sup>25</sup>

In cases where traditional damage cannot be proven there are two formulations of loss of a chance. The narrow formulation involves a failure to protect a person from a preexisting condition.<sup>26</sup> The increasing minority of United States courts that accept loss of a chance exemplify this formulation.<sup>27</sup> These courts typically apply the doctrine in medical malpractice cases where the physician improperly diagnoses or treats a disease.<sup>28</sup> In these cases, plaintiff suffers from a disease that has some chance of being cured, and the physician decreases the chance of cure by negligently failing to diagnose or treat the disease promptly. The following example is typical:

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25. *E.g.*, Vaughn Black, *Not a Chance: Comments on Waddams, The Valuation of Chances*, 70 CANADIAN BUS. L.J. 96, 98 (1998) (In addressing the argument that the loss of a chance itself is harm, Black responds that "all cases of causal uncertainty may potentially be converted into loss of chance cases by such a redescription of the harm.")

26. 1 DOBBS, *THE LAW OF TORTS*, *supra* note 7, § 178, at 434-38. *See* Herskovits v. Group Health Co-op. of Puget Sound, 664 P.2d 474, 477 (Wash. 1983). This is a medical malpractice case where defendant reduced decedent's chance of surviving lung cancer by negligently failing to diagnose the disease in a timely manner; the court applied loss of a chance because defendant "failed in a *duty* to protect against harm from *another source*." *Id.* at 477. The doctrine does not apply to cases where "defendant's act or omission set in motion a force which resulted in harm." *Id.*

27. The evolution of the loss of a chance doctrine in the United States has been traced many times and will not be repeated here. *See* Darrell L. Keith, *Loss of Chance: A Modern Proportional Approach to Damages in Texas*, 44 BAYLOR L. REV. 759 (1992); Joseph H. King, Jr., "Reduction of Likelihood" *Reformulation and Other Retrofitting of The Loss-of-a-Chance Doctrine*, 28 U. MEM. L. REV. 491 (1998) [hereinafter King, *Reduction of Likelihood*]; Dionne R. Carney, Note, *Smith v. State of Louisiana*, Department of Health and Hospitals: *Loss Chance of Survival: The Valuation Debate*, 58 LA. L. REV. 339 (1997); Lori R. Ellis, Note, *Loss of Chance as Technique: Toeing the Line at Fifty Percent*, 72 TEX. L. REV. 369 (1993); Patrick L. Evatt, Note, *A Closer Look at Loss of Chance under Nebraska Medical Malpractice Law: Steineke v. Share Health Plan, Inc.*, 246 NEB. 374, 518 N.W.2d 904 (1994), 76 NEB. L. REV. 979 (1997); Mangan, *supra* note 1, at 280-82; Michelle L. Truckor, Comment, *The Loss of Chance Doctrine: Legal Recovery for Patients on the Edge of Survival*, 24 U. DAYTON L. REV. 349 (1999). *See infra* notes 193-203 and accompanying text for a discussion of the United States cases.

28. 1 DOBBS, *THE LAW OF TORTS*, *supra* note 7, § 178, at 434-38; Jonathan P. Kieffer, *The Case for Across-the-board Application of the Loss-of-chance Doctrine*, 64 DEF. COUNS. J. 568, 576 (1997); King, *Reduction of Likelihood*, *supra* note 27, at 501; Todd S. Aagaard, Note, *Identifying and Valuing the Injury in Lost Chance Cases*, 96 MICH. L. REV. 1335, 1335 (1998).

*Medical Misdiagnosis*

A patient has stage two breast cancer that if properly treated can be cured in 40 percent of cases. She goes to her doctor for a checkup, but the doctor negligently fails to diagnose the illness. Another doctor diagnoses the illness much later when the chance of survival is 0 percent, and the patient subsequently dies. The patient's survivor brings a wrongful death action against the physician.

Plaintiff cannot prove that the first physician caused the patient's death because there was a 60 percent chance that the victim would have died even if she had received prompt treatment.<sup>29</sup> The physician did, however, deprive the patient of a 40 percent chance of survival. Under the loss of a chance theory, some courts hold the physician liable for 40 percent of the damages caused by the patient's death, and other courts hold the physician liable for all the damages.<sup>30</sup> Loss of a chance is often justified in these cases because the physician breached a duty to protect the patient from the preexisting condition, and the patient would have placed high value on the chance of a cure even if it was less than 50 percent.<sup>31</sup>

This narrow formulation of loss of a chance actually includes a very broad spectrum of cases. The essence of the formulation—failure to give valuable protection against an outside source of danger—applies to many recognized theories of recovery. The formulation patently applies to all failure to rescue cases.<sup>32</sup> Note that many cases that we do not ordinarily think of as rescue cases do, at their core, involve a failure to rescue. Most medical malpractice cases are really rescue cases because the physician is

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29. 1 DOBBS, *THE LAW OF TORTS*, *supra* note 7, §178, at 435-36.

30. *Id.* § 178, at 436.

31. *Id.* § 178, at 436-37.

32. Negligent misdiagnosis cases draw on rescue cases in adopting the loss of a chance approach. *E.g.*, *Wendland v. Sparks*, 574 N.W.2d 327 (Iowa 1998) (holding that loss of a chance is not limited only to cases of medical malpractice); *see also* *Keith*, *supra* note 27, at 765; *Ellis*, *supra* note 27, at 377-78. One United States case applies loss of a chance in a failure to rescue case. In *Lohse v. Faultner*, plaintiff's property was damaged by a forest fire. 860 P.2d 1306, 1308 (Ariz. Ct. App. 1992). Plaintiff sued a logger for breach of its undertaking to the Forest Service to patrol the forest for fires. Plaintiff was unable to prove that if the defendant had conducted the patrol it would have detected the fire in time to prevent its spread to plaintiff's property. The court recognized, however, that the loss of a chance theory applies in any case where "the chance interest was within the range of the duty breached by defendant and the harm which followed was the type from which the defendant was to have protected the plaintiff." *Id.* at 1315 (quoting *Thompson v. Sun City Cmty. Hosp., Inc.*, 688 P.2d 605, 616 (Ariz. 1984)). Although recognizing that the loss of a chance theory applies to plaintiff's case, the court denied plaintiff's recovery because plaintiff could only show a speculative and not a "substantial chance" that defendant's omission would have prevented the harm to plaintiff's property. *Id.* at 1316.



hired to protect the patient from an external danger such as disease. Even informed consent cases involve a kind of rescue. The informed consent doctrine requires that physicians give information that helps patients decide on the best course of treatment for a preexisting condition.<sup>33</sup> Legal malpractice cases also involve a failure to rescue when the lawyer is employed to protect the client from an external legal hazard such as a lawsuit filed against the client. Beyond that, the narrow formulation applies by close analogy to many other types of cases. For example, in failure to warn cases, the warning often provides protection against an external risk.<sup>34</sup> Likewise, in cases involving a failure to give a person a safety device, or even a failure to put a safety device on a machine, the device often provides protection against an external risk.<sup>35</sup> Furthermore, if courts began applying loss of a chance to cases involving warnings and safety devices that failed to protect against an outside source of danger, they would be very hard-pressed to find a principled basis for refusing to apply the doctrine to cases where the warnings and safety devices failed to protect against an internal source of danger, e.g., where a safety device on a product is necessary to protect a user from the product. Even without such an extension, however, the narrow formulation of loss of a chance is broad enough to encompass a much wider array of cases than those currently employing the loss of a chance approach.

A number of writers have articulated a broad formulation of loss of a chance in cases where traditional damage cannot be proven.<sup>36</sup> They have pointed out that in any case where defendant creates a risk of injuring plaintiff, he necessarily deprives plaintiff of a chance of avoiding injury.<sup>37</sup> If, for example, defendant exposes plaintiff to radiation that creates a 10 percent chance of causing plaintiff to get

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33. See 1 DOBBS, *THE LAW OF TORTS*, *supra* note 7, §§ 250-51.

34. See *Tarasoff v. Regents of Univ. of Cal.*, 551 P.2d 334, 340 (Cal. 1976) (concerning negligent failure to warn murder victim that assailant made threats on her life); *Roberts v. Colonial Penn Ins. Co.*, 479 So.2d 426, 430 (La. Ct. App. 1985) (holding State Department of Transportation owed a duty to the motoring public to warn of the hazard of cattle on the highways in an open-range area).

35. *E.g.*, *The T.J. Hooper v. N. Barge Corp.*, 60 F.2d 737, 739 (2d Cir. 1932) (holding that due care required tugboat operator to equip tug with radio receiver so that the operator could learn of impending storm in time to protect the barges it was towing by turning back).

36. Jane Stapleton, *The Gist of Negligence* (pt. 2), 104 *LAW Q. REV.* 389, 394-95 (1988) [hereinafter Stapleton, *The Gist of Negligence* (pt. 2)]; see also Timothy Hill, *A Lost Chance for Compensation in the Tort of Negligence by the House of Lords*, 54 *MOD. L. REV.* 511, 517 (1991); Stephen R. Perry, *Protected Interests and Undertakings in the Law of Negligence*, 42 *U. OF TORONTO L. J.* 247, 255 (1992); David P.T. Price, *Causation—The Lords' Lost Chance?*, 38 *INT'L & COMP. L. Q.* 735, 735-36 (1989).

37. Hill, *supra* note 36, at 517; Perry, *supra* note 36, at 255; Price, *supra* note 36, at 735-36; Stapleton, *The Gist of Negligence* (pt.2), *supra* note 36, at 394.

cancer, defendant has deprived plaintiff of a 10 percent chance of avoiding cancer. Thus, under the broad formulation, loss of a chance applies to cases where defendant creates the risk as well as to cases where defendant fails to protect plaintiff from a risk created by an external source. The British Commonwealth cases exemplify the broad formulation in that they apply loss of a chance to risk creating conduct.<sup>38</sup> They do not, however, apply the doctrine to all instances of risk creation. In fact, they rather narrowly limit the doctrine by applying it only in cases involving economic loss, and only to a limited range of causation issues arising in those cases.<sup>39</sup>

Another factor that potentially expands applicability of loss of a chance is that the doctrine is not restricted to cases where the harm has already occurred (referred to in this Article as “proportional damage recovery”).<sup>40</sup> As the following examples illustrate, the doctrine can be applied with equal facility to cases where the harm has yet to occur<sup>41</sup> (referred to in this Article as “proportional risk recovery”).<sup>42</sup> One who exposes another to radiation creating a 10 percent risk of causing cancer deprives that person of a 10 percent chance of avoiding cancer even if that person has not contracted cancer at the time of trial.<sup>43</sup> A physician that negligently fails to diagnose a disease, thereby reducing plaintiff’s chance of survival, has reduced that chance of survival even if the patient is still alive at the time of trial.<sup>44</sup>

The difficulty of limiting application of loss of a chance is compounded because, in addition to potentially applying to a wide variety of cases, loss of a chance also potentially applies to a wide variety of factual determinations relevant to causation in any given case. A number of determinations may be necessary to establish causation in any given case, and loss of a chance can often be

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38. See *infra* notes 204-26 and accompanying text.

39. See *infra* notes 204-26 and accompanying text.

40. See *infra* notes 133-44 and accompanying text.

41. King, *Reduction of Likelihood*, *supra* note 27, at 502, 509, 544; Stapleton, *The Gist of Negligence* (pt.2), *supra* note 36, at 394-95; Melissa Moore Thompson, Comment, *Enhanced Risk of Disease Claims: Limiting Recovery to Compensation for Loss, Not Chance*, 72 N.C. L. REV. 453, 453-54 (1994). Commonwealth cases have applied the loss of a chance approach to cases involving future economic loss. Stapleton, *The Gist of Negligence* (pt. 2), *supra* note 36, at 394-95. See, e.g., *D.W. Moore & Co. v. Ferrier*, 1 All E.R. 400 (Eng. C.A. 1987). The negligent drafting of covenant not to compete gave rise to a tort cause of action at the time the contract was drafted and not at the time the partner subject to the covenant left the firm. *Id.* This is because a properly drafted covenant had value at the time of contracting. *Id.* Damages are to be determined as of the time of contracting by taking into account the chance that the partner would leave the firm in the future. *Id.*

42. See *infra* notes 149-51 and accompanying text.

43. Hill, *supra* note 36, at 517.

44. E.g., *Claudet v. Weyrich*, 662 So. 2d 131, 132 (La. Ct. App. 1995) (living plaintiff could recover for reduction of chance of survival from 75 percent to 42 percent); see Mangan, *supra* note 1, at 309.

applied to some or all of them. The following example based on the facts of *The T.J. Hooper*<sup>45</sup> illustrates this point.

*The Tug*

The manufacturer of an ocean going tugboat negligently fails to equip the tug with a radio receiver so that the operator of the tug can receive weather reports. The tug is caught in a storm while towing barges, and the barges sink. The barge owners sue the manufacturer, claiming that the failure to supply the radio (the negligence) caused the loss of the barges (the damage).

In order for the trier of fact to "believe" that the negligence caused the damage, the trier would have to accept the following premises as true:

- 1) the weather service sent a storm warning,
- 2) the tug operator would have used the radio,
- 3) the radio would have received the storm warning,
- 4) the tug operator would have heeded the warning by changing direction,
- 5) the change in direction would have occurred soon enough to avoid the storm, and
- 6) the storm sank the barges.

A mathematical rule called the conjunction principle suggests that in order for the trier to believe that the negligence caused the damage, it would have to believe that most of the six premises were extremely likely to be true. The conjunction principle states that the probability of a proposition that depends on a number of independent constituent factual premises is equal to the mathematical product of the probability of each premise.<sup>46</sup> Thus, in the Tug example, assume that each of the six constituent premises is independent.<sup>47</sup> If the trier believed that there was a 90 percent chance that each premise was true, it would conclude that there was a 53 percent probability that the negligence caused the damage. This is because  $.9 \times .9 \times .9 \times .9 \times .9 \times .9 = .53$ . If there were a 60 percent chance that each premise is true, then the probability that the negligence caused the damage would be 4.67 percent because  $.6 \times .6 \times .6 \times .6 \times .6 \times .6 = .046656$ . We know that triers of fact

45. 60 F.2d 737 (2d Cir. 1932).

46. See Joseph H. King, Jr., *Causation, Valuation, and Chance in Personal Injury Torts Involving Preexisting Conditions and Future Consequences*, 90 YALE L.J. 1353, 1387-90 (1981) (elaborating on the conjunction principle and citing authorities) [hereinafter King, *Causation, Valuation, and Chance*].

47. If some of the constituent premises are interdependent, the probability of the event is determined by a similar but somewhat more complex formula. For an elaboration on this point, see *id.* In the Tug example, I use the simplifying assumption that each premise is independent because exploring the added complexity of interdependency is unnecessary for purposes of this Article.

sometimes employ the conjunction principle.<sup>43</sup> It is possible, of course, that they do not always employ it. In the example where the probability of each premise was 60 percent, a trier not employing the conjunction principle might conclude that the negligence caused the damage because it believed that each of the six premises was true. How often triers of fact use the conjunction principle is beyond the scope of this Article.

