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One Rule to Compensate Them All

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ONE RULE TO COMPENSATE THEM ALL

Noam Sher*

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ABSTRACT

The article claims that there is a unique compensation criterion that should be applied in all civil wrongs, inter alia, in tort, intellectual property and property law. Where an individual wrongfully infringes the right of another, the taker should be obliged to repay the victim her damages plus half the additional attributed net profits derived from the taking. This article names this criterion the Golden Rule. The suggested criterion contains three main components. First, for example, a firm increased manufacturing with profits of \$1,000, acted wrongfully, and, as a result, someone suffered damages of \$600—the taker should pay the victim \$800 ($600 + \frac{1}{2}(1,000 - 600)$). Second, this rule applies even where the victim suffered only negligible damages. In this case, the taker pays the victim \$500 ($0 + \frac{1}{2}(1,000 - 0)$). Third, if the firm loses after paying the victim her damages, for example, where the total profits are \$400 (before paying the victim’s damages)—the taker pays the victim only her damages (\$600).

The article examines modern physics for an analogical exploration of the notion of phenomena that are hard to verify and current laws for any existing application of the Golden Rule. It finds that patent law embraces major aspects of the rule, inter alia, in the United States Supreme Court’s influential ruling in *eBay Inc. v. MercExchange, L.L.C.*¹ that limits the automatic operation of injunctions and emphasizes the importance of the compensation scheme, and especially in reasonable royalty—the most common criterion of patent infringement compensation. The article claims that the reasonable royalty criterion that requires the court to perform “hypothetical bargaining” between the patent infringer and owner is theoretically equivalent to the Golden Rule.

¹ 547 U.S. 388 (2006).

The article shows that the Golden Rule is already in use and that it is the unique socially optimal rule of compensation for all civil wrongs. First, using law and economics methodology, the article claims as follows: (1) in bargaining settings, the Golden Rule fully protects the value of the victim's entitlements by assigning the maximum value to her right to negotiate and sell her entitlement by herself; damages awards eliminate this value; (2) where under-compensation may be expected, for example, due to asymmetric information, damages awards often lead to inefficient takings, while the Golden Rule ensures that only efficient takings occur; (3) in settings of competitive markets for victim entitlements, damages awards undermine the structure and operation of the markets by allowing potential takers to force a purchase of entitlements at their costs, which the Golden Rule may restore; and finally, (4) the Golden Rule may serve as a proper debiasing mechanism for correcting risk estimation errors caused by cognitive biases.

Second, the article claims that normative theories of both corrective and distributive justice lead to the same unique, socially optimal Golden Rule compensation criterion.

The article further suggests rules to implement the Golden Rule, including ways to measure compensation by this criterion. Inter alia, where takers' profits or victims' damages are elusive, the court may use takers' financial ratios to determine the Golden Rule compensation. Where measuring damages and gains is impractical, the article suggests that the court may apply, *mutatis mutandis*, its ex-ante equivalent, namely the hypothetical bargaining criterion of patent litigation.

Do you really believe that the moon exists only when you look at it?

Albert Einstein

I. INTRODUCTION

A. *The Main Research Question*

This research examines the existence and applicability of a single golden rule of compensation for all civil wrongs, inter alia, in tort, intellectual property and property law, namely a unique criterion for courts and juries to determine the proper pecuniary remedy for cases where an individual wrongfully infringes a right of his fellow member of society. For this purpose, I use both law and economics theories, including game theory, microeconomics, and behavioral economics considerations, as well as normative theories of corrective and distributive justice. Those two different approaches—law and economics, with their emphasis on efficiency and distribution considerations, and normative theories—are seen by some scholars as inconsistent and by others as

complementary.² The notion of complementary use of both methodologies to address the same phenomenon is inspired by quantum theory.³

Albert Einstein is one of the founders of quantum theory, and in 1921, he won the Nobel Prize for his contributions to science.⁴ Einstein presented the idea that light comes in the form of energy quanta or photons.⁵ A year later, Niels Bohr won the Nobel for a major advance in the theory—a model describing the structure and operation of the atom.⁶ This model was the key to the principle of wave-particle duality: elementary particles of both energy and matter have simultaneously particle and wavelike properties, depending on conditions.⁷

Bohr developed the principle of complementarity, which means that basic elements' behavior may be explained by viewing them as *either* waves or particles. Bohr also considered this principle applicable for the understanding of human phenomena.⁸ In tort law, following Bohr's ideas, Izhak Englard addressed the dichotomy between corrective justice and instrumental considerations (as deterrence and distributive justice), and searched for ways to bridge these difficulties. Englard suggested that "the inevitable incoherencies inside tort law be justified by the idea of complementarity."⁹ I follow this idea and add another aspect to the analogy from quantum theory for the benefit of identifying a proper compensation criterion.

Bohr's student, Werner Heisenberg, won the Nobel Prize in 1932 after demonstrating that greater accuracy in determining the location of subatomic particles is possible only at the expense of greater uncertainty in momentum, and

² For the view of the normative approach of corrective justice as inconsistent with the economic analysis of law, see, for example, Ernest J. Weinrib, *Correlativity, Personality, and the Emerging Consensus on Corrective Justice*, 2 THEORETICAL INQUIRIES L. 107, 108 (2001) [hereinafter Weinrib, *Emerging Consensus*]. For the view of the two approaches as complementary, see, for example, IZHAK ENGLARD, *THE PHILOSOPHY OF TORT LAW* 85–92 (Tom D. Campbell ed., 1993).

³ For an explanation of quantum theory, see, for example, ASHER PERES, *QUANTUM THEORY: CONCEPTS AND METHODS* 3–23 (Alwyn Van Der Merwe ed., 2002); and A. C. PHILLIPS, *INTRODUCTION TO QUANTUM MECHANICS* 1–20 (D. J. Sandiford et al. eds., 2003).

⁴ *Albert Einstein—Biographical*, NOBELPRIZE.ORG, <https://www.nobelprize.org/prizes/physics/1921/einstein/biographical/> (last visited Aug. 20, 2018).

⁵ *Id.*

⁶ *Niels Henrik David Bohr—Biographical*, NOBELPRIZE.ORG, https://www.nobelprize.org/nobel_prizes/physics/laureates/1922/bohr-bio.html (last visited Aug. 20, 2018).

⁷ For Bohr's duality principle, see PERES, *supra* note 3, at 3–23; and PHILLIPS, *supra* note 3, at 13–16.

⁸ See *Niels Henrik David Bohr—Biographical*, *supra* note 6.

⁹ See ENGLARD, *supra* note 2, at 55, 192–95. For normative theories' concept of compensation and my attempt to bridge those theories and law and economics' concept of compensation, see *infra* Section IV.B.

vice versa—the Uncertainty Principle.¹⁰ Bohr’s and Heisenberg’s theories involve uncertainty as inherent to nature, leading to debates with Einstein that produced his famous comment: “God does not play dice” with the world.¹¹

In this article, I focus by way of analogy on another aspect of the Einstein-Bohr debates. Bohr’s and Heisenberg’s theories questioned the existence of particles independently of the measurement of their qualities, while Einstein insisted that particles had properties, whether measured or not.¹² American physicist and science historian Abraham Pais recalls: “[D]uring one walk Einstein suddenly stopped, turned to me and asked whether I really believed that the moon exists only when I look at it.”¹³

Analogically to Einstein’s argument, I argue that where a member of the society infringes another member’s legal entitlement, even if the specific amount of compensation that is socially desirable by economic and normative theories is concealed behind the clouds, it exists. Moreover, its location may be approximated, if not determined with absolute accuracy.

This article describes society as a place where individuals act and thereby impose risks on other members of society, whether deliberately or inadvertently. The potential infringer knows his expected value from the act and the expected damages to his fellow from taking or infringing her right. After infringing the victim’s right, the actual harm to the victim and the infringer’s profits materialize.

B. A Short Presentation of the Compared Compensation Schemes for Entitlement Infringement

In this article, I analyze three main compensation criteria for wrongs. The first and most common civil remedy is *damage award* (hereinafter DA). For the purpose of this article, DA basically means a calculation of monetary awards for a specific loss.¹⁴ In cases of tortious accidents, courts and juries usually grant victims DA for their past and future losses.¹⁵

¹⁰ *The Nobel Prize in Physics 1932*, NOBELPRIZE.ORG, <https://www.nobelprize.org/prizes/physics/1932/summary/> (last visited Aug. 30, 2018). For more on Heisenberg’s Uncertainty Principle, see PERES, *supra* note 3, at 445; and PHILLIPS, *supra* note 3, at 1–20.

¹¹ N. David Mermin, *Is the Moon There When Nobody Looks? Reality and the Quantum Theory*, PHYSICS TODAY 38, 38 (1985) (analyzing the Einstein-Bohr debates).

¹² Abraham Pais, *Einstein and the Quantum Theory*, 51 REVS. MOD. PHYSICS 863 (1979).

¹³ *Id.* at 907.

¹⁴ *What is DAMAGES?*, THELAWDICTIONARY.ORG, <https://thelawdictionary.org/damages/> (last visited Aug. 30, 2018).

