Hand Rule Damages for Incompensable Losses†

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I. INTRODUCTION

Compensatory damages often aim to make the victim whole or to restore the victim to a position equivalent to the one before the harm occurred. Two compensatory ideals coexist in law. First, *market value* compensation is perfect when damages equal the price of a substitute.

† Although not defined in dictionaries, I am using the terms "incompensable" and "noncompensable" to describe those losses for which one cannot find a money equivalent by any amount of effort, deliberation, or experience.

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Second, *subjective value* compensation is perfect when the victim is indifferent between "no harm" and "harm plus damages." In some circumstances, neither ideal of compensation is achievable. For example, when a child dies in an accident, the court cannot base damages on the child's market value, because markets for children are illegal. Nor can the court compute subjective value on the repugnant formula, "Find a sum of money such that the parents are indifferent between having a dead child and the money, or having a living child and no money." The loss of a child is an extreme example of incompensable losses that frequently occur in lesser forms.

In finding damages, courts distinguish between economic and noneconomic losses. For economic losses, such as lost wages or medical costs, the court computes market values and awards damages accordingly. For economic losses of goods whose subjective value differs from market value, such as family photographs, expert testimony uses methods that help courts to guess at subjective values.[1] However, for noneconomic losses such as companionship, consort, sexual partnership, affection, or pain and suffering, courts apparently arrive at damages by unaided intuition.

Judges and juries need a clear theory and replicable practice for computing damages for incompensable losses, which should build on familiar risk valuations. Because everyone faces a small risk of death in daily life, even loving parents must decide how much to spend on reducing these risks to their children. In general, the need to buy costly precaution in daily life forces people to trade off money and risk. Social norms often evolve to prescribe the right balance. In favorable circumstances the process of norm creation overcomes personal biases and cognitive errors, so the social standard can withstand scrutiny and criticism. The "reasonable person," who is common law's guide, internalizes these norms.

Courts should develop theory and practice of damages for incompensable losses based on the response of reasonable people to daily risks. Specifically, courts should compute damages based on the reasonable person's point of indifference between less risk and more expenditure on precaution. The Hand rule describes this point of indifference.[2] In its original notation, the Hand rule is based on the equation $B = P \times L$, where B is the burden of precaution, P is the reduction in probability of harm caused by precaution, $\times$ is the multiplication sign, and L is

1. Examples of techniques are hedonic indexes, revealed preferences, and price of closest market substitute. *See, e.g.*, C. LANIER BENKARD & PATRICK BAJARI, HEDONIC PRICE INDEXES WITH UNOBSERVED PRODUCT CHARACTERISTICS, AND APPLICATION TO PC'S (Nat'l Bureau of Econ. Research, Working Paper No. w9980, 2003), *available at* http://www.stanford.edu/~lanierb/research/pi090103.pdf.

2. *See* United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947).

liability.[3] The equation describes the tipping point between negligent and nonnegligent behavior. If *B* equals or exceeds *P x L*, then the behavior is nonnegligent. If *P x L* exceeds *B*, then the behavior is negligent.

Assume the court can identify ideal examples of behavior satisfying this equation. By "ideal," I mean that most people agree that the precaution in question is reasonable. By computing the burden *B* and probability *P* in these ideal examples, the court can solve the equation for liability *L*. In general, *Hand rule damages equal the reasonable burden divided by the reduction in the probability of harm that it causes*, or $L = B/P$.

Applying the Hand rule to good social norms for safety will yield reasonable values of damages. To illustrate numerically, assume that a reasonable person would spend $100 to reduce the probability of accidental death by 1/10,000. Solving the equation *$100 = (1/10,000) x L* for *L* yields the conclusion that courts should award damages of $1 million for wrongful death.

Hand rule damages have some normatively desirable properties that I will explain in this Article. First, Hand rule damages cause potential injurers to internalize the value of the reduction in risk from their precautions. Consequently, Hand rule damages provide incentives for efficient precaution. This fact appeals to economists and utilitarians. Second, "internalization" means that potential injurers treat risks to others like their own risks. This fact appeals to moralists. Third, given complete insurance markets, liability for exposure to risk tends to have the same effects as Hand rule damages for actual losses. Insofar as liability for exposure to risk satisfies the principle of corrective justice, so do Hand rule damages in the presence of idealized markets. This fact appeals to some philosophers of corrective justice.

II. COMPENSABLE HARMS

Utility curves in economics represent points of subjective indifference for an individual. Perfect subjective compensation for a loss is a sum of money that restores the victim to the utility curve where he would have been but for the injury. In general, purchasing a perfect substitute restores the victim to the same subjective utility as before the accident. Consequently, the market price of a perfect substitute equals perfect subjective compensation.

3. *Id.*

Before proceeding to incompensable losses, I mention a few details about compensation. Market compensation differs according to whether the victim can buy and sell the good in question, buy it only, or sell it only. To illustrate the three types: The owner of a barrel of oil can buy or sell it; a person can often buy better health but not sell it; and the owner of a unique good like an impressionist painting can initially sell it but cannot buy it after an accident destroys it.

Now I relate these facts to damages. With a homogenous good, like oil, that the victim can buy or sell, the subjective value equals the market price.[4] Consequently, perfect market compensation is also perfect subjective compensation. With a personal good like health that the victim could buy but not sell, perfect market compensation equals or exceeds perfect subjective compensation. With a unique good like an impressionist painting that the victim could have sold before the accident but cannot buy after it is destroyed, perfect market compensation equals or falls short of perfect subjective compensation.

III. INCOMPENSABLE LOSSES

Now my analysis turns from compensable to incompensable losses. Economic theorists often assume that preference orderings are complete, which means that the actor can order every alternative relative to every other alternative. "Order" means the actor can say whether one is better, equally good, or worse than the other. In reality, choosing requires effort, so people often do not order possible alternatives until they materialize as actual choices. In most cases, however, people can order alternatives when required. For example, most of us do not think seriously about whether we would rather lose our sight or our hearing, but if bizarre circumstances forced us to choose, most of us could make the choice. The important point is that orderings are usually incomplete and people can usually complete them when necessary.

This generalization applies to nonmarket goods. By definition, people do not have experience with buying or selling nonmarket goods. Consequently, most people have not thought about their money value. If circumstances force us to choose, most of us can find monetary equivalents. For example, I do not know how much I would be willing to pay for a twenty-five percent reduction in the pollution of the air that I breathe, but I would figure it out if faced with the possibility of buying it. Similarly, I do not know how much I would accept for a fifteen percent decrease in my visual acuity, but I could figure it out if faced

4. In more technical language, there is no consumer surplus on the purchase of the last unit of a homogeneous good.

with the possibility of selling it. I use the phrase "commensurable with money in principle" if a reasonable person could find a money equivalent for a nonmarket good when faced with the opportunity to buy or sell it.