Regardless of whether a trier uses the conjunction principle, however, it is clear that the trier could not believe that the negligence caused the damage in the Tug example if it believed that any one of the six premises was untrue. Yet if plaintiff proved any five of the premises to a certainty, but was unable to prove the remaining premise, then plaintiff could characterize the failure to supply the radio as causing a loss of a chance to prevent the damage. If plaintiff proved premises one, two, three, four, and six to a certainty, and proved only a 40 percent chance that premise five (time to act) was true, plaintiff could claim that the negligence caused a loss of a 40 percent chance of preventing the damage. Note that a failure to prove any of the other premises also gives rise to the same claim. If, for example, there were a 40 percent chance that the operator would have heeded the warning (premise four), then the negligence also caused the loss of a 40 percent chance of preventing the damage.

The illustration can be carried further in two ways by employing the conjunction principle. First, using the conjunction principle with the above-illustration would reduce the chance below 40 percent unless the trier was certain that the other five premises were true. Assume that there was a 90 percent chance that each of the other five premises was true. A trier using the conjunction principle would conclude that there was 23.6 percent chance that the failure to supply the radio caused the damage. This is because  $.9 \times .9 \times .9 \times .9 \times .9 \times .4 = .236196$ . Second, with the aid of the principle, a failure to prove two or more of the six premises would not defeat the loss of a chance theory. Under the conjunction principle, the trier would multiply the chances of each unproved premise to come up with the lost chance. If, for example, one proved

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48. See, e.g., *Sussman & Anor v. Symes & Ors*, No. 1780/90, 1994 N.S.W. LEXIS 13052 (Austl.). The attorney representing both parties to a transaction negligently failed to advise the plaintiff, one of the parties, to seek independent legal advice before agreeing to extinguish a debt owed to him by the other party. *Id.* at \*2. Plaintiff sued the attorney seeking compensation for the money lost by extinguishing the debt. *Id.* at \*9. The court awarded 20 percent of the amount of the extinguished debt as damages on the basis that there was a 25 percent chance that plaintiff would have acted on proper advice by refusing to extinguish the debt, and there was an 80 percent chance that the other party to the transaction would have been able to acquire sufficient resources to repay the debt. *Id.* at \*29-30. The court arrived at the 20 percent figure because  $.25 \times .80 = .20$ . *Id.* at \*30.

only a 40 percent chance that premises two and three were true, then the lost chance would be 16 percent because  $.4 \times .4 = .16$ . In fact, if one could only prove a 40 percent chance that each of the six premises is true, then the lost chance would be .4 percent because  $.4 \times .4 \times .4 \times .4 \times .4 \times .4 = .004096$ .

Imposing liability on the basis of a .004 chance that the negligence caused damage—as opposed to a “belief” that the negligence caused the damage—represents an extraordinary departure from tradition. This departure is magnified when one considers that the loss of a chance theory potentially applies to all tort cases, it applies to ascertaining harm as well as damage, and it applies to future harm and damage as well as past harm and damage. This is not to mention that probabilistic proof is not logically restricted to the causation issues. A court could allow probabilistic proof of any element of any cause of action including, for example, the duty and breach issues in a negligence action. Use of probabilistic proof has the potential to dramatically change the legal system in ways that most people would probably not approve. Loss of a chance cannot become a truly viable doctrine unless courts find limiting principles that restrict its application in an objective way.

*A Note on Bright Line Rules.* When courts expand liability, they often do so in a cautious, experimental way by employing bright line rules in stages, with early rules creating a narrow scope of expanded liability and later rules creating a broader scope. These bright line rules leave some deserving people without compensation because they fall on the wrong side of the line. Yet, the line is legitimate, and not arbitrary, if it makes distinctions that, at least in a general way, further the court’s rationale for expanding liability.

This process is illustrated by the evolution of liability for negligently causing mental distress to a plaintiff who suffered upset by learning of harm caused to another person. Courts first granted recovery where plaintiff suffered an impact in the accident, and the injured person was a close relative.<sup>49</sup> Later courts granted recovery if plaintiff was at risk of an impact (was in the zone of danger), and the injured person was a close relative.<sup>50</sup> Now most courts follow one of two rules. Some permit recovery only if plaintiff witnessed an injury (was close to the scene and observed the accident with her senses) to a close relative.<sup>51</sup> Other more liberal courts now use the preceding considerations as factors but not elements.<sup>52</sup> They

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49. *Greenberg v. Stanley*, 143 A.2d 588, 590 (N.J. Super. 1958), *aff'd in part, rev'd in part*, 153 A.2d 833 (N.J. 1959) (holding when accident injured mother and killed daughter, mother was entitled to recovery for mental distress arising from death of daughter); *see also KEETON ET AL.*, *supra* note 5, at § 54, at 365.

50. RESTATEMENT (SECOND) OF TORTS § 436(3) (1965).

51. *Thing v. La Chusa*, 771 P.2d 814, 815 (Cal. 1989).

52. 2 DOBBS, *THE LAW OF TORTS*, *supra* note 7, § 310, at 841.

determine whether plaintiff is deserving of recovery based on: 1) whether he is a close relative, 2) whether he was close to the accident scene, and 3) whether he observed the accident with his senses.<sup>53</sup> Each of these rules draw principled lines in that the persons on one side of the line are, in general, more likely to suffer more serious mental distress than people on the other side of the line. For example, people generally suffer more distress because of harm to close relatives than harm to non-relatives. The person suffering an impact in an accident is more likely to suffer severe distress than the person who was not touched. The person at risk of an impact is more likely to suffer distress than the person who merely witnesses the accident. The witness to the accident is likely to suffer more serious distress than the person who learns of it later. The more liberal approach is harder to apply and less predictable than the others, but it is not arbitrary. A person that meets one or two of the above-factors is likely to suffer more severe distress than a person that meets none of them.

On the other hand, a bright line rule that is purely arbitrary, in that it creates categories that fail to further the court's rationale for expanded liability, is not defensible. An example is a rule permitting recovery for mental distress suffered by plaintiffs who have a certain hair color or whose names begin with a certain letter of the alphabet. When courts restrict a doctrine by adopting purely arbitrary rules, this may indicate one of two things: either the doctrine is universally valid and should be applied without restriction, or that the doctrine is invalid and should be discarded.

United States courts apply loss of a chance in medical malpractice cases, but not in legal malpractice cases. British Commonwealth courts do exactly the opposite. Is there a principled basis for these differing approaches? This Article will explore such questions in its search for limiting principles.

### III. RATIONALES FOR LOSS OF A CHANCE

#### A. "Chance Has Value"

A major rationale for loss of a chance where plaintiff cannot prove traditional damage is that the chance of obtaining a benefit or avoiding a harm has value in itself that is entitled to legal protection.<sup>54</sup> Thus, destruction of this chance ought to be regarded

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53. *Id.*

54. *Murrey v. United States*, 73 F.3d 1448, 1454 (7th Cir. 1996); *Wendland v. Sparks*, 574 N.W.2d 327, 331 (Iowa 1998); *Falcon v. Memorial Hosp.*, 462 N.W.2d 44, 57 (Mich. 1990); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 684 (Mo. 1992); Hugh Evans, *Damages for the Loss of a Chance (Damages for Solicitors' Negligence, part 3)*, 8 PROF. NEGL. 85, 87-88 (1992); King, *Causation, Valuation, and Chance*, *supra* note 46, at 138; S. M. Waddams, *Damages: Assessment of Uncertainties*, 13 J. CONT. L. 55, 60-61 (1998) [hereinafter

as damage giving rise to an actionable tort.<sup>55</sup> Characterizing the damage as the loss of a chance of avoiding harm (or gaining a benefit) relieves the plaintiff of the burden of proving that the harm itself (or lost benefit itself) occurred. At the same time, the characterization preserves the requirement that plaintiff prove damages by the usual standard of proof.<sup>56</sup> Note, however, that under the "chance has value" characterization, it is often easier to prove actionable damage. It is usually easier to prove that defendant created a risk of harm (or a risk of loss of benefit) than to prove that defendant caused the harm itself (or benefit itself).<sup>57</sup>

The notion that a chance has value is based on the idea that even a less than 50 percent chance of a cure from a fatal disease,<sup>58</sup> of winning a lawsuit,<sup>59</sup> or of getting land rezoned<sup>60</sup> is a thing of value for which a person would be willing to pay. In some cases this value is reflected in an actual market; a lawsuit with a 50 percent chance of success has real settlement value,<sup>61</sup> and land with a chance of rezoning will have a higher market value than land without a chance.<sup>62</sup> But the same principle applies even though there is no actual market.<sup>63</sup>

Courts recognizing the theory that chances have value should logically grant a cause of action for reduction of chance as well as destruction of chance. That is, if defendant reduces plaintiff's chance of gaining a benefit from 60 percent to 40 percent, and plaintiff fails to gain the benefit, defendant should be liable for 20 percent of the lost benefit. There is no theoretical basis for requiring that defendant completely destroy the chance in order to be subject to liability.

An intriguing question is whether that action should apply to cases where defendant reduces but does not destroy plaintiff's chance of obtaining a benefit, and plaintiff nevertheless obtains the benefit. Suppose, for example, that plaintiff is seeking a job as an artist and prepares a special portfolio of sketches for the interview.

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Waddams, *Assessment of Uncertainties*]; Stephen F. Brennwald, Comment, *Proving Causation in "Loss of a Chance" Cases: A Proportional Approach*, 34 CATH. U. L. REV. 747, 752-53, 766-74 (1985).

55. *Wendland*, 574 N.W.2d at 330; *Falcon*, 462 N.W.2d at 48; *Wollen*, 828 S.W.2d at 684; *Perez v. Las Vegas Medical Ctr.*, 805 P.2d 589, 589 (Nev. 1991); King, *Causation, Valuation, and Chance*, *supra* note 46, at 1376, 1381; Brennwald, *supra* note 54, at 768-72.

56. *E.g.*, *Perez*, 805 P.2d at 592; Stapleton, *The Gist of Negligence* (pt. 2), *supra* note 36, at 392.

57. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1374; Wex S. Malone, *Ruminations on Cause-In-Fact*, 9 STAN. L. REV. 60, 80 (1956).

58. *Wollen*, 828 S.W.2d at 684-85.

59. Waddams, *Assessment of Uncertainties*, *supra* note 54, at 60-61.

60. *Id.*

61. S. M. WADDAMS, *THE LAW OF DAMAGES* ¶ 13.290 (2d ed. 1991).

62. Waddams, *Assessment of Uncertainties*, *supra* note 54, at 60.

63. Brennwald, *supra* note 54, at 768-73.

Defendant negligently destroys plaintiff's portfolio shortly before the job interview. This appears to reduce plaintiff's chance of getting a job from 60 percent to 40 percent, but plaintiff nevertheless gets the job. Plaintiff, of course, has an action for destruction of the portfolio. Should plaintiff, in addition, have an action for loss of the chance to get the job? The answer is no because, using hindsight, we now know that the portion of the chance that defendant destroyed had no real value because plaintiff did not need it to obtain the benefit (the job).<sup>64</sup> The chance lacked value because it was not a true chance at all. Chance is a concept that arises out of a lack of information. We think that careless shooting in the vicinity of another person creates a risk of harming that person. But if we had full information, including the precise location of the person and the precise direction of the bullet, we would know that the true chance of harm is either 100 percent or 0 percent. Destroying the portfolio was like shooting a bullet that missed. We know in hindsight that our estimate of chance was wrong. Plaintiff was certain to get the job without the portfolio.

*Valuing Damages.* Courts have followed three approaches to valuing damages: proportional compensation, full compensation, and discretionary valuation.<sup>65</sup> We shall see shortly that from an efficiency perspective the full compensation method is sometimes preferable to the proportional compensation method, and at other times it is not.<sup>66</sup> As a matter of fairness, however, proportional compensation is preferable to full compensation.<sup>67</sup> Under the proportional method, the fact finder determines the percentage that the defendant reduced the chance and reduces the value of the thing lost by that percentage. Awarding as damages the full value of harm when defendant created only a 20 percent chance of causing that harm is not fair because we can only conceive of the value of the chance in probabilistic terms. For this reason, a court choosing to create a cause of action for loss of a chance should use this measure regardless of whether the chance exceeds 50 percent.<sup>68</sup> The alternative of giving the plaintiff a reduced recovery (for loss of a chance) when his proof of causation is below 50 percent and giving him full recovery (for causation of damage) when his proof of causation is above 50 percent is inconsistent. It is also unfair because it requires defendants, as a group, to pay for more harm than they caused.<sup>69</sup>

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64. Glenn Cooper, *Damages for the Loss of a Chance in Contract and Tort*, 6 AUCKLAND UNIV. L. REV. 39, 47-48 (1988).

65. Aagaard, *supra* note 28, at 1348-49 (citing authorities).

66. *See infra* notes 122-33 and accompanying text.

67. Cooper, *supra* note 64, at 49.

68. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1387; *see also* WADDAMS, *THE LAW OF DAMAGES*, *supra* note 61, ¶13.310 to ¶13.320.

69. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1387. For further discussion of this point, *see infra* notes 128-29 and accompanying text.



The discretionary valuation method allows the fact finder to value damages based on its assessment of all the relevant evidence. The Louisiana Supreme Court describes the process:

Evidence of loss of support, loss of love and affection and other wrongful death damages is relevant, but not mathematically determinative, in loss of a chance of survival cases, as is evidence of the percentage chance of survival at the time of the malpractice. The plaintiff may also present evidence of, and argue, other factors to the jury, such as that a ten percent chance of survival may be more significant when reduced from ten percent to zero than when reduced from forty to thirty percent. The jury may also consider such factors as that the victim, although not likely to survive, would have lived longer but for the malpractice.<sup>70</sup>

Social science research confirms the court's intuition that people place differing values on lost chances depending on where they occur on the spectrum of probability.<sup>71</sup> This insight, however, largely misses the point. Damages in wrongful death cases are not awarded for the loss of life itself.<sup>72</sup> They are awarded for the harm flowing from the death, such as loss of financial support and loss of consortium.<sup>73</sup> Under the chance has value theory, these losses have the same value regardless of where they fall on the spectrum of probability. That is, a 10 percent chance of losing \$100,000 in support is \$10,000 regardless of whether the reduction is from 10 percent to 0 percent or from 40 percent to 30 percent. Yet there are other damages associated with a lost chance that ought to be awarded in full. These are such things as the extra medical expenses associated with the delayed diagnosis, and the extra mental distress caused by the victim's knowledge that she lost her chance of survival.<sup>74</sup> If a court recognizes these damages, it ought to award them without reduction. In calculating mental distress damages, where the loss falls on the spectrum of probability may be relevant. This is because the value that the victim places on the loss will affect the amount of mental distress that she suffers. The discretionary valuation method is too imprecise to make these distinctions. The most accurate method of valuing damages is to award proportional compensation for damages, such as lost

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70. *Smith v. State Dept. of Health & Hosps.*, 676 So. 2d 543, 549 n.10 (La. 1996).

71. Jonathan J. Koehler & Arienne P. Brint, *Psychological Aspects of The Loss of Chance Doctrine*, Address Before the American Psychology-Law Society (Mar. 11, 2000), at <http://www.cepr.org/meets/wkcn/3/3509/Papers/Koehler.pdf>, (reporting on an empirical study showing that people placed a higher value on the loss of a 20 percent chance to survive if the reduction was from 100 percent to 80 percent than if the reduction was from 60 percent to 40 percent).

72. Aagaard, *supra* note 28, at 1344.

73. *Id.* at 1345.