¹⁵ See, e.g., DAN B. DOBBS, LAW OF REMEDIES: DAMAGES–EQUITY–RESTITUTION 3–4 (2d ed. 1993) [hereinafter DOBBS, LAW OF REMEDIES]; DAN B. DOBBS, THE LAW OF TORTS 1047 (2000) [hereinafter DOBBS, THE LAW OF TORTS]; ROBERT S. THOMPSON ET AL., REMEDIES: DAMAGES,

The second remedy I consider is *disgorgement of profits* (hereinafter DoP), also called restitution remedy or accounting. This criterion requires the infringer to restore any gains earned from the wrongful act. It is used in many fields, usually in willful wrongs, for example as the main remedy for unjust enrichment and in cases where money or property is taken by fraud, firm misconduct, or copyright infringement.¹⁶

The third criterion is the *Golden Rule of Compensation* (hereafter GR) suggested here for all civil wrongs. By this criterion, in all civil wrongs where an individual wrongfully infringes the right of his fellow member of society, the taker should be obliged to repay the victim her damages plus half the additional attributed net profits derived from the taking. Note that for the purpose of subsequent calculations, the infringers' profit is that derived from the taking that is attributable to the taking, i.e., attributed net profit (hereinafter ANP).¹⁷ The additional ANP from the taking is the infringer's ANP minus the victim's damages (hereinafter additional ANP). The GR has three main components: (1) payment at the amount of the victim's damages plus half the additional ANP from the taking; (2) payment even in cases where the victim suffered only negligible damages; and (3) in cases where the taker loses after paying the victim's damages, payment at the amount of her damages.

Example 1 demonstrates these components. *Example 1.1.* A firm increases its manufacturing with profits of \$1,000,¹⁸ acts wrongfully by failing to install safety equipment, and as a result, a worker or someone else suffers damages of \$600. Under the current law, the DA is \$600. However, under the GR, the taker pays the victim \$800 ($600 + \frac{1}{2}(1,000 - 600)$).¹⁹ *Example 1.2.* Thanks to moral luck, the worker suffers only negligible damages. Under the current law, the firm does not have to pay. However, under the GR, the taker pays the victim \$500 ($0 + \frac{1}{2}(1,000 - 0)$).²⁰ *Example 1.3.* Realization of profits means the firm is at loss after paying the victim her damages, for example, where the worker suffers damages of \$600 and the total profits are \$400 (before paying the victim's damages). The taker pays the victim her damages (\$600), under both the current law and the GR.

EQUITY, AND RESTITUTION 10 (4th ed. 2009). For a review on the law of DA, see *infra* Section II.A.

¹⁶ See, e.g., DOBBS, LAW OF REMEDIES, *supra* note 15, at 4–5; DOBBS, THE LAW OF TORTS, *supra* note 15, at 1047; THOMPSON ET AL., *supra* note 15, at 11. For a review on the law of restitution, see *infra* Section I.B.

¹⁷ For explanation of ANP and criteria for measuring it, see *infra* Section IV.A.

¹⁸ Assume that those profits are the infringer's ANP.

¹⁹ $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP)$.

²⁰ $GR = 0 + \frac{1}{2}(ANP - 0) = \frac{1}{2}ANP$.

C. A Roadmap to the Article's Claims

In Section I, I review the current legal application of the three main compensation schemes compared in this article, DA, DoP and the GR, and argue that the latter has strong foundations in the current law, especially in patent law. In the influential ruling in *eBay Inc. v. MercExchange, L.L.C.*, the U.S. Supreme Court limited the automatic operation of injunctions in cases of patent infringement.²¹ Plaintiffs prefer injunctions that give them a better hand in negotiation for settlement. Under this ruling, injunctions should be granted only under several conditions, inter alia, that damages are inadequate to compensate the patent holder's injury.²² This ruling emphasizes the importance of the question whether the compensation scheme is proper in different categories of cases. In cases where the patentee is a manufacturer and is able to prove his losses, courts apply the compensation criterion of the patent owner's *lost profits*.²³ In all other cases, usually where the patentee does not compete with the infringer, they apply the criterion of *reasonable royalty*, which has become the most common compensation scheme of patent litigation.²⁴ This criterion requires the court to perform a hypothetical bargaining between the infringer and patent owner based mainly on ex-ante parameters. Inter alia, I claim that the hypothetical bargaining criterion reflects the GR criterion, that they are theoretically equivalent, and that the lost profits criterion may be perceived as applying the GR criterion, at least in most patent infringement cases involving competitors where the patentee's costs exceed the infringer's profits.

In Section II, I present literature discussing the preferable compensation criterion, harm-based (DA) or gain-based (DoP), as well as literature discussing the reasonable royalty and lost profit criterion of patent litigation that reflects the GR.

In Section III, I claim that the GR exists and is the unique socially optimal rule of compensation for all civil wrongs.²⁵ Following Guido Calabresi and Douglas Melamed's method of analysis in their influential article, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral* and an

²¹ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 388 (2006).

²² *Id.*

²³ For a presentation of the lost profits criterion of patent litigation, see *infra* Section II.C.

²⁴ For a presentation of the reasonable royalty criterion of patent litigation, see *infra* Section II.C.

²⁵ In another article, I present the GR criterion as the unique socially optimal rule of compensation for torts. Here, I claim that the GR criterion has strong foundations in the current law and develop a unified theory that justifies it as a unique socially optimal rule for all civil areas. See Noam Sher, *The Best Welfare Point: A New Compensation Criterion and Goal for Tort Law*, 48 U. MEM. L. REV. 145, 154–55 (2017).

extensive amount of subsequent literature,²⁶ the analysis in this article perceives *wrongs as takings*. For this purpose, I define *taking* as an event where an individual unilaterally and forcibly appropriates another's protected right or entitlement, meaning a legal right of a fellow member of society protected by civil law. This definition includes the common setting of present-day commercial and private activities, where a firm or individual hopes to gain from activities, and their activities impose risks to potential victims.²⁷ I claim that this premise, that wrongs are takings, is grounded in law and economics analysis, as well as in normative theories of justice, from Aristotle, who is considered the founder of the corrective justice approach, through Enlightenment era philosophers of natural rights to the modern philosophers who have developed the theory.²⁸ Aristotle's notion of corrective justice is forcing the injurer to pay the victim's damages, which eliminates the wrongful gains of the former and their correlative losses caused to the latter.²⁹ This notion of wrong is in the heart of modern corrective justice theory.³⁰

Using economic analysis of law, my arguments for the existence, applicability, and desirability of the GR compensation criterion for all civil wrongs are as follows. First, in a bargaining setting, I claim that the theoretically equivalent ex-post GR and ex-ante patent litigation's hypothetical bargaining criterion that divides the added value of the taking are the only Nash Equilibrium solutions for hypothetical bargaining between an infringer and a victim. Hence, the GR grants the victim the full and precise value for her right to sell her right by herself, namely her right of disposition or alienation. It gives the remainder to the taker at the same amount that is his part in the effort to create value. The importance of maintaining the victim's right of disposition derives from theories

²⁶ Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1117–18 (1972).

²⁷ For more on Calabresi and Melamed's theory and the extensive subsequent literature that basically accepted their notion of efficient wrongful act that leads to infringer's gains and victim's damages, see, for example, Abraham Bell & Gideon Parchomovsky, *Pliability Rules*, 101 MICH. L. REV. 1 (2002); and Michael I. Krauss, *Property Rules vs. Liability Rules*, in 2 ENCYCLOPEDIA OF LAW AND ECONOMICS 786 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000). For a different approach to torts whereby not all tort cases are takings, see Oren Bar-Gill & Ariel Porat, *Harm-Benefit Interactions*, 16 AM. L. & ECON. REV. 86 (2014) (Bar-Gill and Porat defined takings as a specific category of harm-benefit cases, but according to my definition, all harm-benefit cases are takings).

²⁸ See Weinrib, *supra* note 2, at 108–13.

²⁹ ARISTOTLE, NICOMACHEAN ETHICS bk. V, ch. V (Robert William Browne ed., 1853). See Ernest J. Weinrib, *The Gains and Losses of Corrective Justice*, 44 DUKE L.J. 277, 277 (1994) [hereinafter Weinrib, *The Gains and Losses*].

³⁰ Normative theoreticians challenge the approach of using the liability rule to incentivize efficient taking. See Jules L. Coleman & Jody Kraus, *Rethinking the Theory of Legal Rights*, 95 YALE L.J. 1335, 1370–71 (1986). For normative theories' concept of compensation, my attempt to bridge it, and law and economics' concept of compensation, see *infra* Section IV.B.

justifying property rights as being an essential tool for the purpose of, *inter alia*, creating incentives to manufacture assets. While the DA criterion fully eliminates the right of disposition in any wrongful taking, the GR fully protects it—without detracting from the taker’s share that was created by his initiative and efforts.

Second, applying the transaction costs approach in a bargaining setting, I claim that the literature explores reasons for under-compensation in many fields, for example, due to victims’ tendency not to sue, conservative legal criteria of proving damages, and difficulties in calculating noneconomic losses, particularly in cases of death and serious bodily injury. Since potential takers act based on expected compensation rulings, it is straightforward that under the DA criterion, under-compensation often leads to inefficient takings, while the GR at least mitigates the phenomenon and under certain conditions ensures only efficient takings occur.