For some things, however, many people cannot find a money equivalent by any amount of effort, deliberation, or experience. The death of a child is an example of an alternative that, for most parents, is incommensurable with money in principle. Incommensurability has several causes. A psychological cause is the constraint imposed by categories of thought. If "money" and "death" are different categories of thought, connecting them may be too difficult for some people, no matter how hard they try. Another kind of psychological cause occurs when money crowds out intrinsic motivation. Crowding out is illustrated by the question, "How much money must I pay you to love me for my own sake?" The question makes no sense because it confuses the way money connects to love. Psychology apparently precludes buying and selling love or affection.

Morality provides another cause of incommensurability with money. If I believe that buying or selling something is immoral, then morality precludes a money equivalent. To illustrate, if I am morally committed not to sell my body parts at any price, then the question, "How much money would you take for your eye?" inappropriately suggests that some *amount* of money might influence my answer. Asking a morally committed person the preceding question resembles asking a loving husband, "When did you stop beating your wife?" The question cannot be answered without reformulating it.

Generalizing, Joseph Raz has argued that a norm is an "exclusionary reason," meaning that it excludes the actor from allowing himself to be influenced by some considerations.[5] If a person is committed to a norm that excludes payment as a way to acquire or part with something, then that thing is incommensurable with money in that person's principles. I will develop a theory of damages that proceeds from the fact that some people regard certain losses as incommensurable with money. I will not consider the philosophical question of whether these people are right.

Incommensurability in principle has a significant place in constitutional reasoning and adjudication. Many U.S. judges interpret the Constitution

5. This concept is central to Raz's theory of norms developed in JOSEPH RAZ, PRACTICAL REASON AND NORMS 35–48 (Oxford Univ. Press 1999) (1975).

as giving so much weight to individual rights that material considerations cannot justify their infringement by the state.[6] Political philosophies with long pedigrees bolster courts in western countries that refuse to trade off individual rights for wealth. For example, one of the most celebrated political treatises of our age, John Rawls's *A Theory of Justice*, contends that a society with moderate scarcity should not sacrifice liberty for wealth.[7] According to this view, no increase in wealth can justify, say, a restriction on the freedom of speech. When faced with a public choice, officials who follow this philosophy should always choose more liberty, according to Rawls, even at the cost of a large loss of wealth. Consequently, liberty is regarded as "lexically prior" to wealth in the court's preference ordering.[8]

I have analyzed some forms and causes of incommensurability. In my analysis, incommensurability is relative to the values of an actor. The relevant actor for determining legal questions in common law is the "reasonable person." This fact suggests how the law should distinguish between compensable and incompensable losses. If a loss is commensurable with money for a reasonable person, then the loss is legally compensable. If a loss is incommensurable with money for the reasonable person, then the loss is legally incompensable.

Like losses, the *risk* of a loss can be compensable or incompensable. To illustrate compensable risk, most people will only pay so much to avoid exposure to the risk of a particular harm. People do this when purchasing safer automobiles. To illustrate incompensable risk, some people apparently believe that no amount of money is worth the risk that their immortal soul will be condemned to hell. Similarly, the risk that a catastrophic war will destroy humanity may not be worth any amount of money.

This Article is built on the fact that many incompensable losses correspond to compensable risks. For example, a person will only spend so much to reduce the small risk that his child will die in an automobile accident, but no amount of money will compensate for the child's death. To appreciate the connection between probability and incommensurability, assume that money provides perfect compensation for the risk when the

6. *See, e.g.*, Dunn v. Blumstein, 405 U.S. 330, 335, 360 (1972) (holding that a durational residence requirement for Tennessee voters unconstitutionally restricted the fundamental rights to vote and to interstate travel); ROBERT COOTER, THE STRATEGIC CONSTITUTION 257–58 (2000).

7. JOHN RAWLS, A THEORY OF JUSTICE (1971).

8. In Rawls's system, however, liberties can trade off against each other. To illustrate, a restriction on the freedom of speech might be justified by a resulting increase in the freedom of religion. Rawls's system logically requires a way to combine different liberties in order to say whether the total bundle of liberty is less or more. *See id.* at 42–43, 60–61.

probability is low, but as the probability rises towards one, the risk approaches a certain loss and the loss is incompensable. In many cases, a compensable risk turns into an incompensable loss as the probability rises towards one.

Note that the region where the risk becomes incompensable is also the region where the injurer's behavior is usually worse than negligent. An injurer who imposes a risk with a high probability of materializing is grossly negligent or commits an intentional tort. These are circumstances where punishment is appropriate. Tort law requires a separate theory of punitive damages that this Article does not discuss.

IV. PURE RISK

To recapitulate, people necessarily lack experience with buying and selling nonmarket goods. Many of these goods are commensurable with money in principle. For losses that are commensurable with money in principle, a court can, if necessary, find a money equivalent by established methods. These methods aim for objective compensation based on market prices or subjective compensation based on indifference. However, some losses are incommensurable with money in principle. For common law purposes, a good is incommensurable with money in principle if a reasonable person would not buy or sell it. For losses that are incommensurable with money, damages should be based on a reasonable person's response to risk of the loss that actually materialized. Before developing this method, however, I will explain the concept of pure risk.

The following example helps to disentangle compensable and incompensable losses and to isolate the element of pure risk.

> *Cancer Example*: Victim *V* works at a job where he might be accidentally exposed to a chemical that increases the probability from .01 to .02 of dying from lung cancer in twenty years. *V* would pay $15,000 to avoid exposure to this risk, or he would accept $15,000 to expose himself to this risk. No matter how hard he tries, *V* cannot imagine any sum of money that he would accept in exchange for certain death by lung cancer.

V's employer accidentally exposes him to the chemical. As a result of exposure, *V* spends $1000 to move to another neighborhood with better air quality, and *V*'s insurer raises his health and life insurance premiums by an amount that totals $2000 over twenty years. *V* also suffers fear

and anxiety for twenty years, which he would have paid $5000 to avoid.

Assume that compensation for exposure to risk is paid just before twenty years, when *V* still does not know whether or not the risk will materialize. How much compensation should be paid?

Alternatively, assume that no compensation is paid for exposure to risk, the risk materializes after twenty years, and *V* dies abruptly from lung cancer without incurring further costs. How much damages should be paid to *V*'s heirs?