74. *Id.* at 1352.

earnings, that should be reduced and to award full recovery for damages, such as extra medical expenses, that should not be reduced.

*Drawbacks of the Chance Has Value Theory.* There are three drawbacks to basing loss of chance recoveries on the theory that the lost chance has value in and of itself. One problem, discussed later in this Article,<sup>75</sup> is that the theory would often lead to wildly speculative damage awards because courts would often have very little reliable evidence concerning the magnitude of the lost chance.

A second difficulty is that the theory supports a finding that a plaintiff who has lost a chance has suffered pure economic loss, the monetary value of the lost chance. Such a showing may not be sufficient to support a tort action requiring physical harm.<sup>76</sup> Medical malpractice actions traditionally require a showing that the doctor caused physical harm to the patient. Wrongful death statutes typically require that the tortfeasor caused the decedent's death.<sup>77</sup> In a case where a doctor negligently deprives a patient of a less than 50 percent chance of avoiding personal injury or death, the evidence does not show that the negligence caused the personal injury<sup>78</sup> or death.<sup>79</sup> Courts can, of course, circumvent this problem by creating a cause of action for purely economic loss in such cases.

For purposes of this Article, there is a third drawback. Regardless of the merits of the concept that "chance has value," the concept provides no workable basis for formulating a limiting principle. This becomes clear by examining the two approaches to ascertaining when a chance has value.

The first view, espoused by Helen Reece and Stephen R. Perry, does, in theory, but not in practice, provide a limiting principle. Reece and Perry object to the idea that the loss of a chance has value in cases where the harm-producing processes involved are deterministic.<sup>80</sup> In their view, a chance has value only if it arises from indeterministic forces. Processes are deterministic when their past conclusively determines their future, and processes are indeterministic when there is a random component that makes future consequences of past events uncertain.<sup>81</sup> With deterministic processes, the true probability of causation is always either 100 percent or 0 percent. In such cases any estimate of the probability of causation falling between those two extremes is based on

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75. See *infra* notes 250-52 and accompanying text.

76. Brian Coote, *Chance and the Burden of Proof in Contract and Tort*, 62 AUSTRALIAN L.J. 761, 772 (1988).

77. Brennwald, *supra* note 54, at 786-89.

78. Coote, *supra* note 76, at 772.

79. *United States v. Cumberbatch*, 647 A.2d 1098, 1099 (Del. 1994); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 683 (Mo. 1992).

80. Helen Reece, *Losses of Chances in the Law*, 59 MOD. L. REV. 188 (1996); see also Perry, *supra* note 36.

81. Reece, *supra* note 80, at 194.

ignorance of the processes involved, and has no "connection with the objective world."<sup>82</sup> Such an estimate does not reflect a true chance of occurrence that can properly be regarded as an asset that has independent value.<sup>83</sup>

*Hotson v. East Berkshire Area Health Authority*,<sup>84</sup> a case that Reece and Perry view as deterministic,<sup>85</sup> illustrates the problem. Plaintiff injured his hip in a fall and was taken to defendant's hospital for treatment. Defendant negligently failed to diagnose and treat the injury. Plaintiff later developed a seriously disabling condition, avascular necrosis, because of an inadequate blood supply to the affected area. The inadequate blood supply could have been caused either by the rupture of a sufficient number of blood vessels at the time of the fall or by subsequent excessive pressure in the joint due to inadequate treatment at the time of plaintiff's initial visit to the hospital. Based on expert testimony, the trial court found that there was a 75 percent risk that sufficient blood vessels were ruptured in the initial fall to make the avascular necrosis unavoidable. The trial judge awarded plaintiff 25 percent of his damages on the theory that defendant's negligence deprived plaintiff of a 25 percent chance of avoiding the avascular necrosis. The Court of Appeals affirmed the trial court, but the House of Lords reversed, reasoning that the condition of plaintiff's blood vessels at the time of initial treatment was a past event which plaintiff must prove by a balance of probabilities. Because he was unable to prove this, however, he was entitled to no damages for the disability caused by the avascular necrosis.

The processes in *Hotson* were deterministic because at the time of his initial treatment, plaintiff either had sufficient blood vessels to avoid avascular necrosis or he did not. In the former case he would have had a 100 percent chance of avoiding the disabling injury, and the defendant's negligence interfered with his interest in avoiding the injury. In the latter case he had a 0 percent chance of avoiding the injury, and defendant's negligence did not interfere with that interest. The finding that he lost a 25 percent chance of avoiding the injury is simply an estimate based on ignorance of the existing facts. As Professor Perry states, "[t]he reduction of the 25 per cent chance to 0 per cent was not an occurrence that took place in the physical world."<sup>86</sup>

According to Reece and Perry, if a causal process is truly indeterministic, because it contains a random component, then the chance of causing a harm or a benefit is "a property of the external world, similar to mass or volume, independent of human knowledge

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82. *Id.* at 193.

83. Perry, *supra* note 36, at 260.

84. 2 All E.R. 909 (Eng. H.L. 1987).

85. Perry, *supra* note 36, at 258, 261; Reece, *supra* note 80, at 195.

86. Perry, *supra* note 36, at 259.

or belief<sup>87</sup> that can be valued.<sup>88</sup> An example is a lottery ticket that is not placed in the draw due to defendant's negligence.<sup>89</sup> Here it is impossible to know whether plaintiff would have won the lottery if the ticket had been placed in the draw. Plaintiff lost a true chance of winning that can only be understood in probabilistic terms. It is rational to regard that chance as having a distinct value, and to grant a cause of action for loss of that thing of value.

Unfortunately, the distinction between deterministic and indeterministic forces does not provide the basis for a useful limiting principle. This is because "it is difficult, if not impossible, to know that an event is indeterministic."<sup>90</sup> Consider the Medical Misdiagnosis example discussed previously.<sup>91</sup> It is possible that the processes involved in stage two breast cancer are deterministic, so that if we knew enough about the disease and about the individual characteristics of each patient, we could identify in advance the 40 percent of patients that could be effectively treated and the 60 percent that could not be. On the other hand, it is possible that the processes are indeterministic so that no matter how much information we had, we could not predict which patients fall in which group. Science does not answer this question.

Because science cannot help us distinguish between deterministic and indeterministic forces, we can apply that distinction as a limiting principle only by relying on our intuition about what forces are indeterministic. Our intuition, however, is almost certain to lead us astray. One thing that science can tell us is that our instinct of how the universe works is wildly inaccurate. If we balanced a playing card on edge, we would expect it to fall to either the right or to the left. One respected theory of quantum mechanics predicts that the card falls to both the right and the left.<sup>92</sup> Each fall takes place in a parallel world whose occupants are unaware of the other world.<sup>93</sup> Likewise, the destroyed lottery ticket would have won in one world and lost in another. Surely, intuition can be no better than science at identifying indeterministic forces.

A second view of the "chance has value" theory, espoused by Nils Jansen, takes a more practical approach.<sup>94</sup> He disputes the distinction between deterministic and indeterministic forces.<sup>95</sup> He argues that as a practical matter people value all apparent chances

87. Reece, *supra* note 80, at 193.

88. Perry, *supra* note 36, at 260.

89. *Id.*; Reece, *supra* note 80, at 195.

90. Reece, *supra* note 80, at 194.

91. See *supra* notes 29-30 and accompanying text.

92. Max Tegmark & John Archibald Wheeler, *100 Years of Quantum Mysteries*, SCI. AM., Feb. 2001, at 68, 72.

93. *Id.*

94. Nils Jansen, *The Idea of a Lost Chance*, 19 OXFORD J. LEGAL STUD. 271 (1999).

95. *Id.* at 277-79.

to avoid harm regardless of whether the forces are deterministic or indeterministic.<sup>96</sup> Because people value a chance, its destruction is a thing of value that merits compensation.<sup>97</sup> Jansen is correct that people do value such chances. It is entirely rational to value an illusory chance (one that is predetermined not to exist) as highly as an actual chance (one based on indeterministic forces) as long as one is ignorant that the chance in question is an illusion.

Unfortunately, Jansen's view also fails to provide a limiting principle. If all lost chances have value, and if all questionable causation issues can be viewed as involving a lost chance, then the "chance has value" theory of damages can be applied in virtually every case of questionable causation.

### B. *Autonomy*

Professor Perry offers a rationale for imposing liability in loss of a chance cases that avoids the necessity of distinguishing between deterministic and indeterministic causal processes.<sup>98</sup> He argues that interfering with plaintiff's personal autonomy justifies imposing liability for loss of a chance.<sup>99</sup> Such interference occurs when a defendant knowingly causes plaintiff to rely to his detriment on an undertaking or misrepresentation.<sup>100</sup> Depriving plaintiff of the opportunity to follow a preferable course of action should be treated as a tort loss.<sup>101</sup> Thus, Professor Perry sees the gravamen of the tort as the lost opportunity to follow a preferable course of action rather than the lost chance of avoiding a harm or gaining a benefit.<sup>102</sup> He would, however, take the lost chance into account in valuing damages.<sup>103</sup> Therefore, he would permit the plaintiff in *Hotson* to recover because the defendant deprived plaintiff of the opportunity of seeking appropriate medical treatment. This is a preferable course of action because at the time of the treatment there were reasonable grounds for believing that appropriate treatment might have helped.<sup>104</sup>

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96. *Id.* at 279-84.

97. *Id.*

98. Perry, *supra* note 36, at 289.

99. *Id.* Professor Waddams makes a very similar argument. S.M. Waddams, *The Valuation of Chances*, 70 CANADIAN BUS. L.J. 86, 90, 94 (1998) [hereinafter Waddams, *The Valuation of Chances*] (asserting that the wrong is withholding treatment or information, and damages should be measured according to the probability that the plaintiff would have benefited from the treatment or information); see also King, *Reduction of Likelihood*, *supra* note 27, at 533 ("[A] preferable way of [viewing plaintiff's injury in *Hotson*] is to view it as the loss of the opportunity to allow events to play out in order to see if the plaintiff's condition was in fact amenable to restoration.").

100. Perry, *supra* note 36, at 270, 276.

101. *Id.* at 290-91.

102. *Id.*

103. *Id.* at 291, 309-11.

104. *Id.* at 291, 309.

This autonomy theory has broad application. In addition to applying to negligent misrepresentation cases and medical negligence cases like *Hotson*, the theory also applies to medical malpractice informed consent cases<sup>105</sup> and legal malpractice cases involving improper advice.<sup>106</sup> The theory can also easily be extended to product liability failure to warn cases.<sup>107</sup>

The crucial aspects of Professor Perry's theory are that he requires detrimental reliance, and he defines detriment to include the loss of a chance to follow a course of action that reasonably appears to reduce the risk of economic loss or physical injury.<sup>108</sup> Note that if he defined detriment narrowly to include only actual physical harm or economic loss, the autonomy theory would be largely superfluous. The law already provides several actions permitting recovery for harm intentionally or negligently caused by reliance on an undertaking. The negligence cause of action applies to physical harm, and the misrepresentation cause of action applies to economic harm. Professor Perry's theory accommodates recovery for loss of a chance only because he defines detriment to include increased risk of harm.

Professor Perry's theory can provide a principled basis for limiting the loss of a chance doctrine. But whether it does depends on courts adopting the theory because they are genuinely interested in protecting autonomy. If courts adopt the theory primarily because they desire to grant recovery for loss of a chance, rather than to protect autonomy, then the theory would be a mere subterfuge rather than a useful limiting principle. The question of why to depart from the usual standard of proof would remain unanswered.

Professor Perry's version of the autonomy theory presents a risk of subterfuge because his definition of detriment is sufficiently restrictive to limit the autonomy theory to loss of a chance cases. Many interferences with autonomy cause detriment other than the loss of a chance to avoid harm. A manufacturer's false claim that its product is "Made in America" interferes with the autonomy of customers who are influenced to buy the product because of the claim. And this is true even if the product is a good value. A business that falsely claims to be an "Equal Opportunity Employer" interferes with the autonomy of all the people it deals with who would not knowingly contract with such a business. The detriment in both examples is that the customers were falsely induced to alter their conduct. In addition, if the customers have strongly-held views, they are likely to suffer psychological detriment (mental

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105. *Id.* at 311.

106. *Id.* at 293.

107. Denis W. Boivin, *Factual Causation in the Law of Manufacturer Failure to Warn*, 30 OTTAWA L. REV. 47, 85-86 (1998).

108. See Perry, *supra* note 36, at 290-91.

distress) upon learning the truth. Likewise, a politician that obtains a vote by making a false campaign promise interferes with the voter's autonomy. Why would a court that is genuinely concerned with protecting autonomy not grant a meaningful cause of action in all cases where there is any detriment? Why not treat interferences with autonomy as a dignitary tort like assault or battery, and grant recovery even though there is no detriment or harm at all?

Yet, it is quite possible for a court to adopt Professor Perry's theory because its primary purpose is to protect autonomy. As pointed out previously,<sup>109</sup> courts usually expand liability cautiously. If courts desire to increase protection for autonomy, Professor Perry's proposal is a logical first step. Even though its application is broad, we shall see that Perry's theory does have some value as a limiting principle.

### C. *Fairness Based on Difficulty of Proof*

Several writers assert fairness as a primary justification for the recovery for the loss of a chance, based on either the injustice of denying all recovery to people who fall slightly short of proving their cases by a preponderance of evidence,<sup>110</sup> the injustice of granting no relief against a defendant who has carelessly destroyed a less than 50 percent chance of a successful outcome,<sup>111</sup> or the injustice of denying recovery because of a lack of evidence where the defendant has negligently increased the risk of harm.<sup>112</sup> All of these justifications for loss of a chance have appeal, but they have little value as limiting principles because they point toward imposing proportional recovery in practically every case where plaintiff is unable to prove that the wrongdoer caused his harm.

Professor King makes a more specific fairness argument. He contends that loss of a chance recovery is justified where the defendant's tortious conduct creates the lack of evidence that prevents plaintiff from proving damages by a preponderance of evidence.<sup>113</sup> For example, where a doctor negligently fails to diagnose and treat plaintiff's disease, defendant deprives plaintiff of ever knowing whether the treatment would have been successful.<sup>114</sup> This rationale has merit, and courts sometimes rely on it as a reason for using loss of a chance in medical misdiagnosis cases.<sup>115</sup>

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109. See *supra* notes 49-53 and accompanying text.

110. Walter Scott, *Causation in Medico-Legal Practice: A Doctor's Approach to the 'Lost Opportunity' Cases*, 55 MOD. L. REV. 521, 524-25 (1992).

111. Evans, *supra* note 54, at 87; Marc Stauch, *Causation, Risk, and Loss of Chance in Medical Negligence*, 17 OXFORD J. OF LEGAL STUD. 205, 219-20 (1997).

112. Price, *supra* note 36, at 751, 758-60.

113. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1378; King, *Reduction of Likelihood*, *supra* note 27, at 529-35; see also Waddams, *Assessment of Uncertainties*, *supra* note 54, at 66.

114. King, *Reduction of Likelihood*, *supra* note 27, at 534-35.

115. *E.g.*, *McKellips v. Saint Francis Hosp., Inc.*, 741 P.2d 467, 469 (Okla.