Third, I consider settings of competitive markets for victims’ entitlements, and especially “thin markets,” namely markets that are not highly competitive. My argument is that the DA criterion undermines the structure and operation of free and competitive entitlement markets by allowing potential takers to force a purchase of entitlements at their costs, creating *perfect price discrimination* of entitlement suppliers and resulting in too many takings, many of them inefficient, and inefficient resource allocation. The GR criterion forces hypothetical market prices that ensure the victim’s entitlement costs and further divide the additional ANP from the taking. Hence, it optimally mimics the operation of free and competitive markets.

Fourth, I claim that with the rapid advances of technology that require managers and other individuals to react by estimating risks in new settings, it is important to find efficient *debiasing mechanisms* to correct risk estimation errors caused by cognitive biases. While the DA criterion allows the inspection of errors only where damages are significant, the GR criterion may solve *moral luck problems* and debias estimates by giving numerous victims of minor wrongful takings with small damages an incentive to sue and thereby involve all members of society as agents for timely discovery of estimation errors.

Normative theories of justice use concepts other than those of law and economics to consider social desirability of legal criteria. I adopt the notion of complementarity to justify the use of methodologies of law and economics and of normative theories of justice.³¹ My analysis shows, however, that corrective and distributive justice lead to the same compensation criterion as law and economics.

First, I claim that the GR criterion perfectly matches corrective justice considerations. As mentioned above, Aristotle’s notion of corrective justice is that paying the victim’s damages eliminates the wrongful gains of the injurer and

³¹ See *supra* note 2 and accompanying text.

the correlative losses caused to the victim.³² Modern theorists explain, however, that since the injurer's gains and victim's losses are not necessarily identical, Aristotle's explanation evokes a puzzle.³³ The GR solves this puzzle by giving the victim the precise value of her infringed right and allocates the taker his honest share of the added value of the wrongful taking created by his efforts.³⁴

Second, in the domain of distributive justice theories, I claim that the GR criterion perfectly matches the Rawlsian basic criteria of *justice as fairness*: the *hypothetical social contract* and the *veil of ignorance*.³⁵

In Section IV, I propose rules to implement the GR criterion in specific categories of cases, including possible ways to measure compensation by this criterion, in cases where the infringer's gains exceed the victim's losses, where gains exceed negligible losses, and where losses exceed gains. In this section, I discuss the importance of using objective parameters to measure the infringer's ANP. Further rules on implementing the GR criterion deal with situations where measuring damages or gains is elusive, suggesting that the relevant actual damages or gains may be estimated by the taker's net profit margin ratio, defined as the taker's net profits divided by his net sales (hereinafter NPM ratio).³⁶ If, for example, the infringer's ANP is measured at reasonable accuracy and the damages are elusive, the court may use the infringer's NPM ratio to determine the amount of damages, and in turn determine the compensation by the GR criterion.

Where measuring both damages and gains is impractical, another rule suggests that the court may use the GR's ex-ante equivalent, namely the *hypothetical bargaining* criterion of patent litigation adjusted to each category of cases of all civil wrongs.

Finally, the conclusions show that further research is needed, not only on applying the GR, but on its reciprocity influence on the reasons and conditions to move from this point of departure to another compensation criterion, for example, to the higher between full DoP and DA, and to a possible shift to injunctions.

³² See ARISTOTLE, *supra* note 29 and accompanying text.

³³ Weinrib, *The Gains and Losses*, *supra* note 29, at 277–79. As a solution for this puzzle, Weinrib suggests a distinction between material and normative gains and losses. For Weinrib's and other modern philosophers' solutions for Aristotle's puzzle, see *infra* Section IV.B.1.

³⁴ In Example 1 above, the victim gains \$800 ($600 + 0.5(1,000 - 600)$), \$600 as damages and \$200 for her share in the added value from the taking, and the infringer gains \$200 ($1,000 - 800$) for his honest share of the added value of the wrongful taking. For an explanation of all three components of the GR demonstrated in Example 1 above, see *infra* Section IV.B.1.

³⁵ For an explanation on distributive justice theories, John Rawls's notion of Justice as Fairness, the Rawlsian hypothetical social contract and the veil of ignorance criterion of justice, and for my argument that the GR perfectly matches these Rawlsian criteria, see *infra* Section IV.B.2.

³⁶ For an explanation of NPM ratio and for criteria for measuring it, see *infra* Section V.D.

II. MAIN APPLICABLE COMPENSATION SCHEMES FOR ENTITLEMENT INFRINGEMENT

A. Damages Awards (DA)

In this Section, I review the current legal application of the three main compensation schemes compared in this article, DA (damages awards), DoP (disgorgement of profits), and the GR (the golden rule of compensation). The DA criterion is the most common civil remedy and applies, *inter alia*, in tortious accidents.³⁷ The main objectives of tort law,³⁸ from the approach of economic analysis of tort law, are efficient deterrence, just compensation, and risk distribution.³⁹ The DA criterion meets the former objective by allowing the injurer to act, impose risks on others, and take the victim's right where the taking is efficient, if he is willing to pay its value.⁴⁰ The corrective justice perspective focuses on correcting the injustice that the injurer has done to the victim by having him paying the latter her damages.⁴¹

In torts, recoverable costs are of different categories, including time loss, direct expense incurred by the accident, and pain and suffering.⁴² However, not all costs are recoverable, and there are many adjustments and limitations to the DA scheme.⁴³ For example, the law does not compensate for emotional harm

³⁷ For a review of the law of DA, see, for example, DOBBS, *LAW OF REMEDIES*, *supra* note 15, at 208–363; DOBBS, *THE LAW OF TORTS*, *supra* note 15, at 1047–75; DAN B. DOBBS ET AL., *TORTS AND COMPENSATION: PERSONAL ACCOUNTABILITY AND SOCIAL RESPONSIBILITY FOR INJURY* 833–78 (7th ed. 2013) [hereinafter DOBBS ET AL., *TORTS AND COMPENSATION*]; and THOMPSON ET AL., *supra* note 15, at 205–378.

³⁸ For the main objectives of tort law as reflected in court verdicts, see, for example, DOBBS ET AL., *TORTS AND COMPENSATION*, *supra* note 37, at 4–17.

³⁹ See, e.g., Jennifer Arlen, *Tort Damages*, in 2 *ENCYCLOPEDIA OF LAW AND ECONOMICS* 682–83 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000) [hereinafter Arlen, *Tort Damages*]; Omri Ben-Shahar & Ariel Porat, *Personalizing Negligence Law*, 91 *N.Y.U. L. REV.* 627, 632 (2016); Hans-Bernd Schäfer, *Tort Law: General*, in 2 *ENCYCLOPEDIA OF LAW AND ECONOMICS* 569–71 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000). For a discussion of the DA criterion's inability to meet those objectives using law and economics theories and for my claim that the GR criterion could achieve those goals, see *infra* Section IV.A.

⁴⁰ See, e.g., Arlen, *Tort Damages*, *supra* note 39; Ben-Shahar & Porat, *supra* note 39; Schäfer, *supra* note 39.

⁴¹ See, e.g., ERNEST J. WEINRIB, *THE IDEA OF PRIVATE LAW* 56–83 (2012) [hereinafter WEINRIB, *PRIVATE LAW*]; Weinrib, *supra* note 2; Ernest J. Weinrib, *Corrective Justice in a Nutshell*, 52 *U. TORONTO L.J.* 349 (2002) [hereinafter Weinrib, *Corrective Justice*]. For a discussion of the DA criterion's inability to meet normative theories' objectives and for my claim that the GR criterion could achieve those goals, see *infra* Section IV.A.

⁴² See, e.g., DOBBS, *THE LAW OF TORTS*, *supra* note 15, at 10.

⁴³ See, e.g., *id.*

caused to the victim's family,⁴⁴ and many U.S. jurisdictions apply tort reform statutes that put caps on pain and suffering.⁴⁵ Furthermore, DA measurements using conservative auditing or assessorial techniques could lead to underestimation of costs.⁴⁶

In addition to regulatory restrictions, measurement problems of damages might cause under-deterrence (and sometime over-deterrence) and reduction in the correction of the harm.⁴⁷ Inter alia, calculation of pecuniary losses is a complex task and criteria for noneconomic losses are elusive.⁴⁸ This problem is more severe in cases of death and serious bodily injury, where the criterion for determining damages is theoretically vague.⁴⁹ In such cases, courts award

⁴⁴ See, e.g., *Hota v. NME Hosps., Inc.*, 690 F. Supp. 1539, 1540 (E.D. La. 1988); DOBBS, *THE LAW OF TORTS*, *supra* note 15, at 821–52.

⁴⁵ For a discussion of the structure of tort reform statutes that cap pain and suffering rewards and of their pros and cons, see, for example, DOBBS, *THE LAW OF TORTS*, *supra* note 15, at 1071–74; Ronen Avraham, *Does the Theory of Insurance Support Awarding Pain and Suffering Damages in Torts?*, in *RESEARCH HANDBOOK ON THE ECONOMICS OF INSURANCE LAW* (Schwartz and Siegelman eds., 2015); Ronen Avraham, *Putting a Price on Pain-and-Suffering Damages: A Critique of the Current Approaches and a Preliminary Proposal for Change*, 100 NW. U. L. REV. 87, 97–101 (2006); Mark Geistfeld, *Placing a Price on Pain and Suffering: A Method for Helping Juries Determine Tort Damages for Nonmonetary Injuries*, 83 CALIF. L. REV. 773, 789–90 (1995); Mark A. Geistfeld, *Punitive Damages, Retribution, and Due Process*, 81 S. CAL. L. REV. 263 (2008) [hereinafter Geistfeld, *Punitive Damages, Retribution, and Due Process*]; and Joni Hersch & W. Kip Viscusi, *Saving Lives Through Punitive Damages*, 83 S. CAL. L. REV. 229 (2010).