I begin to answer these questions by computing damages for exposure to risk. Because *V* would have paid $15,000 to avoid exposure, and he would have accepted $15,000 to submit to exposure, $15,000 in damages makes him indifferent between no risk and risk-and-damages. *V*'s full compensation for exposure to risk thus equals $15,000. If *V* is a reasonable person, then the court should award compensatory damages of $15,000 for exposure to risk.

Note that $15,000 encompasses $3000 in objective costs and $5000 in psychological suffering. By objective costs, I mean the costs actually paid out of *V*'s pocket. By psychological suffering, I mean the subjective cost of the feelings caused by exposure to risk. Note, however, that risk is costly quite apart from any feelings that exposure to it causes. Even if *V* had such a calm disposition that exposure to risk did not cause anxiety or fear, or even if he did not know about his exposure to the risk, exposure to risk is still something that he would pay to avoid. I call the additional subjective cost the *cost of pure risk*. The cost of pure risk equals the amount that a person would pay to avoid it, minus out-of-pocket costs or psychological costs caused by it. In the cancer example, the objective costs of $3000 and the psychological costs of $5000 sum to less than the total perfect compensation cost, which is $15,000. The $7000 difference represents the cost of pure risk. Most people are very averse to the risk of large losses and would pay a lot to avoid them. Hence the cost of pure risk is a large element in the total cost of exposure to large risks. Compensating for objective and psychological consequences without compensating for pure risk grossly undercompensates for exposure to the risk of large losses.[9]

Note that the cost of pure risk explains my earlier claim that many accidents involve an element of incompensable loss. Specifically, most people are highly averse to large losses. As the probability of a large loss approaches one, many people may find that they would not accept any amount of money in exchange for exposure to the pure risk of such a

9. For a good discussion of risk in tort law, see ARIAL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 101–29 (2001).

loss. In the typical case of a large loss involving physical harm, there are compensable elements and an incompensable element.

The second question posed by the cancer example is how to compensate *V*'s heirs for the materialized loss. Recall that *V* cannot imagine any sum of money that he would accept in exchange for certain death by lung cancer, so the materialized harm is incompensable. If *V* is a reasonable person, then the court should acknowledge that the materialized loss is incompensable. In these circumstances, subjective indifference provides no basis for damages. Hand rule damages provide a solution. As mentioned above, Hand rule damages equal the reasonable burden of precaution divided by the resulting reduction in the probability of harm. In this example, *V* is indifferent between $15,000 and an increase of 0.01 in the probability of cancer death. Thus, Hand rule damages equal $15,000/0.01, or $1.5 million. Note that Hand rule damages encompass *all* aspects of a fatal risk that the individual would pay to reduce, including out-of-pocket losses, psychological costs, and pure risk. Later, I will explain and defend this method of computing damages, but first I turn to the actual practice of the courts.

V. CONFUSION IN THE COURTS

Modern practices of awarding damages for accidental deaths developed in response to the historic common law principle that if the victim dies before recovering in tort, the right of action also dies for the victim and the victim's relatives and dependents.[10] An implication of this principle is that damages are often much lower when the injurer accidentally kills someone rather than injuring him. This result creates perverse incentives and strikes most people as unfair. The United States overcame the restrictive common law principle by enacting wrongful death statutes, which created a right of relatives and dependents to recover their *own* losses from the victim's death.[11] Some U.S. states also enacted survival statutes, which created a right of relatives and dependents to recover the *deceased's* losses, including suffering that occurred after the injury and before dying.[12]

10. W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS §§ 125A, 127 (W. Page Keeton ed., 5th ed. 1984). Keeton and Prosser also list another restriction that I do not discuss. If the tortfeasor died before the victim recovered, his liability died with him. *Id*. § 125A.

11. *See id*. § 127.

12. *See id*. § 126.

Wrongful death statutes often enumerate categories of recoverable and nonrecoverable losses, including a distinction between economic or pecuniary losses and noneconomic or nonpecuniary losses. For economic losses, courts can rely on the parties to compute damages by replicable methods. For homogenous goods, damages can equal market prices. For unique goods such as art works, courts can use the market price of the closest substitute that recently sold. For complex goods, statisticians can sometimes attribute market value to the good's components. For example, statisticians can impute the implicit market value of clean air from differences in real estate prices among neighborhoods that differ in air quality ("hedonic index"). When subjective values substantially exceed market values, as with family photographs, courts try to infer subjective values by indirect means.

State statutes that allow compensation for noneconomic losses often list some of their types. To illustrate, the Kansas statute allows heirs to recover for the following losses: "(1) [m]ental anguish, suffering or bereavement; (2) loss of society, companionship, comfort or protection; (3) loss of marital care, attentions, advice or counsel; (4) loss of filial care or attention; (5) loss of parental care, training, guidance or education."[13] This Kansas statute allows recovery for "intangible emotional losses," including grief.[14] A separate Kansas statute limits nonpecuniary damages to $250,000.[15]

Similarly, the recommended jury instruction for California's courts has the judge tell the jury:

> You should also consider:
> 1. The age of the deceased and of each heir;
> 2. The health of the deceased and each heir immediately prior to death;
> 3. The respective life expectancy of the deceased and of each heir;
> 4. Whether the deceased was kindly, affectionate or otherwise;
> 5. The disposition of the deceased to contribute financially to support the heirs;
> 6. The earning capacity of the deceased;
> 7. The deceased's habits of industry and thrift; and
> 8. Any other facts shown by the evidence indicating what benefits each heir might reasonably have been expected to receive from the deceased had [he] [she] lived.
>
> . . . .
>
> In determining the loss which each heir has suffered, do not consider:
> 1. Any pain or suffering of the decedent;
> 2. Any grief or sorrow of the heirs; or
> 3. The poverty or wealth of any heir.[16]

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13. JOSEPH W. GLANNON, THE LAW OF TORTS: EXAMPLES AND EXPLANATIONS 315 (2d ed. 2000) (quoting KAN. STAT. ANN. § 60-1904 (1994)).

14. *Id*.

15. *Id*. (citing KAN. STAT. ANN. § 60-1903(a)).

16. 2 CALIFORNIA JURY INSTRUCTIONS: CIVIL, BAJI 14.50, at 232–33 (9th ed. 2002)

The Kansas statute and the California jury instruction tell the decisionmaker some things to look for when setting damages but not what to do with what it sees. In mathematical terms, these instructions list the variables in the damage function but remain silent about its form.