The problem with King's rationale, for our purposes, is that it provides very little basis for limiting the loss of a chance doctrine. Tortfeasor conduct commonly impairs plaintiffs' ability to prove causation. Assume, for example, that a tortfeasor negligently exposes plaintiff to a carcinogen that increases plaintiff's chances of getting cancer by 10 percent, and plaintiff later contracts cancer. The tortfeasor has prevented the plaintiff from ever knowing whether she would have gotten cancer anyway from other carcinogens. Employing loss of a chance in all cases where defendant's conduct impairs plaintiff's ability to prove causation would take us a very long way toward the general use of probabilistic causation.

#### D. Deterrence

A number of scholars justify the loss of a chance approach on deterrence grounds.<sup>116</sup> They argue that efficient deterrence is achieved by granting recovery for loss of a chance and measuring damages by discounting plaintiff's actual or potential harm by the probability that defendant caused the harm. They criticize the all or nothing rule as being harsh and imprecise.<sup>117</sup> Under that rule a tortfeasor who created a 51 percent risk of causing plaintiff's harm will pay 100 percent of plaintiff's damages (resulting in overdeterrence); but the tortfeasor would pay nothing if she created a 49 percent risk of causing plaintiff's harm (resulting in underdeterrence).<sup>118</sup> The loss of a chance approach is more precise because the tortfeasor would pay 51 percent of plaintiff's damages in the former case and 49 percent of plaintiff's damages in the latter case.<sup>119</sup> How meritorious this argument is depends on the likelihood that a suit will be brought for wrongful infliction of harm and on whether the suit is for past harm or future harm.

*Likelihood of Suit.* According to economic theory, actors will use appropriate precautions if they know they will be held liable for all the harm they cause in the event they use inadequate precautions.<sup>120</sup> Holding wrongdoers liable for less harm than they cause will induce them to take too few precautions, and holding them liable for more harm than they cause may possibly induce them to take too many precautions.<sup>121</sup> In the Medical Misdiagnosis example discussed

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1987); see also Ellis, *supra* note 27, at 378-79 (citing and discussing cases).

116. See Stapleton, *The Gist of Negligence* (pt. 2), *supra* note 36, at 399 & n.24 (citing and summarizing authorities).

117. *Id.* at 399 (citing authorities).

118. *Id.* (citing authorities).

119. *Id.* (citing authorities).

120. A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 883-85 (1998).

121. For a detailed explanation of why this is true, and for a discussion of the effect of the amount of damages on activity levels, see *id.*



previously,<sup>122</sup> some courts would use a relaxed approach to causation that would apparently hold the physician liable for all the plaintiff's harm even though the physician only increased the risk of death by 40 percent.<sup>123</sup> Assume the disease caused harm of \$1,000,000. This relaxed causation approach appears to risk overdeterrence because it leads to the actor paying for more harm than she expected to cause. The tortfeasor's expected damages are \$400,000 because she created a 40 percent chance of causing a \$1,000,000 loss (.40 x 1,000,000 = 400,000).<sup>124</sup> If she is liable for \$1,000,000, she pays \$600,000 in "punitive" (or extra) damages. An arguably preferable approach is to apply a probabilistic rule and hold the physician liable for \$400,000 because appropriate deterrence is achieved if the physician faces expected liability that is equal to the losses she expects to cause.<sup>125</sup> A third approach is to use the all or nothing rule. Whether the probabilistic rule is preferable to the all or nothing rule is discussed below.<sup>126</sup>

There is a second approach to loss of a chance that also risks overdeterrence. Some writers advocate granting a proportional recovery in cases where the risk of harm is 50 percent or less and granting full recovery where the risk of harm is more than 50 percent.<sup>127</sup> This risks overdeterrence because it places actors at risk of paying for more harm than they cause.<sup>128</sup> Defendants as a class will pay punitive (or extra) damages if they systematically pay 100 percent of damages in all cases where plaintiff can prove causation by a preponderance of evidence (greater than 50 percent) and partial damages in cases where plaintiff cannot prove causation (50 percent or less). To illustrate, assume that in one case *X* creates a 2/3 risk of causing \$99 in damages and in another case *X* creates a 1/3 risk of causing \$99 in damages. If *X* is held liable for \$99 in the first case and \$33 in the second case, she will have paid \$132 in total damages even though she actually caused damages of only \$99.

Punitive damages create a risk of overdeterrence, however, only if they result in excessive liability. Negligent tortfeasors may not always pay for all the harm they cause. They can escape liability for a variety of reasons such as the difficulty of proving an element of plaintiff's case or because plaintiff's damages are too small to finance the cost of a lawsuit.<sup>129</sup> A repeat tortfeasor that pays full

122. See *supra* notes 29-30 and accompanying text.

123. See *infra* notes 193-98 and accompanying text.

124. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* § 1.2, at 12 (4th ed. 1992).

125. STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* § 5.3.2, at 116 (1987).

126. See *infra* notes 160-74 and accompanying text.

127. Truckor, *supra* note 27, at 372.

128. Saul Levmore, *Probabilistic Recoveries, Restitution, and Recurring Wrongs*, 19 J. LEGAL STUD. 691, 707, 718 (1990).

129. Polinsky & Shavell, *supra* note 120, at 888.

damages in some cases and escapes liability in other cases will be underdeterred. Likewise, one-time-tortfeasors that have a good chance of escaping liability are underdeterred because their expected liability is reduced. Expected liability is the amount the tortfeasor expects to pay if she is held liable multiplied by the chance that she will escape liability. In the Medical Misdiagnosis example, the physician's expected liability is \$250,000 if she believes that there is a 25 percent chance that she will be liable for the \$1,000,000 (expected damage of \$400,000 plus punitive damage of \$600,000).<sup>130</sup> Her expected liability is only \$100,000 if she believes that there is a 25 percent chance that she will be liable for \$400,000 (expected damages only). Neither result risks overdeterrence because in both cases her expected liability is still less than her expected damage of \$400,000. This illustrates the problem of underdeterrence. Awarding punitive damages (the extra \$600,000) helps correct the underdeterrence problem in the example by partially restoring proper incentives.<sup>131</sup>

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130. *Id.* at 889 n.46.

131. Polinsky and Shavell elaborate on the nature of the problem and explain the appropriate solution in the following passage:

[I]njurers will sometimes be able to escape liability for harms for which they should be held responsible. The consequences of this possibility are clear: if damages merely equal harm, injurers' incentives to take precautions will be inadequate and their incentive to participate in risky activities will be excessive. Suppose that there is only a one-in-four chance that an injurer will be found liable for a \$100,000 harm, for which he would have to pay damages of \$100,000. On average, then, the injurer will pay \$25,000 when he causes the harm—only a fraction of the harm caused. If the harm could have been prevented each time by taking a \$50,000 precaution, the injurer will not have an adequate incentive to take the precaution, because the precaution cost will exceed his average liability cost by a substantial margin. Moreover, because the injurer will pay only \$25,000 on average for a \$100,000 harm, he will engage in the risky activity to an excessive degree. If the injurer is a firm, the price of its product will rise by an amount reflecting only one-quarter of the harm caused, leading consumers of the product to buy more of it, and thereby cause more harm, than is socially desirable.

To remedy these problems of underdeterrence, damages that are imposed in those instances in which injurers are found liable should be raised sufficiently so that injurers' average damages will equal the harm they cause. In the example in the preceding paragraph, in which the chance of being found liable for having caused a \$100,000 harm is only one in four, damages should be raised to \$400,000. Then, on average, the injurer will pay \$100,000 when he causes the harm—on average, every four times he causes harm, he will be found liable once for \$400,000. Equivalently, his total damages will tend to equal the total amount of harm that he has caused. As we emphasized above, making injurers liable for the harm they cause will induce them to take proper precautions and participate appropriately in risky activities.

Polinsky & Shavell, *supra* note 120, at 888-89 (footnotes and emphasis omitted).

When tortfeasors often escape liability, using an approach such as relaxed causation, to impose excessive liability will not create overdeterrence unless the tortfeasor's expected liability exceeds her expected harm. Studies of medical negligence in the United States show that only one claim is filed for every five to ten negligently inflicted injuries,<sup>132</sup> and only about 19 percent of the most seriously injured malpractice victims receive compensation.<sup>133</sup> If the studies accurately reflect the degree to which physicians escape liability for negligence in the United States, then any extra compensation awarded in the small number of cases where they are held liable may usefully strengthen physicians' incentives to use due care. This, however, is not the whole story. Courts may sometimes erroneously hold physicians liable when they are not negligent. The prospect of such negligence may cause physicians to raise their level of care in order to avoid such liability. Therefore, in order to determine whether physicians as a whole are held liable for too little harm, the cases where non-negligent physicians are erroneously held liable must be counterbalanced against the cases where negligent physicians escape liability. Whether the relaxed causation approach promotes proper deterrence in medical malpractice cases is an empirical question that is beyond the scope of this Article. It is a question well worth exploring, however, because the data showing the very low frequency of recovery for medical negligence suggests that physicians may be underdeterred if their liability is restricted to the harm that they caused.

*Present Harm and Future Harm.* Putting aside the question of whether tortfeasors are held liable frequently enough, another deterrence consideration raised by loss of a chance is whether the claim is for past harm or future harm. Loss of a chance cases fall into two categories: "proportional damage recovery" and "proportional risk recovery."<sup>134</sup> "Proportional damage recovery" cases are those that permit a plaintiff to recover a portion of his damages only after he has suffered the injury or acquired the disease.<sup>135</sup> If a defendant doctor reduced a patient's chance of surviving cancer by 20 percent, and the patient died from the cancer, plaintiff would recover 20 percent of harm caused by the death. If the doctor reduced a patient's chance of surviving cancer by 60 percent, and the patient died, the plaintiff would recover 60 percent of the damages caused by the death.

"Proportional risk recovery" cases permit a plaintiff to recover a

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132. Philip G. Peters, Jr., *The Role of the Jury in Modern Malpractice Law*, 87 IOWA L. REV. (forthcoming 2002) (on file with the author) (reviewing the literature).

133. Russell A. Localio et al., *Relation Between Malpractice Claims And Adverse Events Due To Negligence: Results of the Harvard Medical Practice Study III*, NEW ENG. J. MED., July 25, 1991, at 245-51.

134. Fischer, *supra* note 3, at 1202.

135. *Id.*

portion of her future harm before she has been injured or made ill.<sup>125</sup> If a defendant doctor reduced a patient's chance of surviving cancer by 20 percent, plaintiff could sue before the cancer recurs. The measure of damages would be 20 percent of harm that would occur if the cancer does recur. Note that in such cases the cancer may never recur. The patient, for example, may have initially had a 40 percent chance of survival that the doctor negligently reduced to a 20 percent chance. The patient may nevertheless survive because her chance of survival was not completely destroyed.

*Present Harm—Proportional Damage Recovery.* In an important article, Professor David Kaye demonstrated that probabilistic causation does not necessarily lead to more satisfactory results in proportional damage recovery cases.<sup>137</sup> The probabilistic rule actually generates more errors affecting deterrence than the preponderance rule because the probabilistic rule makes mistakes in every case, either an overpayment by a defendant because the claimant recovered damages even though he was not injured by the defendant, or an underpayment by a defendant because the claimant was injured by the defendant and received less than all of his damages.<sup>138</sup> In comparison, the all or nothing rule is correct in most cases, but makes a small number of fairly large errors.<sup>139</sup> The all or nothing rule is "unbiased" in that it fairly allocates the mistakes between plaintiffs and defendants "[a]s long as the probabilities [of causation] are distributed across cases and parties in a symmetric way."<sup>140</sup> This is the usual case because most activities involve groups of plaintiffs and defendants where the probability of causation varies from case to case, sometimes more than 50 percent and sometimes less.<sup>141</sup> In such cases "discrepancies in the error rates tend to average out, and the enterprise as a whole

136. *Id.*

137. David Kaye, *The Limits of the Preponderance of the Evidence Standard: Justifiably Naked Statistical Evidence and Multiple Causation*, 1982 AM. B. FOUND. RES. J. 487.

138. *Id.* at 496, 500-02. This approach to measuring error is "deterrence oriented" because it focuses on erroneous payments made by defendants. Levmore, *supra* note 128, at 699. While error minimization is not an ultimate goal of the tort system, it is thought to be a "proxy for a more useful social goal such as the minimization of undesirable consequences like injuries." *Id.* at 696 n.8.

139. Kaye, *supra* note 137, at 502; accord Levmore, *supra* note 128, at 695. Professors Orloff and Stedinger argue that the probabilistic rule might still be superior to the all or nothing rule. Neil Orloff & Jerry Stedinger, *A Framework for Evaluating the Preponderance-of-the-Evidence Standard*, 131 U. PA. L. REV. 1159, 1163-72 (1983). The probabilistic rule produces a large number of small errors that are evenly distributed among the parties. *Id.* This is often likely to be less socially disruptive than the all or nothing rule, which produces a small number of large errors that may fall unequally on plaintiffs or on defendants, depending on the type of case. *Id.*

140. Kaye, *supra* note 137, at 502.

141. *Id.*

is charged the appropriate gross amount for the injuries it causes."<sup>142</sup>

The all or nothing rule, however, does produce "biased" results in cases where "a single defendant faces the possibility of numerous suits from similarly situated plaintiffs and the probability that this defendant is liable is the same in each of these cases."<sup>143</sup> Here defendants are underdeterred if the likelihood of causation is less than 50 percent (they are never held liable for anything) and they are overdeterred if the likelihood of causation is over 50 percent but less than 100 percent (they are always held liable for 100 percent). Professor Levmore has denominated such cases as "recurring misses."<sup>144</sup> In recurring miss cases the probabilistic rule produces superior results because it holds all defendants liable in accordance with the probability of causation so that in the end each defendant will be liable for the amount of harm that it actually caused.<sup>145</sup> The probabilistic rule achieves appropriate deterrence in recurring miss cases only when it is applied to all such cases, even those where causation can be established by a preponderance of evidence.<sup>146</sup>

Identifying cases that are recurring misses is a matter of some difficulty. According to Levmore, examples of recurring misses include medical malpractice cases involving cost-justified procedures that have a low chance of success, and failure to warn and informed consent cases where only a small fraction of the recipients of the information would have altered their behavior.<sup>147</sup> Medical malpractice cases are probably the most promising category of cases for distinguishing recurring miss cases from standard cases because scientists have collected good statistical information concerning the chances of success of a wide variety of medical procedures.<sup>148</sup> Most malpractice cases would not qualify as recurring misses, however, because most physicians diagnose and treat a variety of patients with a variety of ailments, giving rise to widely varying chances of a cure. Such physicians are adequately deterred by the all or nothing rule. The "recurring miss" theory would apply only in relatively rare cases where a given physician encounters numerous cases where the chances of a cure are all approximately the same. Identifying recurring misses is much more difficult in other kinds of cases. In cases involving such issues as failure to warn, legal malpractice, and loss of business opportunity it is hard to identify recurring misses because the facts of each case are highly individualistic and there is

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142. *Id.*

143. *Id.*

144. Levmore, *supra* note 128, at 705. While Professor Levmore is primarily concerned with cases where the probability of causation is consistently less than 50 percent, he also applies his "recurring miss" terminology to cases where the probability of causation is consistently greater than 50 percent. *Id.* at 707.

145. Kaye, *supra* note 137, at 502; Levmore, *supra* note 128, at 705-07.

146. Levmore, *supra* note 128, at 718.

147. *Id.* at 706.

148. *Id.* at 719.

no good body of statistics showing the likelihood of causation.