⁴⁶ For the relation between accounting conservatism and investor protection, see Jere R. Francis & Dechun Wang, *The Joint Effect of Investor Protection and Big 4 Audits on Earnings Quality Around the World*, 25 CONTEMP. ACCT. RES. 157 (2008). For factors that affect the reliability of asset revaluations by appraisers, see Julie Cotter & Scott Richardson, *Reliability of Asset Revaluations: The Impact of Appraiser Independence*, 7 REV. ACCT. STUD. 435 (2002).

⁴⁷ See, e.g., Arlen, *Tort Damages*, *supra* note 39, at 693–95; DOBBS, *THE LAW OF TORTS*, *supra* note 15, at 851–52.

⁴⁸ For the complexity and difficulty of calculating economic (pecuniary) and noneconomic damages, see, for example, W. Kip Viscusi, *Empirical Analysis of Tort Damages*, in *RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS* 463–73 (Jennifer Arlen ed., 2013).

⁴⁹ For a discussion of the problem of determining DA in cases of death and serious bodily injury, see Arlen, *Tort Damages*, *supra* note 39, at 697–711; Jennifer Arlen, *Economics of Tort Law*, in 2 *OXFORD HANDBOOK OF LAW & ECONOMICS* 48 (Francesco Parisi ed., 2017) [hereinafter Arlen, *Economics of Tort Law*]; ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 257–61 (6th ed. 2012); RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 228–33 (9th ed. 2014); Catherine M. Sharkey, *Economic Analysis of Punitive Damages: Theory, Empirics, and Doctrine*, in *RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS* 491 (Jennifer Arlen ed., 2013) [hereinafter Sharkey, *Economic Analysis of Punitive Damages*]; and Catherine M. Sharkey, *Punitive Damages as Societal Damages*, 113 *YALE L.J.* 347 (2003) [hereinafter Sharkey, *Punitive Damages as Societal Damages*]; see also Geistfeld, *Punitive Damages, Retribution, and Due Process*, *supra* note 45; Hersch & Viscusi, *supra* note 45.

victims pecuniary losses plus awards for pain and suffering, and empirical studies show that they tend to be under-compensated.⁵⁰

Empirical studies demonstrate victims' tendency not to sue in several areas,⁵¹ a phenomenon that could lead to under-deterrence and injustice. For example, this phenomenon is severe in the field of medical malpractice.⁵²

Law and economic analysis permits damages that exceed the victim's losses in special cases, including in cases where the wrongdoer might escape liability (for example, due to the victim's tendency not to sue) and in cases of death and serious bodily injury.⁵³ Robert D. Cooter,⁵⁴ Mitchell Polinsky, and Steven Shavell⁵⁵ suggested that in those cases, DA should be increased by adding punitive damages, with the total damages equaling the harm multiplied by the reciprocal of the probability that the injurer would actually be found liable for all the harm they caused.⁵⁶

⁵⁰ See, e.g., Arlen, *Tort Damages*, *supra* note 39, at 697–711.; Arlen, *Economics of Tort Law*, *supra* note 49; COOTER & ULEN, *supra* note 49; POSNER, *supra* note 49; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49; Sharkey, *Punitive Damages as Societal Damages*, *supra* note 49.

⁵¹ For a review of empirical research that demonstrates victims' tendency not to sue in several areas of tort cases in the U.S., see Herbert M. Kritzer, *Propensity to Sue in England and the United States of America: Blaming and Claiming in Tort Cases*, 18 J.L. & SOC'Y 400 (1991). Research conducted by the Institute for Civil Justice found claiming rates for traffic accidents to range from 39% of all cases arising from multiple vehicle accidents or single vehicle accidents where the victim was not the driver to 89% for those leading to serious injuries. See DEBORAH R. HENSLER ET AL., INST. CIVIL JUSTICE, COMPENSATION FOR ACCIDENTAL INJURIES IN THE UNITED STATES (1991). Even in class actions, full compensation cannot be reached, since plaintiffs, including institutional investors in securities fraud cases, sometimes fail to cash their settlement checks. See Geoffrey Miller, *Group Litigation in the Enforcement of Tort Law*, in RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS 267–69 (Jennifer Arlen ed., 2013).

⁵² See, e.g., David A. Hyman & Charles Silver, *Medical Malpractice Litigation and Tort Reform: It's the Incentives, Stupid*, 59 VAND. L. REV. 1085, 1088–92, 1113–15 (2006) (reviewing several studies and concluding that less than 2% of patients experiencing medical malpractice sued for compensation); see also TOM BAKER, THE MEDICAL MALPRACTICE MYTH 22–42 (2005).

⁵³ For justifications for punitive damages from law and economics perspective, see, for example, Arlen, *Tort Damages*, *supra* note 39, at 695; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 489–92; and Sharkey, *Punitive Damages as Societal Damages*, *supra* note 49; see also COOTER & ULEN, *supra* note 49; POSNER, *supra* note 49; Geistfeld, *Punitive Damages, Retribution, and Due Process*, *supra* note 45; Hersch & Viscusi, *supra* note 45. For justifications for punitive damages from normative theories perspective, see, for example, Benjamin C. Zipursky, *A Theory of Punitive Damages*, 84 TEX. L. REV. 105 (2005).

⁵⁴ See Robert D. Cooter, *Economic Analysis of Punitive Damages*, 56 S. CAL. L. REV. 79 (1982).

⁵⁵ See A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869 (1998).

⁵⁶ For a similar approach, see, for example, Richard Craswell, *Damage Multipliers in Market Relationships*, 25 J. LEGAL STUD. 463 (1996). Notably, determining the accurate level of punitive

U.S. law usually permits punitive damages, but only in cases of intentional torts involving malice, or at least recklessness (and usually does not permit punitive damages merely for the reason that the wrongdoer might escape liability or the victim's death or serious bodily injury).⁵⁷ From the law and economics perspective, intentional torts such as deliberate trespass, assault, fraud and conversion are similar to, and coincide with, criminal law.⁵⁸ In this category, the law's objective is to eliminate those takings that are inefficient and impose risks and costs on society, and optimal deterrence means optimal crime deterrence.⁵⁹ Many of these cases involve low transaction cost environments, and the courts actually refer parties to similar future takings to an ex-ante preferable voluntary transaction.⁶⁰ In *Pacific Mutual Life Insurance Co. v. Haslip*,⁶¹ the U.S. Supreme Court held, based on normative theories, that the purpose of punitive damages is deterrence and punishment.⁶² As discussed below, the Supreme Court, however, did not hold that the injurer's profits from the wrongdoing should be measured and fully eliminated.⁶³

In *Haslip*, the Supreme Court enumerated factors that could be considered in determining whether a punitive award was excessive or

damages to ensure optimal deterrence is an elusive task. See Arlen, *Tort Damages*, *supra* note 39, at 695; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 490–91.

⁵⁷ For a discussion of the goals and use of punitive damages in U.S. courts, see DOBBS, LAW OF REMEDIES, *supra* note 15, at 310–33; and DOBBS ET AL., TORTS AND COMPENSATION, *supra* note 37, at 856–78. For the differences between the courts' rationales of punitive damages in this category of cases and the law and economics perspective, see, for example, Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 486–90; and Sharkey, *Punitive Damages as Societal Damages*, *supra* note 49, at 359–65, 372–86.

⁵⁸ See, e.g., WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF TORT LAW 160–63 (1987); POSNER, *supra* note 49, at 239–45; Arlen, *Tort Damages*, *supra* note 39, at 696; Stephen J. Shapiro, *Overcoming Under-Compensation and Under-Deterrence in Intentional Tort Cases: Are Statutory Multiple Damages the Best Remedy?*, 62 MERCER L. REV. 449 (2011); Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 488–90.

⁵⁹ See, e.g., LANDES & POSNER, *supra* note 58; POSNER, *supra* note 49; Arlen, *Economics of Tort Law*, *supra* note 49; Shapiro, *supra* note 58; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49.

⁶⁰ See, e.g., LANDES & POSNER, *supra* note 58; POSNER, *supra* note 49; Arlen, *Economics of Tort Law*, *supra* note 49; Shapiro, *supra* note 58; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49.

⁶¹ 499 U.S. 1 (1991).

⁶² *Id.* at 19–20. The U.S. Supreme Court emphasized in other cases the deterrence-punishment rationale for punitive damages in intentional torts. See, e.g., *Exxon Shipping Co. v. Baker*, 554 U.S. 471, 491–99 (2008); *State Farm Mut. Auto. Ins. Co. v. Campbell*, 538 U.S. 408, 425 (2003). For the courts' perspectives on punitive damage goals in cases of intentional torts, see DOBBS, LAW OF REMEDIES, *supra* note 15, at 318; DOBBS ET AL., TORTS AND COMPENSATION, *supra* note 37, at 859; and Sharkey, *Punitive Damages as Societal Damages*, *supra* note 49.