Besides these lists, jury instructions on incompensable losses seem vacuous or incoherent. The State of Massachusetts offers these instructions:

> Recovery for wrongful death represents damages to the survivors for the loss of value of decedent's life.
>
> There is no special formula under the law to assess the plaintiff's damages.
>
> It is your obligation to assess what is fair, adequate, and just. You must use your wisdom and judgment and your sense of basic justice to translate into dollars and cents the amount which will fully, fairly, and reasonably compensate the next of kin for the death of the decedent. You must be guided by your common sense and your conscience on the evidence of the case.[17]

As I have explained, many people cannot commensurate a person's death with money. The instruction to find the economic value of losses incommensurable with money makes no sense to them. Even so, Massachusetts commends its judges to tell the jury to compensate "fully" for incompensable losses by using its "common sense." This instruction resembles a homeless person saying, "Meet me at my house and use your common sense to find it."

Compared to Massachusetts, the recommended jury instruction in New York is apparently worse. The New York jury instruction says that damages should be awarded only for the deceased's economic or pecuniary value.

> [I]t is the economic value of [the deceased] to [the distributee] that you must decide. That value is incapable of exact proof. Taking into account

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(first alterations in original).

17. 1 PAUL R. SUGARMAN & VALERIE A. YARASHUS, MASSACHUSETTS SUPERIOR COURT CIVIL PRACTICE JURY INSTRUCTIONS § 3.5 (2001) (footnotes omitted). The instruction goes on to explain that the wrongful death statutes entitle the survivors "to recover the fair monetary value of the decedent to them, including, but not limited to, compensation for the loss of . . . society, companionship, [and] comfort . . . of the decedent." *Id.* § 3.6 (footnote omitted). The instruction explains that the survivors' pain and suffering must go uncompensated, but the pain and suffering of the victim between the time of injury and death should be compensated as follows:

> To arrive at a monetary figure for the plaintiff's pain and suffering, you must use your own good sense, background, and experience in determining what would be a fair and reasonable figure to compensate for the physical and mental suffering such as you find has been proved by the evidence.

Id. § 3.12.

> all the factors I have discussed, you must use your own common sense and sound judgment based on the evidence in determining the amount of the economic loss . . . .[18]

In a case where New York parents lose a child, the jury is to use its common sense to find the *economic* value of the child's love and companionships. Like Massachusetts, the New York jury is asked to use common sense to monetize what is incommensurable with money. Unlike Massachusetts, the New York jury is asked to monetize only the economic part of a loss that is incommensurable with money. Avoiding unacceptable outcomes in states that disallow noneconomic damages requires even more than the usual contortions by juries and judges.[19]

Compared to Massachusetts and New York, the California jury instruction is somewhat better. Unlike New York, the California jury is told that it can compensate for noneconomic damages. Unlike Massachusetts and New York, the California jury instruction does not suggest that common sense can solve a problem that lies outside the range of ordinary experience. Rather, California recommends doing what is reasonable: "Also, you should award reasonable compensation for the loss of love, companionship, comfort, affection, society, solace or moral support[,] . . . and any loss of the enjoyment of sexual relations]."[20] This single sentence, however, comprises the entire California instruction on noneconomic damages. The jury is told nothing about how to determine a reasonable amount of damages. Hand rule damages are reasonable, although they are also too difficult conceptually for common sense to encompass. The California instruction thus leaves open the possibility of developing a concrete method for determining reasonable damages. Without a theory like Hand rule damages, however, the instruction to award reasonable compensation is hardly better than the instruction to follow common sense.

VI. COST OF A FATAL RISK

Having described the confusion of courts, I turn to the task of developing a theory and practice of damages for incompensable losses. I have explained that incompensable losses involve goods that people do not buy and sell. In contrast, daily life exposes everyone to the need to

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18. 1B NEW YORK PATTERN JURY INSTRUCTIONS—CIVIL 2:320, at 1428 (3d ed. 2002).

19. *See* GLANNON, *supra* note 13, at 314.

> The inadequacy of the pecuniary loss standard is most glaring when the decedent is a young child. In such cases, the emotional loss to the parents is frightful, yet there is seldom evidence or likelihood of actual financial loss to the survivors. Such compelling cases have led many courts to evade the strictures of the pecuniary loss standard by tortured interpretation.

Id.

20. 2 CALIFORNIA JURY INSTRUCTIONS: CIVIL, *supra* note 16, at 233 (alteration in original).

spend money and effort to reduce the risk of incompensable losses. When precaution is costly, buying it forces people to trade off money and risk, including searching for the point of indifference between them. Economists have long used behavior towards risk to impute the subjective value of the loss, including loss of life, and estimate it by econometric methods.[21] I refer to these estimates as the subjective cost of a fatal risk, although economists typically use the unfortunate phrase, "value of a life."

To illustrate, the Victoria Transport Policy Institute's analysis of the safety and health costs of automobiles surveyed the econometric studies. It concluded that the narrow measure based on market costs of property damages, medical treatment, and lost productivity typically value saving a human life at $500,000 to $1 million, whereas the comprehensive approach based on people's willingness to pay for increased safety put the value in the range of $2 to $7 million.[22] Several publications of the United States Department of Transportation Federal Highway Administration (FHWA) discuss and endorse this method for assigning social costs to automobile accidents. According to these FHWA studies, the social cost of a life lost in an automobile accident during 1994 was approximately $2.6 million.[23] More recently, Kip Viscusi had said that the correct number is $3 to $9 million.[24] Most recently, the Environmental Protection Agency's expert panel recommended the value of $5.8 million in 1997 dollars for cost-benefit studies involving the loss of a statistical life.[25]

This approach has also been used to compute the implicit value of

21. *See* MARSHALL S. SHAPO, BASIC PRINCIPLES OF TORT LAW ¶ 71.03, at 343–44 (1999). The authors of one study calculated the value of a life to be $176,000. *Id*. at 344 n.14 (citing Richard Thaler & Sherwin Rosen, *The Value of Saving a Life: Evidence from the Labor Market*, *in* HOUSEHOLD PRODUCTION AND CONSUMPTION 265, 292 (Nestor E. Terleckyj ed., 1976)). Another economist calculated the value of a life to be over $1 million. *Id*. at 344 n.15 (citing W. Kip Viscusi, *Labor Market Valuations of Life and Limb: Empirical Evidence and Policy Implications*, 26 PUB. POL'Y 359, 372–85 (1978)).

22. VICTORIA TRANSP. POLICY INST., TRANSPORTATION COST AND BENEFIT ANALYSIS: TECHNIQUES, ESTIMATES AND IMPLICATIONS 5.3-7 (2003), *available at* http://www.vtpi.org/tca/tca0503.pdf.

23. FED. HIGHWAY ADMIN., U.S. DEP'T OF TRANSP., TECHNICAL ADVISORY: MOTOR VEHICLE ACCIDENTS COSTS tbl. 2 (1994), http://www.fhwa.dot.gov/legsregs/directives/techadvs/t75702.htm (last visited Nov. 12, 2003).