*Future Harm—Proportional Risk Recovery.* Professor Kaye's criticism of the proportional damage recovery theory, that it makes a mistake in every case, does not apply to cases seeking proportional risk recovery for losses that can be insured against. This latter theory awards a reduced recovery to any person exposed to a risk of future harm that has not yet come to pass. Not all of these persons will actually suffer harm, but each has suffered a loss in an actuarial sense because his chances of avoiding the harm have been reduced.<sup>149</sup> These kinds of losses can often be insured against, and plaintiffs that use their recoveries to purchase such insurance are not overcompensated.<sup>150</sup> Those plaintiffs that actually suffer the future loss will receive appropriate compensation from their insurance companies. Those plaintiffs that do not suffer the future loss receive nothing from their insurance companies, and thus, are not overcompensated.

Some United States medical malpractice cases use loss of a chance to grant proportional risk recovery; they compensate the patient for the harm risked by the physician's negligence even though the harm has not yet occurred.<sup>151</sup> In *Claudet v. Weyrich*<sup>152</sup> a physician negligently failed to diagnose plaintiff's breast cancer when it was in Stage I. Instead, he diagnosed it after it had progressed to Stage II. If the cancer had been treated in Stage I, plaintiff would have had a 75 percent chance of survival with proper treatment. Because it was diagnosed in Stage II, plaintiff's chance of survival was reduced to 42 percent. The court upheld a jury award that included a recovery of 33 percent of damages that would result if she died in the future because of a recurrence of the cancer. The damages included future lost wages, insurance premiums, and physical and mental suffering. Permitting proportional recovery in

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149. See, e.g., *United States v. Anderson*, 669 A.2d 73 (Del. 1995). The failure to diagnose testicular cancer caused it to spread, necessitating additional surgery and chemotherapy; it also caused a 15 percent chance of recurrence of testicular cancer. *Id.* at 74-75. The chance of recurrence would have been 0 percent if diagnosis had been prompt. *Id.* at 75. The court held that because defendant caused physical harm, plaintiff can recover for the increased risk of future cancer as an element of damages. *Id.* at 74. The court rejected the all or nothing rule because plaintiff's life expectancy had been shortened by this risk. *Id.* at 77.

150. Fischer, *supra* note 3, at 1224-25.

151. *Claudet v. Weyrich*, 662 So. 2d 131 (La. Ct. App. 1995) (living plaintiff could recover for reduction of chance of survival from 75 percent to 42 percent). *Contra Andersen v. Brigham Young Univ.*, 879 F. Supp. 1124, 1128, 1130 (D. Utah 1995) (plaintiff alleged an increased risk of future disease, but no present symptoms and no present harm caused by delay in treatment; the court dismissed the case, predicting that Utah would not recognize loss of a chance in the absence of actual harm). Such recovery is most common in cases where the defendant has caused a distinct harm that carries with it an increased risk of a future illness or injury. See *infra* notes 157-92 and accompanying text.

152. 662 So. 2d 131 (La. Ct. App. 1995).

such cases can be justified on deterrence grounds.

Note that the argument that reduced recovery is justifiable in proportional risk recovery cases does not depend on the "chance has value" theory discussed above.<sup>153</sup> The actuarial loss that the plaintiff suffers in proportional risk recovery cases creates the necessity of buying insurance against future losses simply because the future is unknown. Any future loss that materializes poses a hardship if it has not been insured against. That hardship exists without regard to such questions as whether before the event people would have valued the chance of avoiding the loss or whether the forces at work are deterministic or indeterministic.

*Value of Deterrence as a Limiting Principle.* This analysis shows that efficient deterrence is enhanced by the use of loss of a chance for torts where claims are often not pursued and also for torts involving either recurring misses or proportional risk recovery. These insights are useful as limiting principles, however, only to the extent that deterrence is an important objective of tort law. United States scholars are divided over the question of whether the tort system is primarily concerned with achieving efficiency (appropriate deterrence)<sup>154</sup> or with achieving corrective justice.<sup>155</sup> The British

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153. See *supra* notes 54-95 and accompanying text.

154. Richard Posner first explained the tort system "in . . . terms of economic analysis," contending that efficient allocation of resources requires appropriate deterrence of accidents. Gary T. Schwartz, *Mixed Theories of Tort Law: Affirming Both Deterrence and Corrective Justice*, 75 TEX. L. REV. 1801, 1806 (1997); see also Richard A. Posner, *Killing or Wounding to Protect a Property Interest*, 14 J.L. & ECON. 201, 209 (1971); Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 32-33 (1972). Many other scholars have joined Posner in engaging in economic analysis of tort cases. See, e.g., STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* (1987); Guido Calabresi, *Concerning Cause and the Law of Torts: An Essay for Harry Kalven, Jr.*, 43 U. CHI. L. REV. 69 (1975); Levmore, *supra* note 128.

155. Aristotle first advanced the "notion of corrective justice." Catharine Pierce Wells, *Tort Law as Corrective Justice: A Pragmatic Justification for Jury Adjudication*, 88 MICH. L. REV. 2348, 2350 (1990). The objective is to nullify gains and losses that arise between persons when one person wrongfully injures the other. *Id.* at 2350, 2355. Many scholars in recent years have emphasized corrective justice as a rationale for tort law. See generally PHILOSOPHICAL FOUNDATIONS OF TORT LAW (David G. Owen ed., 1995); Ernest J. Weinrib, *Corrective Justice*, 77 IOWA L. REV. 403 (1992). Corrective justice scholars advocate widely divergent definitions of corrective justice. See Jules L. Coleman, *Moral Theories of Torts: Their Scope and Limits* (pts. 1 & 2), 1 LAW & PHIL. 371 (1982), 2 LAW & PHIL. 5 (1983) (developing "foundational" principles to be used to devise specific rules for resolving cases); Richard A. Epstein, *A Theory of Strict Liability*, 2 J. LEGAL STUD. 151, 160-89 (1973) (contending that causation of harm is the basis for corrective justice); George P. Fletcher, *Fairness and Utility in Tort Theory*, 85 HARV. L. REV. 537, 543-56 (1972) (claiming that reciprocity of risk is the basis for corrective justice); Ernest J. Weinrib, *Toward a Moral Theory of Negligence Law*, 2 LAW & PHIL. 37, 43 (1983) (using Kantian principles); Wells, *supra* at 2353 (advocating adoption of procedures that encourage juries to do justice in individual cases).

Commonwealth view places primary emphasis on corrective justice, regarding deterrence as a secondary consideration.<sup>156</sup> To the extent that deterrence is a secondary consideration, it may not be powerful enough by itself to warrant adoption of a controversial doctrine like loss of a chance.

#### IV. LOSS OF A CHANCE WHERE TRADITIONAL DAMAGE IS PROVEN

Courts use loss of a chance most often to value harm in cases where plaintiff has proven the elements of the tort by a preponderance of evidence. An example is where plaintiff proves that defendant negligently caused actionable damage by breaking plaintiff's knee, but the extent of the harm is uncertain because there is a risk that plaintiff will develop arthritis in the knee in the future. Usually plaintiffs can bring only one cause of action for each tort, and they must recover all of their damages (including damages for future harm) in that action.<sup>157</sup> It is often impossible to prove some harm, such as future harm, by a preponderance of evidence.

To meet these proof problems, the English,<sup>158</sup> Canadian,<sup>159</sup> and Australian<sup>160</sup> courts apply the loss of a chance doctrine where damage is proven but the amount of the loss depends on future events (the plaintiff's future position) or hypothetical events (the position the plaintiff would have been in had no tort occurred). The rule is that where there is insufficient evidence to prove these events on the balance of probabilities, they award damages in proportion to the chance of the loss as long as the chance is not unduly speculative.<sup>161</sup> If the consequential loss can be proven on the balance of probabilities, plaintiff receives full damages.<sup>162</sup> Proof on the balance of probabilities is always required for losses based on past facts.<sup>163</sup> Therefore, whether an existing arthritic condition

156. PETER CANE, *TORT LAW AND ECONOMIC INTERESTS* 406-07 (1991) ("[T]he *prime* function of the English law of tort is the correction of past wrongs; the deterrence of future wrongful conduct is a secondary, although not unimportant, aim.").

157. 2 DAN B. DOBBS, *LAW OF REMEDIES, DAMAGES-EQUITY-RESTITUTION* 406 (2d ed. Prac. Series 1993) [hereinafter DOBBS, *LAW OF REMEDIES*].

158. *Mallett v. McMonagle*, 2 All E.R. 178 (Eng. H.L. 1969). See generally ANDREW BURROWS, *REMEDIES FOR TORTS AND BREACH OF CONTRACT* 31 (2d ed. 1994).

159. *Athey v. Leonati* [1966] 140 D.L.R. 4th 235 (Can.); see Waddams, *The Valuation of Chances*, *supra* note 99, at 87.

160. *Malec v. J.C. Hutton Pty. Ltd.* (1990) 92 A.L.R. 545 (Austl.); see Mitchell McInnes, *Causation in Tort Law: Back to Basics at the Supreme Court of Canada*, 35 ALBERTA L. REV. 1013, 1032 (1997); Waddams, *The Valuation of Chances*, *supra* note 99, at 87.

161. BURROWS, *supra* note 158, at 31; Waddams, *The Valuation of Chances*, *supra* note 99, at 87.

162. BURROWS, *supra* note 158, at 33.

163. *Id.* at 31; WADDAMS, *THE LAW OF DAMAGES*, *supra* note 61, at ¶ 13.140; Waddams, *Assessment of Uncertainties*, *supra* note 54, at 61.



resulted from a broken knee is a question of past fact that must be proven by a preponderance of evidence.<sup>164</sup> If plaintiff proves this, she receives full compensation for the arthritis, and if she does not prove it, she receives no compensation for the arthritis. But whether arthritis will develop in the future from a broken knee is a future event that is compensable in accordance with the probability that the event will occur.

The Commonwealth distinction between past facts and hypothetical facts when valuing loss is not based on the difference between deterministic and indeterministic facts. Rather, it is based on the idea that past events are provable, but future events and hypothetical events are inherently unknowable and, thus, subject to a lesser standard of proof. Several Commonwealth scholars criticize the distinction between past facts and hypothetical events as illusory.<sup>165</sup> Under the "but for" test of causation, past facts are established only by proving what would have happened in a different state of the world.<sup>166</sup> Therefore, all causal questions are hypothetical.<sup>167</sup> While it is true that all causation questions are hypothetical under the but for test, there still is some merit to the Commonwealth distinction. Knowing what happened can often help us resolve the hypothetical question. If a broken knee causes arthritis 15 percent of the time, there is an 85 percent chance that plaintiff's knee trauma will not lead to arthritis. This 85 percent includes the chance that plaintiff will never get arthritis in the knee. But if plaintiff does develop arthritis, the chance that plaintiff will not get arthritis is eliminated, and this necessarily increases the likelihood that trauma caused the arthritis above 15 percent. Plaintiff can further increase this likelihood by eliminating or reducing the possibility that other causal factors (such as heredity) were operating. If plaintiff sufficiently eliminates other causal factors, the trier will be able to conclude rationally that the knee trauma did cause plaintiff's arthritis.<sup>168</sup> In this case it is easier to prove the past fact than the future event. This is probably true often enough that the Commonwealth distinction is not arbitrary.

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164. See *B.C. Elec. R. Co. v. Clarke* [1950] 3 D.L.R. 161 (Can.) (addressing whether "Dupuytren's contracture" resulted from trauma to plaintiff's hand to be determined by the balance of the probabilities).

165. MICHAEL A. JONES, *TEXTBOOK ON TORTS* 217 (6th ed. 1998); Price, *supra* note 36, at 753; Reece, *supra* note 80, at 191-92; Ben Smith, *Loss of a Chance*, 29 VICT. U. WELLINGTON L. REV. 225, 237-38 (1999).

166. JONES, *supra* note 165, at 217; Price, *supra* note 36, at 753; Reece, *supra* note 80, at 191-92; Smith, *supra* note 165, at 237-38.

167. Black, *supra* note 25, at 96-104; John G. Fleming, *Probabilistic Causation in Tort Law: A Postscript*, 70 CANADIAN B. REV. 136, 140 (1991); Smith, *supra* note 165, at 237-38.

168. See *B.C. Elec. R. Co. v. Clarke* [1950] 3 D.L.R. 161 (Can.) (determining that "Dupuytren's contracture" resulted from trauma to plaintiff's hand because trauma causes the condition 15 percent of the time and all other causes were eliminated).

Note that the Commonwealth courts require plaintiffs to prove actionable damage by a preponderance of evidence without regard to whether the proof involves past facts or hypothetical facts. If defendant negligently omits to provide plaintiff with a safety device, for example, plaintiff must prove by a preponderance of evidence that she would have used the device (and thus not been injured) in order to show causation even though the question of what the plaintiff would have done if given the device is hypothetical.<sup>169</sup> The distinction between past facts and hypothetical facts only applies when the courts value losses where actionable damage has been established by a preponderance of evidence.

Restricting probabilistic proof to the valuation issue is such a powerful limiting principle that the need for additional limiting principles may not be vital. As long as courts require proof of traditional actionable damage by a preponderance of evidence, the specter of greatly expanded liability presented by the Tug example<sup>170</sup> cannot occur. Probabilistic causation is restricted to valuing harm in a very limited class of cases, those where plaintiff has proven his right to recover damages. It is only when courts recognize non-traditional damage, such as loss of a chance or interference with autonomy, that the specter of unlimited liability arises.

United States courts also sometimes award damages for harm in proportion to the risk.<sup>171</sup> They do so by applying the doctrine that plaintiff must prove the existence of some harm by the preponderance of evidence, but he can prove the extent of the harm with as much certainty as the circumstances permit.<sup>172</sup> Courts necessarily take chance into account when estimating the extent of the loss.<sup>173</sup> In personal injury cases, for example, loss of earning

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169. See *Sellars v. Adelaide Petroleum NL* (1994) 120 A.L.R. 16 (Austl.); *Allied Maples Group Ltd. v. Simmons & Simmons*, 4 All E.R. 907 (Eng. C.A. 1995).