⁶³ For a discussion on the proper compensation rule for intentional wrongs, see *infra* Section V.G.

inadequate, including “the profitability to the defendant of the wrongful conduct and the desirability of removing that profit and of having the defendant also sustain a loss”—suggesting that eliminating injurers’ gains could be considered.⁶⁴

The Supreme Court placed constitutional restrictions on the punitive damage-to-DA ratios that might mitigate courts’ and juries’ power to efficiently eliminate intentional infringer profits from wrongdoing.⁶⁵ In *Exxon Shipping Co. v. Baker*,⁶⁶ the Supreme Court reaffirmed its ruling in *State Farm Mutual Automobile Insurance Co. v. Campbell*⁶⁷ and held that a single-digit cap is usually appropriate; that when compensatory damages are substantial—as in the Exxon Valdez oil spill—a 1:1 ratio of punitive-to-compensatory damages is an acceptable upper limit.⁶⁸ Notably, the court left the door open to a higher ratio in exceptional cases, including those with intentional or malicious conduct that exceeds recklessness; behavior driven primarily by avarice; and low economic harm or odds of detection.⁶⁹

There are also cases where lower U.S. federal and state courts approve a high ratio of punitive-to-compensatory damages.⁷⁰ In *Mathias v. Accor Economy Lodging, Inc.*,⁷¹ for example—a case where damages and probability of suing were low—Judge Richard Posner approved an approximately 40:1 ratio of punitive-to-compensatory damages, based on the following rationale: “The award of punitive damages in this case thus serves the additional purpose of limiting the defendant’s ability to profit from its fraud by escaping detection and

⁶⁴ *Haslip*, 499 U.S. at 21–22.

⁶⁵ See POSNER, *supra* note 49, at 243–44.

⁶⁶ 554 U.S. 471, 503–15 (2008). In this case, Exxon’s captain was found to have had high blood alcohol after his supertanker had spilled millions of gallons of crude oil into the Prince William Sound in Alaska, causing enormous environmental damage. *Id.* at 475–80. Exxon spent approximately \$2.1 billion in cleanup efforts and pleaded guilty to criminal violations. *Id.* The jury found the captain reckless, Exxon liable in torts for his recklessness (corporate liability), and ordered damage awards as well as punitive damages. *Id.* The Ninth Circuit imposed damages of \$287 million and punitive damages of \$2.5 billion. *Id.* at 509–14.

⁶⁷ 538 U.S. 408 (2003).

⁶⁸ *Id.* at 425. Posner argued that if damages are low, single-digit multipliers fail to incentivize highly meritorious suits, and in turn to deter intentional torts, and in this case, a higher multiplier is required. See POSNER, *supra* note 49, at 243–44.

⁶⁹ POSNER, *supra* note 49, at 512–13. Klutinoty criticized the strict one-to-one ratio imposed in *Exxon*, supported the *State Farm* single-digit maximum-multiple due process approach that better serves the objectives of deterrence and punishment, and suggested to apply the former only in the maritime context and not in cases involving conduct more culpable than recklessness. See Maria C. Klutinoty, *Exxon Shipping Co. v. Baker: Why The Supreme Court Missed the Boat On Punitive Damages*, 43 AKRON L. REV. 203 (2010).

⁷⁰ See DOBBS ET AL., TORTS AND COMPENSATION, *supra* note 37, at 872–76; Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 498.

⁷¹ 347 F.3d 672 (7th Cir. 2003).

(private) prosecution.”⁷² The approved ratio, however, as Judge Posner stated, is arbitrary, namely because it does not reflect an attempt to determine and precisely eliminate the injurer’s profits.⁷³ In other cases held after *Exxon Shipping*, courts used ratios higher than 1:1 but without profit criteria considerations.⁷⁴

In sum, in tort cases where the injurer acts with intent, the Supreme Court did not hold a DoP principle in the sphere of punitive damages or as a unique compensation criterion. Note that not all jurisdictions outside the U.S. acknowledge punitive damages as a legitimate tort measure, a fact that should be considered by regulators seeking efficient universal commerce and by courts seeking recognition and enforcement of their rulings by out-of-jurisdiction courts.⁷⁵

⁷² *Id.* at 677. In this case, Judge Posner held that a hotel was liable in fraud where it willfully failed to warn guests against bugs, accepted the concept that the objective of punitive damages is punishment and deterrence, and determined the high ratio in order to compensate for the under-deterrence effect caused by the many times it got away. *Id.* at 675–77.

⁷³ An earlier case where the court used punitive damages to deter intentional wrongdoing by using a high ratio of punitive-to-compensatory damages, with punitive damages estimated to be higher than profits, albeit without investing effort in precise estimation and DoP, is *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154 (Wis. 1997). In this intentional trespass case of moving a mobile home through private land, the compensation was nominal. *Id.* at 156. The court stated that

[p]unitive damages, by removing the profit from illegal activity, can help to deter such conduct. In order to effectively do this, punitive damages must be in excess of the profit created by the misconduct so that the defendant recognizes a loss. It can hardly be said that the \$30 forfeiture paid by Steenberg significantly affected its profit for delivery of the mobile home. One hundred thousand dollars will.

Id. at 165. Hylton discussed this case as an example for the court’s acceptance of his suggestion to consider injurers’ gains elimination as a measure of punishment. See Keith N. Hylton, *Punitive Damages and the Economic Theory of Penalties*, 87 GEO. L.J. 421, 445–56 (1998). For Sharkey’s criticism on Hylton’s analysis of *Jacque v. Steenberg Homes, Inc.*, see Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 498. For a discussion on the appropriate rule for intentional wrongdoing, see *infra* Section V.G.

⁷⁴ See, e.g., *Gabriel v. Jackson Nat’l Life Ins. Co.*, No. 11-12307-MLW, 2015 U.S. Dist. LEXIS 39042, at *6 (D. Mass. Mar. 26, 2015).

⁷⁵ Civil law countries and Japan do not award punitive damages in torts, and courts outside the U.S. tend not to recognize punitive damages imposed by U.S. courts. See, e.g., Patrick J. Borchers, *Punitive Damages, Forum Shopping, and the Conflict of Laws*, 70 LA. L. REV. 529, 531 (2010) (discussing courts outside of the U.S.’s tendency not to recognize U.S. punitive damages); Marco Cappelletti, *Punitive Damages and the Public/Private Distinction: A Comparison Between the United States and Italy*, 32 ARIZ. J. INT’L & COMP. L. 799, 799 (2015) (discussing the rejection of punitive damages in Italy); Madeleine Tolani, *U.S. Punitive Damages Before German Courts: A Comparative Analysis with Respect to the Ordre Public*, 17 ANN. SURV. INT’L & COMP. L. 185, 186–87 (2011) (discussing the rejection of punitive damages in Germany).

B. Disgorgement of Profits (DoP)

The second remedy I consider is DoP. This remedy is part of the broader restitution principle and is often called restitution remedy.⁷⁶ This criterion requires the infringer to restore any gains earned from the wrongful act. It is designed to prevent the infringer's unjust enrichment.⁷⁷ From the economic analysis of law perspective, there are cases such as intentional torts where the intentional taking is inefficient since it imposes risks and costs on society.⁷⁸ In those cases, the law should promote the objective of eliminating inefficient takings and aim for complete deterrence by eliminating profits from the wrong.⁷⁹ From the corrective justice perspective, the disgorgement remedy is a suitable normative answer to the infringer's gain from wrongful acts, as the victim is entitled to the infringer's abstention from the wrong that produced it.⁸⁰

Notably, in many cases, as in intentional torts, restitution is an alternative remedy for DA, and the plaintiff is entitled to the higher compensation of the two.⁸¹ In contract fraud, for example, the plaintiff is required to choose before the trial between annulment of a contract and applying for restitution or affirmation of the contract and seeking damages.⁸²

The broader restitution principle has both substantive and remedial aspects: substantive, in being the basis and cause for the plaintiff's claim, and

⁷⁶ For a review of the law of restitution, see, for example, DOBBS, LAW OF REMEDIES, *supra* note 15, at 365–491; and THOMPSON ET AL., *supra* note 15, at 379–464.

⁷⁷ See, e.g., DOBBS, LAW OF REMEDIES, *supra* note 15; THOMPSON ET AL., *supra* note 15.

⁷⁸ For the concept that in willful intentional torts the law should achieve “complete deterrence,” see, for example, POSNER, *supra* note 49, at 239–45; and Sharkey, *Economic Analysis of Punitive Damages*, *supra* note 49, at 488–90. For an economic analysis of typical cases that justify DoP by unjust enrichment law, see Christopher T. Wonnell, *Unjust Enrichment and Quasi-Contracts*, in 6 ENCYCLOPEDIA OF LAW & ECONOMICS: CONTRACT LAW & ECONOMICS 795 (Gerrit De Geest ed., 2d ed. 2011).