24. W. KIP VISCUSI, MISUSES AND PROPER USES OF HEDONIC VALUES OF LIFE 5 (Harvard Law School Discussion Paper No. 292, 2000), http://www.law.harvard.edu/programs/olin_center/ (last visited Sept. 7, 2003).

25. U.S. ENVTL. PROT. AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 90 (2000), *available at* http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html. Thanks to Richard Ravesz for this reference.

fatal risks in federal safety regulations. Viscusi found that the cost per life saved by various regulations varies from $100,000 for unvented space heaters to $72 billion for the 1987 formaldehyde standard.[26] Although the numbers in these estimates are questionable, Viscusi's implication is undoubtedly correct that Americans could save many lives by changing the pattern of safety expenditures without increasing total safety expenditures.[27]

I have been discussing the subjective cost of fatal risks as revealed by the precautions of people, which economists routinely use in analyzing safety standards. Commentators sometimes ask whether this approach should be used to set damages. Landes and Posner discussed this possibility briefly in their 1987 torts book and tentatively concluded in favor of courts adopting this approach.[28] Shavell's 1987 torts book did not discuss this possibility.[29] Viscusi, who favors using this method to set standards of care, opposes using it to set damages. He argues that using this method to set damages will result in overinsurance.[30]

Is the subjective value of a fatal risk more or less than the damages that courts award in wrongful death cases? Available data is usually aggregated in a way that precludes answering this question. In 1996, the Federal Department of Justice and the National Center on State Courts conducted a large survey of state court civil cases.[31] Extracting the awards in wrongful death cases from this data seems to be the most promising approach. Towards this end, Theodore Eisenberg generously made some calculations for me.[32] Table 1 concerns those cases won by plaintiffs asserting a wrongful death claim. The mean, median, and standard

26. W. Kip Viscusi, *Regulating the Regulators*, 63 U. CHI. L. REV. 1423, 1432–35 (1996).

27. *Id.* at 1432–36.

28. WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF TORT LAW 86–90 (1987). Landes and Posner describe how to compute the implicit value of a life from expenditures on precaution and the resulting reduction in the probability of an accident, and they conclude that "this may be a feasible as well as theoretically correct method of estimating tort damages. The tort system shows, as yet, no signs of moving in this direction; it continues to be wedded to the pecuniary-loss measure, which bears no necessary relationship to the economically correct measure." *Id*. at 188–89.

29. *See generally* STEVEN SHAVELL, ECONOMIC ANALYSIS OF ACCIDENT LAW (1987). Shavell's detailed examination of damages does not consider the problem of valuing lives or the inference of the value of a life from precautionary behavior. *See id*. at 127–63 (contemplating the problem of discussing damages in general); *see also id*. at 131–35 (discussing nonpecuniary losses in particular).

30. VISCUSI, *supra* note 24, at 2, 22.

31. BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, CIVIL JUSTICE SURVEY OF STATE COURTS, 1996: [UNITED STATES] (2d ed. 2001), *available at* http://www.icpsr.umich.edu/cgi/archive.prl?study=2883 (last visited Oct. 8, 2003).

32. Theodore Eisenberg has coded this data set, and he performed these calculations at my request. Note that Professor Eisenberg maintains a website with useful statistics on civil trials entitled "Federal District-Court Civil Trials." Theodore Eisenberg & Kevin M. Clermont, *Federal District-Court Civil Trials*, *at* http://teddy.law.cornell.edu:8090/questtr7900.htm (last visited Oct. 14, 2003).

deviation in damages are reported for each tort category. Thus the data set contains twenty-eight motor vehicle cases where the winning plaintiff claimed for wrongful death. In these cases, the median damage award was $927,125. The median is much smaller than the mean, as explained by a small number of very large awards that result in a large standard deviation.

TABLE 1

DAMAGES AWARDED IN WRONGFUL DEATH CASES
WON BY PLAINTIFFS

CASE TYPE	NUMBER OF CASES	MEAN	MEDIAN	STANDARD DEVIATION
Motor Vehicle Tort	28	$2,106,718	$927,125	$2,808,147
Premises Liability	8	1,518,983	449,603	2,697,612
Products Liability: Asbestos	3	1,100,000	350,000	1,430,909
Intentional Tort	5	1,128,826	550,000	1,317,038
Medical Malpractice	44	1,406,098	725,825	2,481,901
Other Negligence	17	4,016,988	754,100	9,174,530

My earlier analysis of fatal risks suggested that appropriate damages for loss of life are between two and nine million dollars. The median damage award is typically less than half of the subjective cost of a fatal risk, but the large standard deviation suggests that damages sometimes exceed the subjective cost of a fatal risk. These facts correspond to the intuitive beliefs of some experienced trial lawyers. However, the data must be treated with caution for several reasons. First, the number of cases is small, which makes the number unreliable. Second, some accidents presumably killed more than one person, which biases the median award as a measure of average damages for a wrongful death. Third, the damages may include an element of punishment, which biases the median award upward as a measure of average damages for wrongful death. Fourth, the cases presumably include some in which the plaintiff won but not on the wrongful death claim, which biases the median award downward as a measure of average damages for wrongful death.

Besides analyzing data, I also read individual cases. The *National*

Law Journal publishes the 100 top jury verdicts by dollars for each year.[33] The 2001 wrongful death cases suggest to me that wrongful death can result in very large damage awards when the jury perceives the defendant as behaving badly and having a deep pocket.[34]

VII. HAND RULE DAMAGES

This Article advocates computing damages by an approach that resembles, but is not the same as, the econometric method for estimating the subjective cost of fatal risks. My approach is based on the Hand rule, which Judge Hand anticipated in several cases and formulated explicitly in 1947 in *United States v. Carroll Towing Co*.[35] In *Carroll Towing*, Judge Hand applied his rule to a situation where no community standard existed. So the Hand rule was first used to test whether or not behavior is reasonable in the absence of a norm. The Hand rule was subsequently used to test whether or not an existing norm is reasonable. For example, physicians may develop community standards that serve themselves better than their patients. The Hand rule can be used to determine whether or not the community standard of physicians is legally adequate.[36]

I am proposing a third way to use the Hand rule. Instead of applying the Hand rule to standards, I apply it to damages. Computation of Hand rule damages begins by identifying one or more examples of reasonable precautions against the loss that materialized. To illustrate, if the loss in question is a child's wrongful death, then the court must begin by identifying a reasonable standard of care towards children. If the legal rule at issue is negligence, determining liability requires the court to determine a reasonable standard of precaution. Consequently, the court must identify a reasonable standard of precaution before turning to damages. If the legal rule at issue is strict liability, then determining liability does not require the court to determine a reasonable standard of precaution. Nevertheless, the court must determine a reasonable standard of precaution in order to compute Hand rule damages.