170. See *supra* note 45 and accompanying text.

171. See *infra* note 173-77.

172. See RESTATEMENT (SECOND) OF TORTS § 912 (1977) (stating this rule).

173. *King, Causation, Valuation, and Chance, supra* note 46, at 1373-76; see, e.g., *Petriello v. Kalman*, 576 A.2d 474 (Conn. 1990). A surgeon negligently damaged plaintiff's intestine in the course of an operation, creating an 8 percent to 16 percent risk of a future bowel obstruction. *Id.* at 477. The court held that plaintiff could recover for this future damage reduced by the chance that it would not occur. *Id.* at 483-84 (adopting RESTATEMENT (SECOND) OF TORTS § 912 (1977)); see also *United States v. Anderson*, 669 A.2d 73 (Del. 1995). Defendant's failure to diagnose testicular cancer caused it to spread, necessitating additional surgery and chemotherapy; it also caused a 15 percent chance of recurrence of testicular cancer. *Id.* at 75. The chance of recurrence would have been almost 0 percent if the diagnosis had been prompt. *Id.* The court held that because defendant caused physical harm, plaintiff can recover for the increased risk of future cancer as an element of damages. The court rejected the all or nothing rule because plaintiff's life expectancy was shortened by this risk. *Id.*

capacity is often a major component of damages.<sup>174</sup> A permanent physical injury itself is frequently sufficient evidence to show that "some" loss of earning capacity has occurred.<sup>175</sup> The extent of the loss, however, can be highly speculative, particularly in the case of a young plaintiff who has not completed his education and embarked on a career. Courts granting such awards often discount the recovery by the plaintiff's chance of succeeding in the career.<sup>176</sup> Thus, a person disabled by a tortfeasor while aspiring to a career would receive a smaller award than a person disabled after establishing himself in the career.<sup>177</sup>

The United States cases, however, have not consistently awarded damages for future harm discounted by the probability that the harm will occur. They sometimes require plaintiffs to prove future harm by a preponderance of evidence, and deny all recovery where plaintiff cannot show that such harm will more likely than not occur.<sup>178</sup> A common example is measuring damages for future lost profits of a business.<sup>179</sup>

It is difficult to predict when United States courts will apply the all or nothing rule and when they will award damages discounted by the risk of loss. They do, however, appear more likely to award damages discounted for future losses when plaintiff has shown a present harm and the trier of fact can reasonably infer that it will continue.<sup>180</sup> Cases involving loss of earning capacity stemming from a physical injury are a prime example. Courts are less likely to award discounted damages when plaintiff shows that she has suffered one type of harm (breathing problems caused by toxic dust) and asserts that another type of harm (cancer) may occur in the future.<sup>181</sup> Where a different type of harm is claimed, however, courts are more likely to accept plaintiff's position and award discounted damages where plaintiff has a severe physical injury.<sup>182</sup> Thus, where plaintiff suffered a severe skull injury, courts have permitted recovery for a small enhanced risk of having epileptic seizures in the

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174. 2 DOBBS, LAW OF REMEDIES, *supra* note 157, at 370.

175. *Id.*

176. *Id.*

177. Grayson v. Irvmar Realty Corp., 7 A.D.2d 436, 437 (N.Y. 1959). An accident caused hearing loss to an opera student that precluded her from pursuing a professional opera career. *Id.* The court approved recovery for loss of opportunity to pursue her career, but limited damages to \$20,000 because "in the case of persons of rare and special talents many are called but few are chosen. For those who are not chosen, the probabilities of exploiting their talents financially are minimal or totally negative." *Id.*

178. DAN B. DOBBS, LAW OF REMEDIES, DAMAGES-EQUITY-RESTITUTION 235 (2d ed. Hornbook Series 1993).

179. *Id.*

180. 2 DOBBS, LAW OF REMEDIES, *supra* note 157, at 407.

181. *Id.*

182. Thompson, *supra* note 41, at 461-65.

future<sup>183</sup> or developing meningitis in the future.<sup>184</sup>

Where plaintiff has not suffered severe injury, however, courts are less likely to award damages for other types of harm that are unlikely to occur.<sup>185</sup> In asbestos exposure cases, for example, some courts regard subcellular or cellular damage that has not given rise to a present disease as actionable damage, and permit recovery for present harm such as mental distress arising from a fear of getting cancer in the future.<sup>186</sup> They do not, however, permit recovery for the future disease itself unless it is more likely than not to occur, in which case they award damages for all of the harm that the disease is likely to cause.<sup>187</sup> Under the traditional rule, a plaintiff that could not prove the future disease was more likely than not to occur would recover no compensation for that disease.<sup>183</sup> The modern trend in such cases, however, is to allow plaintiff to split his cause of action, and bring a later suit for the disease if it should occur.<sup>189</sup>

Awarding damages for future disease reduced by the probability that the disease will occur can be justified on deterrence grounds. Such cases involve proportional risk recovery for future losses that can be insured against. Our earlier analysis<sup>190</sup> suggests that awarding discounted damages is appropriate because they represent the sum necessary to pay for the insurance against the risk of loss that the defendant imposed on plaintiff.

Awarding appropriate damages in such cases, however, presents a serious practical problem. This is the inability to estimate accurately such future losses. Experience in mass tort class action cases shows that expert estimates of future harm caused by carcinogens such as asbestos are often wildly inaccurate.<sup>191</sup> Often the superior solution in future disease cases is to allow plaintiff to split her cause of action and bring a second suit in the event that she actually contracts the disease in the future. This solution is

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183. *Schwegel v. Goldberg*, 228 A.2d 405, 408 (Pa. Super. Ct. 1967) (testifying to a 5 percent risk of epileptic seizures).

184. *Feist v. Sears, Roebuck & Co.*, 517 P.2d 675, 680 (Or. 1973) (stressing plaintiff's "susceptibility" to contracting meningitis).

185. *Thompson*, *supra* note 41, at 462-65.

186. *Mauro v. Raymark Industries, Inc.*, 561 A.2d 257, 263 (N.J. 1989) (allowing recovery for emotional distress).

187. *Id.* at 259-60.

188. *Thompson*, *supra* note 41, at 464; e.g., *Elam v. Alcolac, Inc.*, 765 S.W.2d 42, 208 (Mo. Ct. App. 1988) (holding that toxic exposure is actionable if the "exposure had induced some biological manifestation from which the anticipated cancer is reasonably certain to occur—as quantified by expert testimony as a probability of occurrence greater than fifty percent"), *cert. denied*, 493 U.S. 817 (1989).

189. *Mauro*, 561 A.2d at 266; see also 2 DOBBS, LAW OF REMEDIES, *supra* note 157, at 410.

190. See *supra* notes 147-50 and accompanying text.

191. John C. Coffee, Jr., *Class Wars: the Dilemma of the Mass Tort Class Action*, 95 COLUM. L. REV. 1343, 1361-62, 1432-33 (1995).

practical in cases where the damages caused by the future disease are large enough to finance a second lawsuit. Lung cancer caused by asbestos exposure is an example.

In many cases, however, the future disease is not serious enough to make a second lawsuit practical. An example is arthritis caused by a knee injury. In such cases the right to bring a separate suit is an illusory remedy because the cost of the suit might well exceed the amount of damages that plaintiff would recover. In such cases the fairness considerations discussed in Part III. C suggest that plaintiff be given a proportional recovery in the original lawsuit if there is some reasonable basis for estimating the future loss. It is true that the estimate is likely to be inaccurate, but the defendant is a proven wrongdoer that has caused an identified injury. It is better that she pay somewhat speculative damages for the future disease caused by that injury than that she pay nothing.

This reasoning suggests that plaintiffs should be presently compensated for other future repercussions of a present injury by a sum reduced by the chance that the future harm will not occur. With some future harm, such as pain and suffering and medical expenses, it may be possible to wait and see if it occurs, and allow a subsequent action to recover for it. This would normally be impractical, however, because the amount of loss would not be large enough to justify a second suit.

With other future harms stemming from a present injury, such as lost earnings and lost profits, it is often impossible to wait and see if they occur in the future. This is because the defendant's wrongful conduct altered the future. We can never know, for example, how much a disabled child would have earned if he had not been disabled. These damages do not fall neatly in the proportional risk recovery classification because we can never know whether the insurable event (his failure to achieve the earning capacity that he would have had as a non-disabled person) occurred. Therefore, the plaintiff cannot use the tort recovery to buy insurance against the future loss. The best he could do is invest the recovery, and use the principal and income to supplement his wages. This would lead to overcompensation of plaintiffs whose earnings would not have been impaired and undercompensation of plaintiffs whose earnings would have been impaired.

Deterrence aside, simple fairness justifies recovery for lost earnings and profits. Defendant has tortiously caused an injury that prevents plaintiff from ever knowing what earnings and profits the plaintiff would have accumulated in the future.<sup>192</sup> It is better that plaintiff recover something on the basis of the best estimate possible, even if it is based on averages, than that she recover nothing. Fairness also justifies discounted recovery for

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192. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1378; King, *Reduction of Likelihood*, *supra* note 27, at 529-35.

repercussions of a present injury that may occur in the future (such as a future illness) if splitting the cause of action is impractical. These recoveries do not risk excessive liability because they are restricted to valuing harm arising from a proven tort. Courts have valued harm in this way for many years with no apparent adverse consequences.

#### V. LOSS OF A CHANCE WHERE TRADITIONAL DAMAGE IS NOT PROVEN

This section is concerned with tort cases requiring proof of damage as an element of the cause of action, but where plaintiff cannot prove by a preponderance of evidence that defendant caused a traditionally recognized form of actionable damage. What plaintiff can prove is that defendant deprived plaintiff of a less than 50 percent chance of avoiding a harm or obtaining a benefit.

The increasing minority of United States courts that accept the loss of a chance doctrine in this context apply it primarily in medical malpractice cases involving improper diagnosis or treatment. There are two major approaches. The first takes a relaxed approach to causation. These courts recognize that the actionable damage is the harmful consequence of the disease, but they permit plaintiffs to recover all of their harm even though their evidence is insufficient to show that the failure to diagnose or treat caused the damage.<sup>193</sup> These courts still require juries to find that the failure to diagnose or treat the illness caused the damage;<sup>194</sup> however, they no longer require plaintiff to introduce evidence sufficient to support that finding. Thus, plaintiff can prevail by introducing evidence showing that the physician deprived plaintiff of a less than 50 percent chance of avoiding the harmful consequence.<sup>195</sup> Whether plaintiffs actually recover compensation for all of their harm in such cases is unclear. A leading case adopting the relaxed causation approach states that "juries often discount damages according to the statistical evidence in order to accurately evaluate the true loss."<sup>196</sup> Our previous analysis suggests that using relaxed causation in medical malpractice cases may be justified on deterrence grounds if it in fact imposes excessive liability because physicians apparently often escape liability.<sup>197</sup> While application of the relaxed causation

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193. See *Thompson v. Sun City Cmty. Hosp.*, 688 P.2d 605, 615-16 (Ariz. 1984) (en banc); *Kallenberg v. Beth Israel Hosp.*, 45 A.D.2d 177, 180 (N.Y. App. Div. 1974) (per curiam), *aff'd.*, 337 N.E.2d 128 (N.Y. 1975); 1 DOBBS, *THE LAW OF TORTS*, *supra* note 7, at § 178, at 435.

194. *Thompson*, 688 P.2d at 616; *Kallenberg*, 45 A.D.2d at 180.

195. *Thompson*, 688 P.2d at 614 (explaining that evidence must show defendant "deprived plaintiff of some significant chance of survival or better recovery"); *Kallenberg*, 45 A.D.2d at 179 (showing a 20 percent to 40 percent chance of survival).

196. *Thompson*, 688 P.2d at 616.

197. See *supra* notes 92-112 and accompanying text.

approach to medical malpractice cases is new, the approach itself, which is discussed later in this Article,<sup>198</sup> is not new.

The second approach in medical malpractice cases is to recognize the chance of a cure as a thing of value,<sup>199</sup> and to grant recovery for destruction of that chance rather than for causation of the adverse consequence of the disease.<sup>200</sup> Courts adopting this approach often measure plaintiff's damages by reducing compensation for the harm caused by the disease by the percentage chance that treatment would not have cured the disease.<sup>201</sup> Our earlier policy analysis shows that this second approach is fully supported by the autonomy theory,<sup>202</sup> but is supported by deterrence considerations only in cases involving recurring misses and proportional risk recovery.<sup>203</sup>

Courts in Commonwealth countries reject use of loss of a chance in the medical malpractice context.<sup>204</sup> They often apply the theory, however, in cases of economic loss.<sup>205</sup> These courts initially applied the theory in legal malpractice cases, where, for example, a lawyer negligently fails to file a suit within the period of limitation,<sup>206</sup> or negligently drafts a contract creating a risk that the client will be subject to future economic loss,<sup>207</sup> or negligently fails to advise a

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198. See discussion *infra* Part VI of this Article.

199. *Murrey v. United States*, 73 F.3d 1448, 1454 (7th Cir. 1996); *Wendland v. Sparks*, 574 N.W.2d 327, 331 (Iowa 1998); *Falcon v. Memorial Hosp.*, 462 N.W.2d 44, 57 (Mich. 1990); *Wollen v. DePaul Health Ctr.*, 828 S.W.2d 681, 684 (Mo. 1992).

200. *Wendland*, 574 N.W.2d at 331; *Falcon*, 462 N.W.2d at 57; *Wollen*, 828 S.W.2d at 684; *Perez v. Las Vegas Medical Ctr.*, 805 P.2d 589 (Nev. 1991).

201. *Murrey*, 73 F.3d at 1453 (Illinois law allows compensation for loss of a chance); *Wendland*, 574 N.W.2d at 329-30 (failure to resuscitate patient destroyed a less than 50 percent chance of survival); *Delaney v. Cade*, 873 P.2d 175, 177 (Kan. 1994) (loss of chance to avoid paralysis); *Falcon*, 462 N.W.2d at 49 (failure to take precautions prior to delivery of child that would have increased the chance the physician could have effectively treated an embolism arising as a complication of birth); *Wollen*, 828 S.W.2d at 682 (failure to diagnose); *Perez*, 805 P.2d 589 (wrongful death; failure to diagnose disease increased risk of death); *Scafidi v. Seiler*, 574 A.2d 398, 399 (N.J. 1990) (involving wrongful death of infant born prematurely where the failure to treat pregnant mother increased risk of premature birth); *Roberts v. Ohio Permanente Med. Group, Inc.*, 668 N.E.2d 480, 481 (Ohio 1996) (wrongful death); *McKellips v. Saint Francis Hosp., Inc.*, 741 P.2d 467, 469 (Okla. 1987) (wrongful death; failure to diagnose).

202. See *supra* notes 99-107 and accompanying text.

203. See *supra* notes 133-51 and accompanying text.

204. *Hotson v. E. Berkshire Area Health Auth.*, 2 All E.R. 909 (Eng. H.L. 1987); *Kenyon v. Bell*, 1953 S.C. 125 (Scot. 1952); *Sullivan v. Micallef*, No. BC13956, 1994 N.S.W. LEXIS 13956 (Austl.); *Laferriere v. Lawson* [1991] 1 S.C.R. 541 (Can.).

205. See *infra* notes 259-91 and accompanying text.

206. *E.g.*, *Prior v. McNab*, [1976] 16 O.R. 2d 380 (Can.); *Yeoman v. Ferries*, 1967 S.L.T. 332 (Scot. 1967); see also *Kyle v. P & J Stormonth Darling*, 1994 S.L.T. 191 (Scot. 1992) (appeal dismissed because of violation of a rule).

207. *D.W. Moore & Co. v. Ferrier*, 1 All E.R. 400 (Eng. C.A. 1987) (negligent

client about a legal problem that the client would have attempted to resolve if she had known about it in time.<sup>209</sup>

Relying on the "chance has value" rationale,<sup>209</sup> these courts routinely grant proportional recovery.<sup>210</sup> That is, they measure damages by discounting the loss that the client incurred (or the benefit that the client failed to receive) by the chance that the client would have incurred the loss had the malpractice not occurred. Legal malpractice cases can be brought in the Commonwealth on either a contract or a tort theory.<sup>211</sup> The loss of a chance theory is applied in the same way regardless of whether the suit is brought in tort or contract.<sup>212</sup> The authorities tend to grant a discounted recovery even when the chance of gain is greater than 50 percent.<sup>213</sup>

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drafting of a covenant not to compete gave rise to a tort cause of action at the time the contract was drafted).