⁷⁹ *Id.*

⁸⁰ See, e.g., Ernest J. Weinrib, *Restitutory Damages as Corrective Justice*, 1 THEORETICAL INQUIRIES L. 1, 1 (2000) [hereinafter Weinrib, *Restitutory Damages*]. For criticism of Weinrib's arguments, see Hanoch Dagan, *The Distributive Foundation of Corrective Justice*, 98 MICH. L. REV. 138 (1999); and James Gordley, *The Purpose of Awarding Restitutory Damages: A Reply to Professor Weinrib*, 1 THEORETICAL INQUIRIES L. 1, 39 (2000). For a discussion of the disgorgement criterion's inability to meet normative theories' objectives in cases of unintentional wrongs and for my claim that the GR criterion could achieve those goals, see *infra* Section IV.B. For a discussion of situations where it is appropriate to use the criterion of full disgorgement compensation, see *infra* Section V.G.

⁸¹ See DOBBS, LAW OF REMEDIES, *supra* note 15, at 712–15; THOMPSON ET AL., *supra* note 15, at 388–89; Robert D. Cooter & Ariel Porat, *Disgorgement Damages for Accidents*, 44 J. LEGAL STUD. 249, 249–50 (2015).

⁸² See DOBBS, LAW OF REMEDIES, *supra* note 15, at 712–15.

remedial, given the criterion for compensation.⁸³ They are both defined in the Restatement (Third) of Restitution and Unjust Enrichment.⁸⁴ As a remedy, restitution is used in cases where the cause of action is unjust enrichment and in other fields,⁸⁵ for example, in intentional torts cases where money or property is taken by fraud, embezzlement, or conversion.⁸⁶ In contract law, despite the fact that expectation damages are the main remedy and disgorgement remedy is controversial,⁸⁷ the Restatement (Third) of Restitution and Unjust Enrichment allows the disgorgement remedy for willful breach of contract whereby adequate damage remedy is not available.⁸⁸ Furthermore, in the United States, disgorgement serves as a remedy in antitrust law, for example in cases of dominant firm misconduct;⁸⁹ in securities regulations, as in cases of insider trading;⁹⁰ and in intellectual property laws, as in cases of willful infringement of

⁸³ See *id.* at 365–66.

⁸⁴ The Restatement states that

the unjust enrichment of a conscious wrongdoer, or of a defaulting fiduciary without regard to notice or fault, is the net profit attributable to the underlying wrong. The object of restitution in such cases is to eliminate profit from wrongdoing while avoiding, so far as possible, the imposition of a penalty. Restitution remedies that pursue this object are often called “disgorgement” or “accounting.”

RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 51(4) (AM. LAW INST. 2011).

⁸⁵ For the disgorgement remedy in unjust enrichment law and other fields, see, for example, DOBBS, LAW OF REMEDIES, *supra* note 15, at 366–68; Daniel Friedmann, *Restitution of Benefits Obtained Through the Appropriation of Property or the Commission of a Wrong*, 80 COLUM. L. REV. 504 (1980); Mark P. Gergen, *Causation in Disgorgement*, 92 B.U. L. REV. 827 (2012); George P. Roach, *Unjust Enrichment in Texas: Is It a Floor Wax or a Dessert Topping?*, 65 BAYLOR L. REV. 153 (2013); and Caprice L. Roberts, *Supreme Disgorgement*, 68 FLA. L. REV. 1413 (2016).

⁸⁶ See DOBBS, LAW OF REMEDIES, *supra* note 15, at 367, 588–95, 597–612, 708–12.

⁸⁷ For seminal research describing the dilemma of applying the expectation damages or disgorgement principle to breach of contract, see E. Allan Farnsworth, *Your Loss or My Gain? The Dilemma of the Disgorgement Principle in Breach of Contract*, 94 YALE L.J. 1339 (1985); and Friedmann, *supra* note 85; see also Roy R. Anderson, *The Compensatory Disgorgement Alternative to Restatement Third’s New Remedy for Breach of Contract*, 68 SMU L. REV. 953 (2015); Melvin A. Eisenberg, *The Disgorgement Interest in Contract Law*, 105 MICH. L. REV. 559 (2006); Steve Thel & Peter Siegelman, *You Do Have to Keep Your Promises: A Disgorgement Theory of Contract Remedies*, 52 WM. & MARY L. REV. 1181 (2011).

⁸⁸ RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 39 (AM. LAW INST. 2011). For a discussion of the adequate use of disgorgement as a contract law remedy under § 39, see Anderson, *supra* note 87.

⁸⁹ See, e.g., Einer Elhauge, *Disgorgement as an Antitrust Remedy*, 76 ANTITRUST L.J. 79 (2009).

⁹⁰ See, e.g., Thomas C. Mira, *The Measure of Disgorgement in SEC Enforcement Actions Against Inside Traders Under Rule 10b-5*, 34 CATH. U. L. REV. 445 (1985).

trademarks;⁹¹ design patent infringement;⁹² and copyright infringement, where disgorgement is the main remedy.⁹³

C. *The Golden Rule (GR) of Compensation in Current Laws*

In cases of patent infringement, the U.S. Patent Act allows the patent holder “damages adequate to compensate” him for the infringement, but no less than “a reasonable royalty for the use made of the invention by the infringer.”⁹⁴ Over the years of patent law development, courts have applied several compensation schemes to compensate the victim in infringement cases, including the patent owner’s lost profits, established or reasonable royalty, enhanced damages, and disgorgement of the infringer’s illicit profits.⁹⁵

⁹¹ See 15 U.S.C. § 1117(a) (2018). This section states that

[w]hen a violation of any right of the registrant of a mark registered in the Patent and Trademark Office . . . or a willful violation under section 1125(c) of this title . . . the plaintiff shall be entitled . . . to recover (1) defendant’s profits, (2) any damages sustained by the plaintiff, and (3) the costs of the action.

Id. For a discussion of the necessity of willfulness as a precondition for awarding disgorgement remedy in trademark infringement cases, see Rachel A. Zisek, *Where There’s a Will, There’s a Way: Reconciling Theories of Willful Infringement and Disgorgement Damages in Trademark Law*, 22 J. INTELL. PROP. L. 463 (2015).

⁹² 35 U.S.C. § 289 (2018). This section states that

[w]hoever during the term of a patent for a design, without license of the owner, (1) applies the patented design, or any colorable imitation thereof, to any article of manufacture for the purpose of sale, or (2) sells or exposes for sale any article of manufacture to which such design or colorable imitation has been applied shall be liable to the owner to the extent of his total profit, but not less than \$250.

Id. For a discussion of the methods to award DoP in design patent infringement cases, see Thomas F. Cotter, *Reining in Remedies in Patent Litigation: Three (Increasingly Immodest) Proposals*, 30 SANTA CLARA HIGH TECH. L.J. 1, 17–21 (2013) [hereinafter Cotter, *Reining in Remedies*].

⁹³ 17 U.S.C. § 504(a)–(b) (2018). Section 504(b) states that “[t]he copyright owner is entitled to recover the actual damages suffered by him or her as a result of the infringement, and any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages.” For further discussion of DoP in copyright law, see Kenneth E. Burdon, *Accounting for Profits in a Copyright Infringement Action: A Restitutionary Perspective*, 87 B.U. L. REV. 255 (2007); Joe Donnini, *Downloading, Distributing, and Damages in the Digital Domain: The Need for Copyright Remedy Reform*, 29 SANTA CLARA HIGH TECH. L.J. 413 (2013); and Richard C. Wolfe & Serona Elton, *Proving Disgorgement Damages in a Copyright Infringement Case is a Three-Act Play*, 84 FLA. BAR J. 26 (2010).

⁹⁴ 35 U.S.C. § 284 (2018). This section states that “[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.” *Id.*

⁹⁵ For the history of patent law remedies, see Caprice L. Roberts, *The Case for Restitution and Unjust Enrichment Remedies in Patent Law*, 14 LEWIS & CLARK L. REV. 653, 656 n.13 (2010); and James Ryan, *A Short History of Patent Remedies*, 6 CYBARIS INTELL. PROP. L. REV. 150 (2015).

In the era prior to 2006, if courts had found patent infringement, they usually granted a permanent injunction against future infringement and compensation for the past.⁹⁶ As mentioned above, the U.S. Supreme Court held in *eBay* that injunctions should be granted only under several conditions, inter alia, that damages “are inadequate to compensate” the patent holder’s injury. Otherwise, injunction should be denied and legal damages granted.⁹⁷

Since that ruling, courts have used two main compensation schemes. Where the patentee is a manufacturer, would have sold products in the absence of infringement, and is able to prove his losses, courts apply the criterion of the patent owner’s lost profits.⁹⁸ This criterion is common in cases where the infringer uses a competitor’s patent.⁹⁹ In all other cases, the common compensation scheme is reasonable royalty.¹⁰⁰ The latter criterion is adequate in cases where the patentee does not compete with the infringer, for example, when the patentees are patent assertion entities (PAEs)¹⁰¹ and in all other cases where

⁹⁶ See, e.g., Ryan, *supra* note 95, at 184–87, 187 nn.217–18, 192, 199; Christopher B. Seaman, *Permanent Injunctions in Patent Litigation After eBay: An Empirical Study*, 101 IOWA L. REV. 1949 (2016).