Having identified a reasonable standard of care, the court can then plug its values into the Hand rule to find damages. Hand rule damages generally equal the reasonable burden divided by the reduction in the

33. *See, e.g.*, *Top Verdicts*, NAT'L L.J. LITIG. Y.B., 2002, at 45, 47–49.

34. *See, e.g.*, Anderson v. Alberto-Culver USA, Inc., 789 N.E.2d 304 (Ill. App. Ct. 2003). My thanks to Debby Kearney for gathering these cases for me.

35. 159 F.2d 169, 173 (2d Cir. 1947).

36. Helling v. Carey, 519 P.2d 981, 983 (Wash. 1974) (holding that ophthalmologists were negligent under a standard of reasonable prudence regardless of the standard set by the ophthalmology profession).

probability of harm that it causes. In Hand's notation, the court must determine the cost of precaution at the tipping point, or *B*, and the resulting reduction in the probability of harm, or *P*. Having found *B* and *P*, the court then solves the Hand rule for *L* by using the equation $L = B/P$. As noted by Hand rule commentaries, the relevant values are marginal values of *B* and *P*, not total values.[37]

I contrast this use to Hand's original use of his rule. If there is no community standard, Judge Hand requires the actor to take precaution until the burden *B* is at least as great as the resulting probability *P* of an accident multiplied by the liability *L*, or $B > P \times L$. The tipping point between negligence and nonnegligence occurs at equality: $B = P \times L$. To implement this rule, the court determines liability *L* and probability *P*, solves the equation $B = P \times L$ for *B*, and then compares whether this value of *B* is more or less than the defendant's actual care.

Econometric estimates concern the *average* subjective cost of a risk among actual people who face it, whereas Hand rule damages concern the *reasonable* person's subjective cost of a risk. The average person resembles the reasonable person, but they differ in two important respects for computing damages. First, when facing risky alternatives, actual people often make mistakes and suffer regret. The reasonable person, however, does not make mistakes or suffer regret. Consequently, a reasonable person's decisions are free from cognitive biases, computational inaccuracies, and inconsistent reasoning. Second, some people are selfish or eccentric. Like children, they have not internalized the social norms of consideration and prudence that constrain most people. The reasonable person, however, internalizes social norms of consideration and prudence. These facts imply that the average person's behavior provides evidence about reasonable behavior without being entirely conclusive. Average behavior must survive critical scrutiny before concluding that it is reasonable. In this respect, computing Hand rule damages presents no special problems that courts do not already face when evaluating community standards.

I explained above that the best available data, which is not very good, suggests that the subjective cost of a fatal risk typically exceeds the median damages awarded by courts for wrongful death by more than 200%. Also, the variance in court awards is very high partly because

37. An inspection did not reveal who first stated this proposition, but Posner made the assertion in RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 69 n.2 (1973).

judges give juries vacuous instructions. Better data from courts would undoubtedly prompt adjustments in these numbers. Also, critical scrutiny of average behavior towards risk would undoubtedly reveal biases and mistakes that require correction. Nevertheless, the magnitude of the difference between court awards for wrongful death and the subjective cost of fatal risks is large enough to survive foreseeable corrections. We are probably safe to conclude that implementing Hand rule damages would result in a substantial increase in damages for the most common wrongful death cases involving automobiles.

A pervasive problem in law concerns the extent to which rules should be particularized. To illustrate, a highway might have a uniform speed limit for all cars under almost all driving conditions. Alternatively, a highway might have a variable limit depending on the weather, type of car, driver's skill, and so on. Similarly, a method for setting damages can prescribe the same damages for the wrongful death of anyone, as in the *Laws of Hammurabi*, which prescribe the same damages for the wrongful death of any free man or woman.[38] Alternatively, the common law prescribes different damages for the wrongful death of people who differ in their earning power and other characteristics.

Similarly, Hand rule damages could be uniform or particularized. To illustrate, uniform damages could be awarded in wrongful death cases equal to the average social cost of a traffic fatality as currently specified by the Federal Highway Administration. Uniformity increases by pegging damages to the risk behavior of a "reasonable person" who is generalized rather than particularized.

Alternatively, Hand rule damages might depend on an individual's particular precaution against risk. With particularized damages, for example, wealthy people who spend more on safety might receive higher damages for a child's death than poor people who spend less on safety. This outcome is consistent with the fact that courts award the heirs higher damages for the death of a high wage earner than for the death of a low wage earner. Similarly, the heirs of a young man who dies in an automobile accident might receive less than the heirs of a young woman, because young men drive much more recklessly than young women as proved by insurance rates. Perhaps the lower compensation for a young male driver could be a presumption overcome by the proof that the young victim was a very careful driver. In practice, however, relatively simple, uniform damages for incompensable losses are probably best, as found in some European jurisdictions.[39] The adoption of a "reasonable"

38. James Lindgren, *Measuring the Value of Slaves and Free Persons in Ancient Law*, 71 CHI.-KENT L. REV. 149, 163–65 (1995).

39. Some European courts use simple schedules for computing incompensable

person standard for damages, not just for negligence, would necessarily put some distance between the law and current U.S. practices of highly individualized damages.

VIII. EFFICIENCY

Having explained Hand rule damages, I turn to their justification. I will explain the efficiency justification and then turn to the more controversial fairness justification. The general form of the efficiency justification reduces to a few sentences. Hand rule damages are determined by the reasonable person's valuation of the risk of loss. Liability for Hand rule damages generally causes potential injurers to internalize the reasonable person's valuation of the risk they impose on others. Internalization of social costs typically provides incentives for efficient behavior.

The precise form of this argument depends on the background liability rule, as well as various behavioral assumptions. I will limit my discussion to the difference between strict liability and a negligence rule. A strict liability rule causes a rationally self-interested person to balance the cost of precaution and the resulting reduction in expected liability. With Hand rule damages, expected liability equals the reasonable person's subjective value of the risk. Consequently, a rationally self-interested person balances the cost of precaution and the resulting reduction in the reasonable value of the risk. Because a reasonable person values risk accurately according to its social cost, Hand rule damages cause a rationally self-interested person to balance the social cost and benefits of precaution as required for efficiency.