208. *Graybriar Indus. Ltd. v. Davis & Co.*, [1990] 21 A.C.W.S. 3d 273 (Can.) (Lawyer negligently failed to advise client who was about to enter into a real estate joint venture that the other party owned land in trust rather than in fee simple. Thus, the client ended up with less security than he thought he had. Client proved that he would have attempted to negotiate a better deal if he had known about this. The court awarded plaintiff damages for loss of opportunity to negotiate a better deal, but the damages were discounted because of the risk that the negotiation would be unsuccessful.); *Allied Maples Group Ltd. v. Simmons & Simmons*, 4 All E.R. 907 (Eng. C.A. 1995) (Lawyer failed to advise client adequately of potential liability resulting from the purchase of certain real estate. If client had been properly advised, he would have attempted to obtain a warranty, or other protection, from seller. Lawyer held liable to client for losses resulting from failure of client to obtain the warranty or other protection, but damages are discounted because the seller might have been unwilling to give the warranty or other protection.). The New Zealand cases are divided on the question of whether to apply the loss of a chance approach in this situation. The cases are discussed in JONES, *supra* note 165.

209. *D.W. Moore & Co. v. Ferrier*, 1 All E.R. 400 (Eng. CA. 1987) (The negligent drafting of covenant not to compete gave rise to a tort cause of action at the time the contract was drafted and not at the time the partner subject to the covenant left the firm. This is because a properly drafted covenant had value at the time of contracting. Damages are to be determined as of the time of contracting by taking into account the chance that the partner would leave the firm in the future.). Failing to file a suit within the statute of limitations causes the plaintiff a loss because a case "with a fifty per cent chance of success has a definite 'settlement value.'" WADDAMS, *THE LAW OF DAMAGES*, *supra* note 61, at ¶ 13.290.

210. John G. Fleming, *Probabilistic Causation in Tort Law*, 68 CANADIAN B. REV. 661, 674 (1989).

211. *Id.*

212. *Id.*; Geoff Masel, *Damages in Tort for Loss of Chance*, 1 TORTS L.J. 43, 44 (1995); Perry, *supra* note 36, at 312; Reece, *supra* note 80, at 190; Smith, *supra* note 165, at 233.

213. See *First Interstate Bank of Cal. v. Cohen*, 1 P.N.L.R. 17 (Eng. C.A. 1995) (involving a negligent misrepresentation case where plaintiff recovered 66.66 percent of his damages because if the misrepresentation had not been made, plaintiff would have had a 66.66 percent chance of avoiding a loss). Other authorities are discussed in Cooper, *supra* note 64, at 45-46. Note that the Commonwealth courts could grant a full recovery in cases where the chance



Commonwealth courts have applied the principle in other economic loss cases as well. *Sellars v. Adelaide Petroleum NL*<sup>214</sup> is the leading Australian case. In *Sellars* the directors of a company decided to restructure the company by selling some shares. The directors entered into parallel negotiations with the defendant and another entity for the sale of the shares. The other entity made a favorable offer for the purchase, and the directors came close to reaching an agreement with it that was subject to a number of conditions precedent. The directors broke off negotiations with the other entity, however, because defendant's agent misrepresented that the defendant would buy the shares under even more favorable terms. After the deal with the defendant fell through, the other entity withdrew its earlier offer, and was willing to deal only on less favorable terms. Plaintiffs sued defendant, claiming that the misrepresentation caused them to lose the commercial opportunity to enter into the more favorable agreement with the other entity. Plaintiffs filed suit under a statute permitting recovery only for misrepresentations that cause actual "loss or damage."<sup>215</sup> The trial court found that in the absence of defendant's misrepresentation, plaintiffs would have entered into the more favorable agreement with the other entity. The judge also found that there was only a 40 percent chance that all of the conditions precedent would have been satisfied, and thus, that this agreement would have become effective. Based on this, defendant argued that plaintiff was unable to prove by a preponderance of evidence that it suffered an actual loss as required by the statute. While acknowledging that damages were the "gist of the cause of action," the court found them to be present by accepting the "chance has value" theory.<sup>216</sup> The court held that the loss of a 40 percent chance of obtaining a commercial benefit is a thing of value.<sup>217</sup> Thus, the loss of a chance that has value is a form of economic loss.<sup>218</sup> Furthermore, plaintiffs proved that defendant caused them to lose this chance for commercial benefit because, but for the misrepresentation, they would have entered into the contract with the other entity.<sup>219</sup> Even though the suit in *Sellers* was brought for violation of a statute requiring "actual loss," the court stated that the same approach applies to tort cases involving loss of commercial opportunity.<sup>220</sup>

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of causation is greater than 50 percent on the grounds that plaintiffs can prove traditional damage in such cases. The Commonwealth approach of granting a proportional recovery both when the chance of causation is greater than 50 percent and when it is 50 percent or less can be justified on deterrence grounds.

214. (1994) 120 A.L.R. 16 (Austl.).

215. *Id.* at 18 (citing Trade Practices Act 1974 § 82(1)).

216. *Id.* at 33.

217. *Id.* at 37.

218. *Id.*

219. *Id.* at 40.

220. *Id.*

In *Davies v. Taylor*,<sup>221</sup> the English court applied an approach consistent with *Sellers* in a wrongful death case.<sup>222</sup> A widow who was separated from her husband prior to his death brought a wrongful death action against the tortfeasor that caused the death.<sup>223</sup> In order to recover, the widow had to show an injury in the form of the financial loss that she suffered as a result of his death. To show the loss, the court required her to prove a substantial chance or probability that she would have returned to her husband had he lived. The court held that this chance could be less than 50 percent, but damages were to be calculated by reducing the amount of support she would have received, if she had been living with her husband, by the probability of her not returning to him.<sup>224</sup> The court held that she was entitled to no damages in this case, however, because she was able to show only a speculative, and not a substantial, chance that she would have returned to her husband.<sup>225</sup>

The Irish case of *Fryers v University of Ulster*<sup>226</sup> is also similar to *Sellers*. Plaintiff brought a claim in an Industrial Tribunal against the University of Ulster for sex discrimination. Plaintiff applied for employment with the University and proved that due to gender discrimination she was not put on the short interview list of prospective employees. The tribunal found, that had she been "short listed," she would have had a one-in-four chance of being hired. The primary basis for this finding was that there would have been four people on the interview list. The Industrial Tribunal took the 25 percent chance of getting the job into account in calculating plaintiff's financial losses. The Court of Appeal agreed with the Tribunal's approach and affirmed its findings.<sup>227</sup>

The Commonwealth cases use the "chance has value" rationale for granting proportional recovery in economic loss cases. This theory is convenient because it allows the courts to grant recovery without eliminating the requirement of actionable damages.<sup>228</sup> Commonwealth courts still adhere to the damage requirement<sup>229</sup> by insisting that plaintiff prove non-traditional actionable damage (the loss of a chance) by a preponderance of evidence.

One of the ways the Commonwealth courts limit application of

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221. 1974 A.C. 207 (Eng. H.L. 1972).

222. *Id.* at 209.

223. *Id.* at 212.

224. *Id.*

225. *Id.* at 213.

226. N.I.C.F. 2668 (Transcript) (N. Ir. 1998).

227. *Id.*

228. King, *Causation, Valuation, and Chance*, *supra* note 46, at 1394-95.

229. Lesley J. Anderson, *Loss of a Chance in Tort*, 131 SOLIC. J. 1258, 1261 (1987); Coote, *supra* note 76, at 768; Charles Foster, *A Plea for a Lost Chance: Hotson Reconsidered (pt. 2)*, 145 NEW L.J. 248 (Feb. 24, 1995); Tony Honoré, *Medical Non-Disclosure, Causation and Risk: Chappel v. Hart*, 7 TORTS L.J. 1, 6-7 (1999).

loss of a chance is by the restrictive way they interpret the actionable damage requirement. They require plaintiff to show that defendant caused the loss of a chance by showing that plaintiff would have taken the chance if given that option.<sup>230</sup> The practical effect of this distinction is to require plaintiff to prove what she would have done (that she would have taken advantage of the opportunity) by a balance of probabilities, and to prove what others would have done (that opportunities dependent on actions of others would have been successful) by a lower standard.

Whether this restriction applies in a given case depends, of course, on who the plaintiff is. In the Tug example, used earlier,<sup>231</sup> the barge owner's claim against the manufacturer for failure to equip the tug with a radio hinges in part on the conduct of a third party, i.e., would the tug operator have used the radio (premise two) and heeded the weather report by changing direction (premise four). If the tug operator owned the tug and sued the manufacturer for storm damage to the tug, then premises two and four would pertain to the plaintiff's conduct. Many actions hinge on the conduct of both the plaintiff and of third persons. In *Sellars*, the misrepresentation caused economic loss if plaintiff would have entered into the other contract in the absence of the misrepresentation (plaintiff's conduct) and if the contact would have proven profitable (conduct of numerous third parties).<sup>232</sup>

Whether to apply loss of a chance to what plaintiff would have done is a very important issue. Doing so will open the door to using the loss of a chance approach in a wide range of tort cases where courts currently do not apply it. These actions include failure to provide a warning that plaintiff might not have heeded,<sup>233</sup> failure to provide a safety device that plaintiff might not have used,<sup>234</sup> failure to obtain informed consent for a medical procedure that plaintiff might have undergone even with full information,<sup>235</sup> and making misrepresentations that might not have influenced plaintiff's behavior.<sup>236</sup>

Restricting loss of a chance to third party behavior effectively limits the use of probabilistic causation, but it is not clear that this distinction is sound.<sup>237</sup> What the plaintiff would have done if

230. *Allied Maples Group Ltd. v. Simmons & Simmons*, 4 All E.R. 907 (Eng. C.A. 1995); *Sellars v. Adelaide Petroleum NL* (1994) 120 A.L.R. 16 (Austl.); *JONES*, *supra* note 165, at 220; *Coote*, *supra* note 76, at 768; *Masel*, *supra* note 212, at 44, 46-47.

231. *See supra* notes 45-48 and accompanying text.

232. *Sellars*, (1994) 120 A.L.R. 16 (Austl.).

233. *Boivin*, *supra* note 107, at 86; *Masel*, *supra* note 212, at 44-45.

234. *Masel*, *supra* note 212, at 44-45.

235. *Id.* at 44-45, 49; *Waddams, Assessment of Uncertainties*, *supra* note 54, at 71; *Waddams, The Valuation of Chances*, *supra* note 99, at 94.

236. *Reece*, *supra* note 80, at 199.

237. A number of Commonwealth scholars have pointed out the lack of a

presented with the opportunity is just as easily characterized as involving a loss of a chance that has value.<sup>239</sup> Assume, for example, that defendant makes a misrepresentation that deprives plaintiff of an opportunity to make an investment that later proved to be successful, e.g., to invest in a commodity or business that later increased in value. Assume also that there was only a 40 percent chance that plaintiff would have made the investment if given the opportunity. In a very real sense the misrepresentation deprived plaintiff of a 40 percent chance of profiting from the investment. The same reasoning applies to cases involving physical harm. A doctor may fail to diagnose plaintiff's disease under circumstances where the chance of a cure with proper treatment is 100 percent, but there is only a 40 percent chance that plaintiff would consent to the treatment. By failing to diagnose the disease, the doctor has deprived plaintiff of a 40 percent chance of a cure because with proper diagnosis there was a 40 percent chance that plaintiff would have availed himself of the treatment and been cured.<sup>239</sup>

In addition, Levmore argues that deterrence can often be advanced by applying loss of a chance to the question of what the plaintiff would have done when the case involved a "recurring miss."<sup>240</sup> His examples include failure to warn cases and informed consent cases where only a small fraction of the recipients of the information would have altered their behavior.<sup>241</sup>

A possible justification for the Commonwealth approach to loss of a chance (reducing plaintiff's burden of proving what others would have done) is that it is much easier for plaintiff to prove how he would have reacted in hypothetical circumstances than to prove how others would have reacted.<sup>242</sup> On close examination, difficulty of proof does not justify the Commonwealth distinction for two reasons. First, to the extent that testimony can establish what a person would have done in hypothetical circumstances, it is equally easy for plaintiff to prove what he would have done (by testifying) and to prove what a third party would have done (by calling the third party as a witness).<sup>243</sup> Second, proving what the plaintiff would have done in hypothetical circumstances can be extremely difficult. We can only really speculate about how a plaintiff would have responded to

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logical basis for this distinction. JONES, *supra* note 165, at 220; WADDAMS, *THE LAW OF DAMAGES*, *supra* note 61, at ¶ 13.360; Masel, *supra* note 212, at 44; Reece, *supra* note 80, at 198-204; Waddams, *The Valuation of Chances*, *supra* note 99, at 92-94.

238. Masel, *supra* note 212, at 44; Waddams, *The Valuation of Chances*, *supra* note 99, at 94.

239. Reece, *supra* note 80, at 189.

240. Levmore, *supra* note 128, at 706.

241. *Id.*

242. Black, *supra* note 25, at 102.

243. Evans, *supra* note 54, at 91.

a non-existent stimuli such as a warning.<sup>244</sup> Plaintiff's testimony about what he would have done (such as whether he would have heeded a warning) is itself highly speculative.<sup>245</sup> For this reason some courts will not even admit plaintiff's testimony into evidence.<sup>246</sup> Even jurisdictions that admit plaintiff's testimony may give it very little weight because it is so speculative and self-serving.

In fact, the problem of proving how the plaintiff would have behaved in hypothetical circumstances is so difficult that courts have created a variety of special rules to deal with it. In products liability failure to warn cases, some courts have informally relaxed plaintiff's burden of proving that she would have read and heeded the warning, permitting her to get to the jury on the basis of very thin evidence.<sup>247</sup> Others have created a presumption that a proper warning would have been read and heeded.<sup>248</sup> In medical malpractice informed consent cases, some courts now use an objective test. For example, Canada uses a "modified objective test" for determining whether plaintiff would have declined treatment if given full information about the risk of treatment, i.e., would "a reasonable person having the patient's tastes, beliefs and characteristics . . . have declined treatment."<sup>249</sup>

Actually, the difficulty of proving the hypothetical conduct of the plaintiff provides a compelling argument against using loss of a chance with respect to this issue.<sup>250</sup> Reliable evidence regarding how a given plaintiff, or all plaintiffs as a group, would have reacted to a given piece of information is almost never available.<sup>251</sup> A jury finding that there was a 10 percent chance or a 40 percent chance that plaintiff would have heeded a warning if it had been given would frequently be based on speculation. Of course, this argument also suggests that the loss of a chance theory should not apply to the question of what others would have done because that issue is equally speculative. The least speculative loss of a chance claims are against physicians for failure to diagnose or treat a disease. The policy against permitting judgments to be based on speculation lend support to the approach of United States courts in limiting loss of a chance to medical malpractice cases. In these cases, the United States courts apply loss of a chance to the issue of whether the disease could be cured, but not to the issue of whether the plaintiff would have elected the treatment. The opportunity for a cure is

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244. Boivin, *supra* note 107, at 75-76. This is true whether we use an objective or a subjective test. *Id.* at 76.

245. *Id.*

246. *Id.* at 87 n.186 (citing authorities).

247. David A. Fischer, *Causation in Fact in Product Liability Failure to Warn Cases*, 17 J. PROD. & TOXICS LIAB. 271, 274-75 (1995) (citing authorities).