⁹⁷ In *eBay*, the Supreme Court held that

[t]he traditional four-factor test applied by courts of equity when considering whether to award permanent injunctive relief to a prevailing plaintiff applies to disputes arising under the Patent Act. That test requires a plaintiff to demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

eBay Inc. v. MercExchange, LLC., 547 U.S. 388, 391 (2006). For the history of the use of injunctions in patent litigation, see Roberts, *supra* note 95; and Ryan, *supra* note 95. The literature broadly justifies the *eBay* ruling, inter alia, since injunctions lead to risk of patent holdup. See, e.g., Cotter, *supra* note 92, at 10–13. For a review of empirical research examining the effect of the *eBay* ruling, see Thomas F. Cotter & John M. Golden, *Empirical Studies Relating to Patents–Remedies*, in RESEARCH HANDBOOK ON ECONOMIC INTELLECTUAL PROPERTY LAW (forthcoming July 2019) (manuscript at 4) (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2665680).

⁹⁸ *eBay Inc.*, 547 U.S. at 391.

⁹⁹ See, e.g., Thomas F. Cotter, *Patent Remedies and Practical Reason*, 30 TEX. L. REV. 125, 134–35 (2009) [hereinafter Cotter, *Patent Remedies*]; Cotter, *Reining in Remedies*, *supra* note 92, at 17–21; William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385, 394–95 (2016); Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 657–61 (2009); Ryan, *supra* note 95, at 174–78; Carl Shapiro, *Property Rules vs. Liability Rules for Patent Infringement* 4 (Univ. of Cal. at Berkeley Working Paper, 2016) [hereinafter Shapiro, *Property Rules*], https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2775307.

¹⁰⁰ Cotter, *Patent Remedies*, *supra* note 99, at 134–35; Cotter, *Reining in Remedies*, *supra* note 92, at 17–21; Lee & Melamed, *supra* note 99, 394–95; Lemley, *supra* note 99, at 657–61; Ryan, *supra* note 95, at 174–78; Shapiro, *Property Rules*, *supra* note 99, at 4.

¹⁰¹ PAEs, also known as patent trolls, are entities that sell patent licenses and are not manufacturers.

the plaintiff cannot meet the court's requirements to establish lost profits.¹⁰² This remedy is the type of compensation most frequently awarded in patent litigation.¹⁰³

As the statute language indicates, the patent owner may prove her lost profits and reasonable royalties are a floor for those who cannot show actual damages in the product markets. In cases of PAE patent infringement, where the patentees do not manufacture, they cannot show actual losses in the product markets (excluding rare cases where the PAE uses a policy of selling licenses at the same price) and sue for reasonable royalties.¹⁰⁴

The reasonable royalty criterion means that the court should calculate the outcome of a hypothetical bargaining between reasonable manufacturers and PAEs.¹⁰⁵ Courts have developed ex-ante factors, known as “book of wisdom,” to determine the outcome of this negotiation. Many of those factors were set in 1970 in *Georgia-Pacific Corp. v. United States Plywood Corp.*¹⁰⁶ In this case, the court used a 15-factor test to assess the ex-ante hypothetical royalty, widely followed by courts.¹⁰⁷ Those factors include royalties received by the same PAE

¹⁰² See, e.g., Cotter, *Reining in Remedies*, *supra* note 92, at 21–30; Erik Hovenkamp & Jonathan Masur, *How Patent Damages Skew Licensing Markets*, 36 REV. LITIG. 379, 385–96 (2017); Lee & Melamed, *supra* note 99, at 395–98; Lemley, *supra* note 99, at 661–69; Ryan, *supra* note 95, at 193–200.

¹⁰³ See Cotter, *Reining in Remedies*, *supra* note 92, at 9; Shapiro, *Property Rules*, *supra* note 99. According to a PricewaterhouseCoopers (PwC) study, from 2005 to 2014 reasonable royalties were the type of compensation most frequently awarded in patent cases (81%), which is more than double the frequency of lost profits awards (31%) (in several cases, the courts granted a combination of reasonable royalties and lost profits), while the use of other schemes was negligible (compensating for price erosion in 2% of cases). PWC, 2015 PATENT LITIGATION STUDY: A CHANGE IN PATENTEE FORTUNES 8 (2015), www.pwc.com/us/en/forensic-services/publications/assets/2015-pwc-patent-litigation-study.pdf.

¹⁰⁴ See, e.g., Cotter, *Reining in Remedies*, *supra* note 92, at 9–10, 21–30; Lee & Melamed, *supra* note 99, at 395–98; Lemley, *supra* note 99, at 661–69; Ryan, *supra* note 95, at 193–200. In *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, decided in 1978 and widely followed, the court set a high requirement for the patentee, stating that

[t]o obtain as damages the profits on sales he would have made absent the infringement, i.e., the sales made by the infringer, a patent owner must prove: (1) demand for the patented product, (2) absence of acceptable noninfringing substitutes, (3) his manufacturing and marketing capability to exploit the demand, and (4) the amount of the profit he would have made.

575 F.2d 1152, 1156 (6th Cir. 1978). For a discussion of this requirements, see, for example, Lee & Melamed, *supra* note 99; and Lemley, *supra* note 99.

¹⁰⁵ See, e.g., Lee & Melamed, *supra* note 99, at 393.

¹⁰⁶ 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modifying judgment*, 446 F.2d 295 (2d Cir. 1971).

¹⁰⁷ For a discussion of the Georgia-Pacific 15-factor test, its application by U.S. courts, and academic debate on how to configure the royalties, see, for example, Anne Layne-Farrar & Koren W. Wong-Ervin, *Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United*

in the past and royalties paid by the same manufacturer to other PAEs in comparable circumstances.¹⁰⁸

My claim is that, theoretically, the negotiation between the manufacturer and the PAE, if conducted between equal players, would lead to a division of the added value from the transaction as expected by the parties that use the expected values of costs and profits to determine the negotiation gap: the expected costs for the PAE, who is expected to lose part of her ability to further sell her rights, and the manufacturer's expected profits from using the advanced technology. The GR criterion divides the gap created by the realization of the same values expected before the taking: the actual PAE's costs and the actual manufacturer's profits from the taking. Therefore, the hypothetical bargaining, if performed between equal players, ex-ante reflects the GR criterion, and both are theoretically equivalent.¹⁰⁹

The GR criterion means that if the patentee's damages and the infringer's profits are known, the added value from the taking should be shared. In infringement of PAE rights, this is rarely the case. Therefore, its ex-ante reflection, namely the reasonable royalty criterion, uses expectations of the same values—expected damages and profits that define the hypothetical bargaining gap—as a theoretically equivalent alternative solution.

As mentioned above, lost profits are applied in cases where the infringer uses a competitor's patent. For example, a manufacturer enters a new product market and infringes a patent owned by a monopoly. The literature widely advocates this different remedy for the competition sets.¹¹⁰ The patentee-competitor invests in the production of a patent to use it in her own manufacturing and benefit from its monopolistic power in the product market. Therefore, to make her whole, the patentee should receive a payment in the

States, 8 JINDAL GLOBAL L. REV. 127 (2017); Lee & Melamed, *supra* note 99, at 395–98, 411–64; Lemley, *supra* note 99, at 661–69; Ryan, *supra* note 95, at 196; and Douglas Melamed, *Over-Rewarding Patenting: You Get What You Pay For*, 39 HARV. J. L. & PUB. POL'Y 59 (2016).

¹⁰⁸ *Georgia-Pacific Corp.*, 318 F. Supp. at 1120.

¹⁰⁹ The nature of the reasonable royalty criterion led Judge Posner to classify the reasonable royalty remedy as restitution, in suitable cases, stating that

[a] reasonable royalty is a form of damages when awarded in the damages phase of an infringement litigation, though it usually is a form of equitable relief, as we'll see, when it is imposed, in lieu of an injunction, to prevent future harm to the patentee. The difference between conventional damages and a royalty is that often a royalty is actually a form of restitution—a way of transferring to the patentee the infringer's profit, or, what amounts to the same thing, the infringer's cost savings from practicing the patented invention without authorization.

Apple, Inc. v. Motorola, Inc., 869 F. Supp. 2d 901, 909–10 (N.D. Ill. 2012); see also Cotter, *Reigning in Remedies*, *supra* note 92, at 26. In this article, I consider reasonable royalties distinct from damages and restitution, and a remedy aimed at adequately dividing the added value of wrongful albeit permitted transactions.

¹¹⁰ See *supra* note 99.

amount of the profit she would have made but for the infringement of her right, including losses of future market share due to a decrease in her reputation.¹¹¹ Including all patentee costs in compensation schemes basically implies that the applied compensation criterion is DA.

My claim is that in most patent infringement cases where the rule of compensation is lost profit, it may also be perceived as an application of the GR criterion. The patentee has monopoly power, and if an infringer and a patentee compete, the rivalry leads to lower product price, and an increase in the quantity of the product sold in the market and in consumer surplus. The patentee-monopoly loses profits and the infringer-competitor gains from the taking. The total producers' profits, however, may increase or decrease, depending on the market structure. In most cases, they decrease. In turn, the infringer has to pay higher damages than his profits.¹¹² Notably, in this case, the damages ruling matches the GR criterion since the rule specifies that if the damage exceeds the profits the infringer must pay the victim's damages.