This analysis extends to liability for losses under a negligence rule. If the legal standard is clear and courts apply it without error, then an injurer can avoid liability by satisfying the legal standard. Thus, the rationally self-interested injurer never exceeds the legal standard. What

losses, but the practice is not easy to confirm. I asked Francesco Parisi, a specialist in comparative at George Mason Law School and the University of Milan, to summarize the practice in Italy. In a private communication, he said that legislation does not establish "menu pricing" for compensation of nonpecuniary losses, but several Italian tribunals (district courts) have informally adopted menu prices as a presumptive benchmark. These values were borrowed (with some adjustments) from insurance company guidelines for compensation. While these presumptive valuations do not eliminate the right of the parties to prove higher damages, given the difficulties of proof, the default compensation is accepted in most cases.

about falling short of the legal standard? The incentive for negligence depends on the level of liability. If liability for deficient precaution equals Hand rule damages, then the potential injurer whose precaution falls short of the legal standard internalizes its social costs and benefits. Thus, Hand rule damages cause the injurer to fall short of the legal standard to the exact extent required by social efficiency and no further. If the legal standard is set at the efficient level of care, and the Hand rule sets damages, then the rationally self-interested actor exactly satisfies the legal standard. If the legal standard is set above the efficient level of care, and the Hand rule sets damages, then the rationally self-interested actor takes the socially efficient level of care and falls short of the legal standard.

I have discussed the justification of Hand rule damages under a clear negligence standard that courts apply without error. With some effort, the argument generalizes to circumstances when the legal standard is unclear, courts make errors, and actors suffer from lapses. However, I will not consider these complications here.

I have explained why Hand rule damages provide incentives for efficient precaution. If the numbers given above are correct, current practices by courts give deficient incentives. Implementing Hand rule damages for, say, automobile accidents would result in a sharp increase in automobile insurance rates and more monitoring of policyholders by insurance companies. With fewer people driving and drivers taking more precautions, accident rates would fall significantly. The reduction in injury risk would be more valuable to reasonable people than the increase in insurance costs.

IX. FAIRNESS

A fundamental moral principle requires people to treat others the way they want to be treated. Applying this principle to accidents, a person should give the same weight to the reductions in risk enjoyed by others as to his own costs of precaution. A reasonable person acts this way, whereas a purely self-interested person looks only to his own costs. Hand rule damages make purely self-interested people act like reasonable people, so everyone receives the behavior that others owe to them. Hand rule damages implement the principle that people should treat others like themselves, which I presume is morally good.

Besides this simple moral argument, I want to justify Hand rule damages in terms acceptable under some theories of corrective justice.[40]

40. *See* Christopher H. Schroeder, *Corrective Justice and Liability for Increasing Risks*, 37 UCLA L. REV. 439 (1990); Kenneth W. Simons, *Corrective Justice and*

In daily life people necessarily impose risks on each other, including the risk of accidents that cause incompensable harms. A fundamental principal of fairness is that people who impose costs on others should compensate them. Tort liability satisfies this principle by shifting the cost of an accident to the person who caused it. Costs can be shifted in two different ways. One way is to hold the injurer liable for exposure to risk. To illustrate, everyone exposed to risk by a negligent driver could sue and recover the cost of the risk. Another way is to hold the injurer liable for materialized losses. To illustrate, when exposed to risk, only those drivers who suffer an accident could sue.

For practical reasons, tort law almost always proceeds in the second way. The practical reason for proceeding this way is that few exposures to risk materialize as losses. Consequently, liability for materialized losses results in far fewer trials with easier proofs than liability for exposure to risk. For now, I want to set aside practical considerations and consider matters of principle.

First, consider liability for exposure to risk. Under ideal conditions, liability for exposure to risk is efficient because the injurer internalizes the risks that he imposes on others. In addition, liability for exposure to risk seems fair by corrective justice standards because the person who imposes risk on others compensates them. Fairness requires the compensation level to equal the monetary equivalent of the risk. As explained, even the risk of *in*compensable losses usually has a monetary equivalent. Consequently, liability for exposure to risk is efficient and apparently fair by corrective justice standards. In the cancer example, it would be fair to require compensation now for exposure to the risk of developing cancer in twenty years.

However, some corrective justice theories that only recognize objective losses must disagree with this conclusion and deny that compensation is ever due because of exposure to pure risk. In this view, requiring the person who caused a pure risk to compensate its victims is unfair. Instead, the objective theory of corrective justice only requires compensation for those pure risks that materialize as actual harms. Applying this version of an objective theory of corrective justice to the cancer example, it is unfair to require compensation now for exposure to the risk of developing cancer in twenty years, and it is fair to require

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Liability for Risk-Creation: A Comment, 38 UCLA L. REV. 113 (1990).

compensation in twenty years for cancer that actually develops.

Second, consider liability for materialized losses. If the loss is compensable, then compensatory damages for materialized losses are efficient because the injurer internalizes social costs. In addition, compensatory damages for materialized losses are fair by corrective justice standards because the person who causes the loss compensates the victim.

The problem arises with liability for materialized losses that are incompensable in principle. An incompensable loss has no monetary equivalent, so *restoration* makes no sense, and the damages required by corrective justice are undefined. There is, however, a way to ameliorate or even circumvent this difficulty and preserve the corrective justice ideal, at least in one of its versions. Recall that holding injurers liable for exposing others to risk is efficient and fair under one version of corrective justice. Under certain circumstances, liability for exposure to risk is equivalent to Hand rule damages for materialized losses. Given material equivalence, a regime of Hand rule damages satisfies the principle of corrective justice to the same extent as a regime of liability for exposure to risk.

Under what circumstances is liability for exposure to risk equivalent to Hand rule damages for materialized losses? Before answering this question, I want to address the version of corrective justice that denies its relevance. Recall that an objective theory of corrective justice might refuse compensation for exposure to pure risk because doing so would be unfair. My discussion of incompensability reveals a serious problem with this theory. If the loss is incompensable, such as death, then this version of an objective theory of corrective justice provides no guidance for setting damages when the loss materializes. To illustrate by the cancer example, an objective theory of corrective justice might deny compensation for the cost of pure risk of cancer and insist that damages are limited to materialized losses and then provide no coherent way to compute damages when the losses materialize. Perhaps this failure in objective theories of corrective justice explains some of the present court confusion with respect to damages for incompensable losses.

Now I return to an explanation of the conditions for material equivalence between compensation for exposure to risk and Hand rule damages for materialized losses. An explanation requires an account of insurance markets. Competition in insurance markets drives premiums towards the level of expected claims. With liability insurance, expected claims tend to equal expected liability. Now assume the courts adopt Hand rule damages, and consider the consequences for liability insurance. In Hand's notation, the expected liability of the insured equals $P \times L$. Competition in insurance markets will cause the insured's premium to tend towards $P \times L$. Thus, liability insurance premiums under a Hand

rule damages regime will tend to equal the injurer's liability under a regime of liability for exposure to risk. Insurance markets tend to make the two regimes materially equivalent for injurers.