248. *Id.*

249. Waddams, *The Valuation of Chances*, *supra* note 99, at 93.

250. Price, *supra* note 36, at 754-60; Stauch, *supra* note 111, at 222.

251. Stauch, *supra* note 111, at 222.

often largely dependent on physical forces such as the etiology of plaintiff's disease, and we often have fairly good statistics concerning the chance of a cure.<sup>252</sup>

Professor Perry's autonomy rationale<sup>253</sup> does provide a coherent basis for distinguishing between plaintiff behavior and third party behavior. Professor Perry finds an interference with autonomy only when defendant's undertaking or misrepresentation causes plaintiff to lose an opportunity to follow a preferable course of action (loss of a chance).<sup>254</sup> Plaintiff can only show that defendant caused plaintiff to lose this chance by proving that plaintiff relied to his detriment on the undertaking or misrepresentation.<sup>255</sup> Detrimental reliance is necessary because autonomy implies as much freedom to reject the chance as to take it. If, in the absence of defendant's conduct, plaintiff would have rejected the chance, then defendant's conduct did not cause plaintiff to lose the chance.<sup>256</sup> If plaintiff would have taken the chance, then the interference with autonomy caused him to lose the chance. Therefore, plaintiff must prove that he would have taken the chance in order to show that the interference with autonomy caused the loss of the chance.

We have seen that the United States practice of applying loss of a chance to medical malpractice actions arguably furthers deterrence in some, and perhaps all, instances.<sup>257</sup> Furthermore, these cases have smaller proof problems than other cases. It appears possible for courts to make realistic estimates of the magnitude of the lost chance in those cases where they have the aid of scientific studies. Such studies are possible because the chance usually depends on the etiology of a disease or the characteristics of an injury rather than on human behavior.

We have found less justification for the British Commonwealth cases. Applying loss of a chance in economic loss cases requires courts to make fairly speculative estimates of chance. Furthermore, the distinction between what plaintiff would have done and what others would have done appears arbitrary unless courts adopt the autonomy theory. It is not at all clear that the Commonwealth courts are applying loss of a chance because they desire to protect autonomy. Cases like *Davies v. Taylor*<sup>258</sup> (widow's wrongful death action) and *Fryers v. University of Ulster*<sup>259</sup> (gender discrimination)

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252. Black, *supra* note 25, at 104; Ellis, *supra* note 27, at 393; Scott, *supra* note 110, at 524; Stauch, *supra* note 111, at 206; Vern R. Walker, *Direct Inference in the Lost Chance Cases: Factfinding Constraints under Minimal Fairness to Parties*, 23 HOFSTRA L. REV. 247, 252-53, 292 (1994).

253. See discussion *supra* Part III. B of this Article.

254. Perry, *supra* note 36.

255. Boivin, *supra* note 107, at 86.

256. *Id.*

257. See *supra* notes 116-56 and accompanying text.

258. 1974 A.C. 207 (Eng. H.L. 1972).

259. N.I.C.F. 2668 (Transcript) (N. Ir. 1998).

would have been decided differently under the autonomy theory because there was no detrimental reliance on an undertaking or misrepresentation.

## VI. THE ROLE OF CASE-SPECIFIC POLICY CONSIDERATIONS

The analysis above demonstrates that general policy considerations—such as autonomy, fairness, deterrence, and difficulty of proof—are sometimes helpful as limiting principles. But they are not powerful enough to dictate a general loss of a chance rule for resolving all causation issues for all torts. That is, we cannot say that courts should always, or never, apply loss of a chance to such issues as plaintiff's hypothetical conduct, third parties' hypothetical conduct, and physical forces of nature. This is because each case is affected to some extent by specialized policy considerations. These considerations may often weigh heavily enough to dictate whether, and to what extent, courts will deviate from the requirement that plaintiff prove traditional damage by a preponderance of evidence.

In a leading article written in 1956, Professor Wex Malone described the role of policy in determining the level of proof of causation required by courts.<sup>260</sup> He contended that courts require enough evidence of causation to enforce effectively the policy behind the rule of law in question.<sup>261</sup> If a rule of law is quite exacting because it is based on strong moral considerations, courts are likely to hold the violator of such a rule liable "for any harm that can be causally associated in any plausible way with his wrongdoing."<sup>262</sup> Liability of intentional wrongdoers is an example.<sup>263</sup> Furthermore, where the rule of conduct was designed to protect against the exact risk to which plaintiff was exposed, courts are likely to let plaintiff get to the jury on a minimal showing of causation.<sup>264</sup> Malone cites liability of shipowners for failure to rescue sailors who fall overboard as an example.<sup>265</sup> Courts have been quite willing to submit such cases to juries, even when the chance of a rescue appeared quite slim.<sup>266</sup> On the other hand, Malone found that courts take a different view if a rule is less well entrenched either because it is new, it is designed to protect against a narrow scope of risks, or it represents a small departure from acceptable conduct.<sup>267</sup> With respect to such rules courts are likely to require plaintiffs to make a

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260. Malone, *supra* note 57, at 72-77.

261. *Id.* at 72.

262. *Id.*

263. *Id.* at 72-73.

264. *Id.* at 73.

265. *Id.* at 76.

266. *Id.* at 77.

267. *Id.* at 73.

clear showing of causation in order to recover damages.<sup>263</sup> Malone cites medical malpractice misdiagnosis cases as involving policy considerations that favor defendants.<sup>269</sup> Consequently, courts—at the time he wrote—required plaintiffs to meet a stringent standard in proving causation.<sup>270</sup> We have seen that this is still the rule in British Commonwealth countries and in the majority of United States courts. A growing minority of United States courts have changed their minds about malpractice misdiagnosis cases, however, and have relaxed the standard of proof considerably. Yet, Malone's basic observation still holds true. There are some cases where courts hold plaintiffs to a rigorous standard for proving causation in fact and other cases where they hold plaintiffs to a very lax standard.<sup>271</sup>

Malone's thesis that for policy reasons courts sometimes relax traditional causation requirements is important for our purposes. This is because loss of a chance cases can be viewed as more moderate instances of the relaxed approach to causation that Malone identified. The cases Malone discussed permitted plaintiff to recover full damages upon a showing of a mere possibility of causation whereas the loss of a chance cases permit only a reduced recovery of damages upon such a showing. The two lines of United States malpractice cases discussed previously illustrate this; one permits full recovery and the other permits partial recovery. In short, a court's view of the position that the parties occupy in society, including the need to protect against overdeterrence, may help explain its decisions concerning the burden of proving causation.

Malone's thesis provides a justification for the different approaches to medical malpractice cases taken by courts in the United States and in the Commonwealth countries. In a useful extension of Malone's work, Professors Twerski and Sebok point out that United States courts now show much less deference to the medical profession than they did when Malone wrote.<sup>272</sup> This may explain their increased willingness to allow malpractice recovery when the likelihood of causation is less than 50 percent. Recent studies in the United States show that medical malpractice causes

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268. *Id.*

269. *Id.* at 85.

270. *Id.* at 85-88.

271. For a discussion of recent cases, see DOBBS, *THE LAW OF TORTS*, *supra* note 7, at § 174. According to Twerski and Sebok, cases that continue to require proof of causation by a preponderance of evidence include those where shopping centers are sued for negligent failure to provide security guards to protect customers from criminal attack. Aaron Twerski & Anthony J. Sebok, *Liability Without Cause? Further Ruminations on Cause-in-Fact as Applied to Handgun Liability*, 32 CONN. L. REV. 1379, 1385 (2000).

272. *Id.* at 1382 n.12.



more deaths each year than motor vehicle accidents,<sup>273</sup> the overwhelming majority of instances of medical malpractice are never pursued by victims,<sup>274</sup> and that defendants win a much higher percentage of medical malpractice cases that do go to trial than other types of cases.<sup>275</sup> Under these circumstances it may be entirely appropriate for United States courts to embrace the loss of a chance approach in medical malpractice cases. Yet, the United States approach may not be right for the Commonwealth countries. They have a medical delivery system that differs dramatically from the United States system,<sup>276</sup> and it may well create problems very different from those seen in the United States. Furthermore, Commonwealth courts place far less emphasis on deterrence as a legitimate function of tort law than do United States courts. Therefore, the high deference that Commonwealth courts give to medical professionals may well be appropriate because of the circumstances that prevail in those countries.

Malone's thesis also helps explain why courts have not embraced loss of a chance in physical injury cases not involving medical malpractice. The kinds of physical harm cases that are most appropriate for loss of a chance are those where courts have already given plaintiff the benefit of a drastically reduced burden of proof that is far more beneficial to plaintiffs than use of probabilistic causation. In the cases Malone discussed, such as the failure to rescue a sailor that has been washed overboard, plaintiffs usually recover full damages even though they lost only a slim chance of a rescue.<sup>277</sup> There are other examples than those discussed by Malone. For example, many United States courts use a presumption of causation in products liability failure to warn cases. The presumption often produces a result more favorable to plaintiffs than the loss of a chance theory would because it allows for full rather than partial recovery. In cases using these relaxed causation approaches, plaintiffs have little incentive to ask the court to adopt a probabilistic rule since a probabilistic approach will usually

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273. TO ERR IS HUMAN: BUILDING A SAFER HEALTH SYSTEM 27-42 (Linda T. Kohn et al. eds., 2000).

274. Peters, *supra* note 132 (reviewing the literature and describing studies that show only one claim is filed for every five to ten negligently inflicted injuries).

275. *Id.* (reviewing the literature and reporting that studies show malpractice plaintiffs win about 30 percent of their cases; this is about one-half as many cases as automobile accident victims win). Other studies show that juries are more tolerant of malpractice defendants than are other physicians. *Id.*

276. Jennifer R. Weinman, Comment, *A Deterioration of Health: A Critical Analysis of Health Care Systems, Medical Malpractice, and No-Fault Insurance in Canada, Great Britain, and the United States*, 14 HOUS. J. INT'L L. 425 (1992) (describing the universal health insurance in Canada and the National Health Service in England).

277. Malone, *supra* note 57, at 76-77.

operate to their disadvantage.<sup>278</sup> Defendants in such cases may also be reluctant to ask the court to adopt a probabilistic rule for strategic reasons of their own. When no party asks the court to adopt a probabilistic rule, the court may be reluctant to adopt one on its own. This may be especially true in most non-medical malpractice cases because there will be little reliable evidence upon which a fact finder could base its finding as to the chance of survival.

We have seen that Commonwealth courts are much more willing than United States courts to apply loss of a chance where economic losses are involved. This is true whether other physical harm is present or not. This phenomenon is difficult to explain. Professor Waddams suggests that Anglo-Canadian courts are more willing to estimate losses based on hypothetical facts because of the decline in the use of juries.<sup>279</sup> While distrust of juries is a plausible explanation for why courts that do not use juries have adopted different rules, it is not clear that the distrust itself is justified.

Distrust of juries could rest on one of two grounds. The first is the belief that juries are inherently less capable of making estimates based on probability than judges. It is not clear that there is a valid basis for this ground. A recent study of fact-finding ability in general suggests that judges are not much more reliable as fact finders than juries.<sup>280</sup> Present studies do not focus specifically on the ability of judges and juries to estimate probabilities. Perhaps future studies will clarify this issue.

The second ground for distrusting juries is that they will have less experience estimating probabilities than judges. This is because in jurisdictions that use juries, each case is decided by a

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278. David Hamer, *'Chance Would Be a Fine Thing': Proof of Causation and Quantum in an Unpredictable World*, 23 MELB. U. L. REV. 557, 614-15 (1999). In 1998 a trial judge applied an inference of causation created by *McGhee v. National Coal Board*, 3 All E.R. 1008 (Eng. H.L. 1972), to a lawsuit against the government brought by 100,000 ex-coal miners for chest injuries linked to exposure to coal dust. Jane Stapleton, *Scientific and Legal Approaches to Causation*, in CAUSATION IN LAW AND MEDICINE (D. Mendelson & I. Freckelton, eds., forthcoming 2001). The case settled for two billion pounds, an amount larger than the government received from sales associated with the privatization of the coal industry. *Id.*

279. WADDAMS, *THE LAW OF DAMAGES*, *supra* note 61, at §13.30.

280. Social science research has identified five cognitive illusions that lead jurors to make errors. See Chris Guthrie et al., *Inside the Judicial Mind: Heuristics and Biases*, 86 CORNELL L. REV. 777 (2001). These are anchoring effects, framing effects, hindsight bias, the representativeness heuristic, and egocentric bias. *Id.* A recent empirical study demonstrates that judges suffer from these same illusions when they act as fact finders, although judges "expressed slightly less vulnerability to two of the five illusions than laypersons and other experts." *Id.* These two illusions are framing effects and the representativeness heuristic. Whether judges reduced vulnerability to these two illusions gives them a significant advantage in estimating probabilities of future events and hypothetical events is unknown.

new jury without reference to how similar cases have been decided by other juries. In jurisdictions that do not employ juries, judges become experienced in estimating probabilities by virtue of routinely performing that function in the cases that they try. Furthermore, published reports of opinions give them some knowledge of how other judges have performed that function in similar cases. In addition, trial judges may get some useful feedback concerning the quality of their estimates from the appellate courts that handle appeals from their decisions. Whether this kind of experience and feedback truly makes judges superior estimators of probability is unknown. Perhaps future empirical studies examining this issue will shed some light on the question.

## VII. CONCLUSION

This Article has searched for non-arbitrary limiting principles that would permit courts to use loss of a chance, where appropriate, without fear that the doctrine will expand into a general theory of probabilistic causation. The Article first examined the major policy rationales for loss of a chance. The examination revealed that neither the "chance has value" theory nor considerations of fairness based on difficulty of proof were helpful in restricting the doctrine.

The autonomy theory does provide principled restrictions. It limits probabilistic causation to cases where a defendant engages in an undertaking or makes a misrepresentation. Furthermore, by requiring plaintiff to prove detrimental reliance on the undertaking or misrepresentation, the theory precludes applying probabilistic causation to the question of what the plaintiff would have done (whether the plaintiff would have relied on the undertaking or misrepresentation). A drawback of the autonomy theory is that it is useful as a limiting principle only if courts adopt it for the purpose of protecting autonomy rather than as a subterfuge for employing probabilistic causation. Courts to date have shown little interest in granting expanded protection to autonomy.

The policy of promoting efficient deterrence also gives principled guidance. Efficiency considerations suggest that probabilistic causation should be employed in recurring miss cases and in proportional risk recovery cases involving losses that can be insured against. Such cases are likely to be rather small in number. In addition, in the kinds of cases where tortfeasors often escape liability, deterrence may be enhanced by using the relaxed causation approach to hold defendants liable for all of plaintiff's harm.

The most workable approach is to use the case-specific policy considerations identified by Professor Malone for deciding when to lower plaintiff's burden of proving causation of traditional damage. Yet, except in medical malpractice cases, even this is problematic because of the lack of good statistical evidence upon which to base a finding of the probability of causation. Furthermore, application of

probabilistic causation in these cases would operate to plaintiff's disadvantage, producing smaller recoveries than the relaxed causation approach that courts presently use.

The Commonwealth courts often apply loss of a chance in economic loss cases. In this respect they are more adventurous than United States courts. Yet their inability to find non-arbitrary ways to limit the issues to which the doctrine applies raises questions about the soundness of applying the doctrine broadly to all economic loss cases.

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