A similar proposition applies to victims. Assume away the practical obstacles and consider how victims would respond to a rule of liability for exposure to risk. In a regime of liability for exposure to risk, victims would receive a small amount of damages for each tortuous exposure to risk and no damages for materialized losses. Consequently, they might want to insure against materialized losses. Specifically, they would want to insure against those risks that increase their need for money.

Alternatively, in a regime with Hand rule damages for materialized risk, victims would receive no damages for exposure to risk and a large amount of damages for materialized losses. In so far as an incompensable loss does not increase the need for money, potential victims have no need for insurance against these losses. Consequently, potential victims might like to sell some of their liability rights. To illustrate, the death of a child reduces the financial obligations of loving parents, so few parents insure their children's lives. In effect, the tort system gives parents insurance for their children. Given the opportunity, many parents would presumably sell their tort rights to recover for dead children and use the money to spend on their living children. Competition in markets for unmatured tort claims will tend to cause their price to approach the expected recovery $P \times L$.[41] Thus, a market for unmatured tort claims would allow victims to create the identical situation for themselves under a Hand rule damages regime as under a regime of liability for exposure to risk.

I have explained that liability insurance tends to make the opportunities of injurers identical under a Hand rule damages regime or a regime of liability for exposure to risk for injurers and victims, and a market for unmatured tort claims would tend to make the opportunities of victims identical under the two regimes. Given identical opportunities, a rational actor will choose identical outcomes. If a regime of liability for exposure to risk is efficient and fair, then a materially identical Hand rule damages regime for materialized losses is also fair and efficient.

In reality, insurance markets are incomplete. The most serious kind of incompleteness concerns the inability of potential victims to sell their

41. Robert Cooter, *Towards a Market in Unmatured Tort Claims*, 75 VA. L. REV. 383, 399 (1989).

rights to recover in tort before they get injured. Markets for unmatured tort claims are thin or nonexistent, mostly because of legal obstacles. Given this fact, potential tort victims cannot get rid of unwanted insurance that the tort system gives them. To use the preceding illustration, many parents would sell their tort rights to recover for dead children and use the money to spend on their living children, but the law prevents such sales, so the parents are stuck with too much insurance and too little income. Removing the legal obstacles to the development of markets for tort claims and liability insurance would increase efficiency and fairness. In the absence of these developments, Hand rule damages for materialized losses is probably the best damages rule available for incompensable losses.

X. CONCLUSION

I have defined an incompensable loss as a loss with no monetary equivalent for a reasonable person. When courts must award damages for incompensable losses, judges do not have a clear theory or replicable methodology for computing their magnitude. Judges give misleading and imprecise instructions to juries. Courts should build a theory and method for damages on the fact that the risk of an incompensable loss usually has a monetary equivalent. I propose that courts should base damages on a reasonable person's point of indifference between the cost of more precaution and the resulting reduction in risk of an incompensable loss. Specifically, Hand rule damages equal the reasonable burden of care divided by the resulting reduction in the probability of liability. Hand rule damages cause injurers to internalize the cost of the risk that they impose on others, which is efficient and fair to the injurer. In the presence of idealized markets for insurance and tort rights, a Hand rule damages regime puts victims in the same position as a regime of liability for exposure to risk. A regime of liability for exposure to risk is fair to victims, at least under some conceptions of justice. Therefore, achieving fairness to victims under a Hand rule damages regime requires removing the legal obstacles to markets for torts rights.[42]

42. For further reading, see ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS (2d ed. 1996); MARK A. DELUCCHI, THE ANNUALIZED SOCIAL COST OF MOTOR-VEHICLE USE IN THE U.S., 1990–1991: SUMMARY OF THEORY, DATA, METHODS, AND RESULTS (1998), *available at* http://www.its.ucdavis.edu/publications/1996/RR-96-03%20(01).pdf; WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF TORT LAW (1987); JAMES MURPHY & MARK A. DELUCCHI, REVIEW OF SOME OF THE LITERATURE ON THE SOCIAL COST OF MOTOR-VEHICLE USE (rev. version 1997), *available at* http://www.its.ucdavis.edu/publications/1996/RR-96-03%20(03).pdf; Jennifer H. Arlen, *Should Defendants' Wealth Matter?*, 21 J. LEGAL STUD. 413 (1992); William E. Becker & Richard A. Stout, *The Utility of Death and Wrongful Death Compensation*, 5 J. FORENSIC ECON. 197 (1992); John

Prather Brown, *Toward an Economic Theory of Liability*, 2 J. LEGAL STUD. 323 (1973); John E. Calfee & Paul H. Rubin, *Some Implications of Damage Payments for Nonpecuniary Losses*, 21 J. LEGAL STUD. 371 (1992); John E. Calfee & Clifford Winston, *The Consumer Welfare Effects of Liability for Pain and Suffering: An Exploratory Analysis*, *in* 1 BROOKINGS PAPERS ON ECONOMIC ACTIVITY 133 (Martin Neil Baily et al. eds., 1993); Bruce Chapman, *Law, Incommensurability, and Conceptually Sequenced Argument*, 146 U. PA. L. REV. 1487 (1998); Stephen G. Gilles, *The Invisible Hand Formula*, 80 VA. L. REV. 1015 (1994); Mark F. Grady, *Why Are People Negligent? Technology, Nondurable Precautions, and the Medical Malpractice Explosion*, 82 NW. U. L. REV. 293 (1988); Thomas R. Ireland & John O. Ward, *Valuing the Life of a Child: Broadening the Investment Approach*, 7 J. FORENSIC ECON. 179 (1994); Jason S. Johnston, *Punitive Liability: A New Paradigm of Efficiency in Tort Law*, 87 COLUM. L. REV. 1385 (1987); FED. HWY. ADMIN., U.S. DEP'T OF TRANSP., THE COSTS OF HIGHWAY CRASHES (1991); James L. Plummer, *The Cost of Substitute Consumption Activities: A Better Alternative than Hedonic Damages*, 8 J. FORENSIC ECON. 159 (1995); Margaret Jane Radin, *Compensation and Commensurability*, 43 DUKE L.J. 56 (1993); E. Schwartz & R. Thornton, *Toward a Utility-Based Theory of Loss in Wrongful Death Case*s, 2 J. FORENSIC ECON. 67 (1989); George A. Schieren, *The Economic Framework of Personal Injury/Wrongful Death Damages*, 11 J. FORENSIC ECON. 33 (1998); Ernest J. Weinrib, *Corrective Justice*, 77 IOWA L. REV. 403 (1992).