If the market's structure, however, leads to higher profits for two competitors in the post-infringement's market compared to the profits for a single monopoly in the post-infringement market, a rule of lost profits is inadequate. As I argue in this article, if there are profits from an infringement higher than the injurer's costs, the added value of the taking should be shared.¹¹³

Note that according to current U.S. law, the DoP rule does not dominate the infringer's duty to compensate. Alternatively, the U.S. Patent Act states: "the court may increase the damages up to three times the amount found or assessed."¹¹⁴ In *In re Seagate Technology, L.L.C.*,¹¹⁵ the court held that willful or bad faith infringement are required to establish enhanced damages, and that failure to perform due care does not meet this standard. As discussed above, in other fields of law, including other intellectual property domains, willful infringement entitles the victim to disgorgement of the taker's profits.¹¹⁶ As mentioned above, the U.S. Copyright Act allows the victim of copyright

¹¹¹ See Lemley, *supra* note 99, at 661 nn.29–30.

¹¹² See Lemley, *supra* note 99 and accompanying text.

¹¹³ See *infra* Sections IV and V.A.

¹¹⁴ 35 U.S.C. § 284 (2018).

¹¹⁵ See *In re Seagate Tech., LLC*, 497 F.3d 1360, 1370 (Fed. Cir. 2007), *abrogated by* Halo Elecs., Inc. v. Pulse Elecs., Inc., 136 S. Ct. 1923 (2016). For the history of the enhanced damages remedy, see Ryan, *supra* note 95, at 178–83. For a discussion of the court's ruling in *In re Seagate Technology, LLC*, see Lee & Melamed, *supra* note 99, at 401–02; and Ryan, *supra* note 95. For a model for determining the value of super-compensatory patent infringement awards based on the patent's social value, see Mengxi Zhang & Keith N. Hylton, *Optimal Remedies for Patent Infringement* (B. U. Sch. of Law Working Paper, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2698413.

¹¹⁶ For a call that patent law should at least accept DoP as a remedy for willful infringement, see Roberts, *supra* note 95.

infringement to recover her actual damages and any profits of the infringer that are attributable to the infringement, without being required to prove willful infringement.¹¹⁷ The act states that, alternatively, the victim may be entitled to statutory damages.¹¹⁸

In recent years, courts apply an indirect method to establish compensation in cases where the copyright owner (1) is unable to prove her damages and the infringer did not gain profits from the taking, denying her any regular compensation; and (2) has failed to timely register her work, denying her statutory damages.¹¹⁹ In those circumstances, courts apply the value-of-use criterion to establish compensation, determined by hypothetical bargaining over license fee.¹²⁰ This criterion actually applies, *mutatis mutandis*, patent law's reasonable royalty criterion.¹²¹

III. THE LITERATURE'S JUSTIFICATIONS FOR THE MAIN APPLICABLE COMPENSATION SCHEMES FOR ENTITLEMENT INFRINGEMENT

A. Damages Awards (DA) and Litigation Biases

In this section, I present literature discussing the preferable compensation criterion, harm-based (DA) or gain-based (DoP), as well as literature discussing the reasonable royalty and lost profit criterion of patent litigation that reflects the GR. My claim in the article is that the GR criterion is

¹¹⁷ 17 U.S.C. § 504(a)–(b) (2018); *see supra* note 93 and accompanying text.

¹¹⁸ *Id.* § 504(a), (c). Section 504(c) states

the copyright owner may elect, at any time before final judgment is rendered, to recover, instead of actual damages and profits, an award of statutory damages for all infringements involved in the action . . . in a sum of not less than \$750 or more than \$30,000 as the court considers just. . . . (2) In a case where . . . the court finds, that infringement was committed willfully, the court in its discretion may increase the award of statutory damages to a sum of not more than \$150,000. In a case where . . . the court finds, that such infringer was not aware and had no reason to believe that his or her acts constituted an infringement of copyright, the court in its discretion may reduce the award of statutory damages to a sum of not less than \$200.

Id. § 504(c).

¹¹⁹ *See* *On Davis v. Gap, Inc.*, 246 F.3d 152, 171–72 (2d Cir. 2001); *Oracle Am., Inc. v. Google Inc.*, 847 F. Supp. 2d 1178, 1182 (N.D. Cal. 2012). For a review of this development, see Kevin Bendix, *Copyright Damages: Incorporating Reasonable Royalty from Patent Law*, 27 BERKELEY TECH. L.J. 527, 532–37 (2012). Bendix argued that in calculating reasonable royalties in copyright law, courts may use the Georgia-Pacific factors as a baseline and adjust them to the copyright context. *Id.* at 547–57.

¹²⁰ *Id.*

¹²¹ *Id.*

the proper compensation scheme for all civil wrongs, and therefore, the reasoning of patent litigation literature for the advantages of its equivalent rules in patent law is valuable.

The literature discusses the importance of DA and its accurate measurement. The law and economics literature emphasizes full DA to achieve optimal deterrence: with full DA, the injurers take all relevant social costs into account, internalize the risk for damage, and act at a socially optimal level including optimal care.¹²² As mentioned above, regulatory restrictions and measurement problems, as in cases of death and serious injury,¹²³ and victims' tendency not to sue¹²⁴ might cause under-deterrence. The Punitive Damages Multiplier formula, as articulated by Cooter, and by Polinsky and Shavell, is aimed to solve under-deterrence problems.¹²⁵ It is limited, however, by legal requirements for injurer's bad behavior and by constitutional restrictions.¹²⁶

An extensive literature explores reasons for takers and victims to agree in settlement before and during trial to payments different from actual damages (assuming courts rule DA).¹²⁷ Lucian A. Bebchuk demonstrated how litigation costs¹²⁸ and information asymmetry between takers and victims¹²⁹ create this phenomenon.¹³⁰ Court errors might have the same effect. Kaplow and Shavell, however, argued that if courts' assessments of DA are expected to be correct on average, the potential injurer's decision is expected to be efficient.¹³¹

The law and economics literature also provides reasons for partial DA. For example, Cooter showed that under negligence regime, a lesser award may

¹²² In the context of torts, see, for example, GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* 26–31 (1970); COOTER & ULEN, *supra* note 49, at 217–20; STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 5–45 (1987); Arlen, *Economics of Tort Law*, *supra* note 49, at 47–55; Arlen, *Tort Damages*, *supra* note 39, at 682; and Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29 (1972).

¹²³ See *supra* notes 43–50 and accompanying text.

¹²⁴ See *supra* notes 51–53 and accompanying text.

¹²⁵ See Cooter, *Economic Analysis of Punitive Damages*, *supra* note 54; Polinsky & Shavell, *supra* note 55. For their arguments, see *supra* notes 53–56 and accompanying text.

¹²⁶ See *supra* notes 57–74 and accompanying text.

¹²⁷ For a review of the literature and theory of litigation and settlement, see, for example, Bruce L. Hay & Kathryn E. Spier, *Settlement of Litigation*, in 3 *THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW* 442 (Peter Newman ed., 1998); and J.J. Prescott & Kathryn E. Spier, *A Comprehensive Theory of Civil Settlement*, 91 N.Y.U. L. REV. 59 (2016).

¹²⁸ See Lucian A. Bebchuk, *A New Theory Concerning the Credibility and Success of Threats to Sue*, 25 J. LEGAL STUD. 1 (1996) [hereinafter Bebchuk, *A New Theory*].

¹²⁹ See Lucian A. Bebchuk, *Suing Solely to Extract a Settlement Offer*, 17 J. LEGAL STUD. 437 (1988) [hereinafter Bebchuk, *Suing Solely to Extract*].

¹³⁰ See *infra* notes 205–208 and accompanying text.

¹³¹ Louis Kaplow & Steven Shavell, *Accuracy in the Assessment of Damages*, 39 J.L. & ECON. 191 (1996). For a discussion of their arguments, see *infra* note 209 and accompanying text.

suffice to induce due care because any decrease in investment in care might dramatically increase potential injurers' expected liability.¹³² Arlen and MacLeod argued¹³³ that damages for accidental negligence must be less than the value of the harm because they are needed to internalize the social costs of underinvestment in expertise and not in precaution. D'Antoni and Tabbach showed¹³⁴ regulation could support an equilibrium in which the potential injurer acts at optimal care and the potential victim relies on his optimal effort and acts optimally, in settings of bilateral accidents, under a negligence rule, where victims could not receive full compensation.

Polinsky and Shavell argued¹³⁵ that harm-based liability is preferable to gain-based liability. They compared requiring a wrongdoer to pay DA to requiring him to pay his savings from his misconduct. In their basic example,¹³⁶ an individual failed to take precaution, saved himself costs of \$1,000, and caused harm of \$10,000 to a patient. In cases where harm exceeds gains (socially undesirable acts that should be deterred), and where harm and gains are correctly assessed, both deter wrongdoings.¹³⁷ Where courts might err in assessment of damages and gains (calculated by injurer's savings), under harm-based liability, an individual is not likely to commit wrongdoing when the harm greatly exceeds his gains (10,000 >> 1,000).¹³⁸ Under gain-based liability, underestimation of gains leads to injurer profits from inefficient taking (committing wrongdoing when the harm is higher than the gains).¹³⁹

As mentioned above, Polinsky and Shavell determined the wrongdoer's gains by his savings from undertaking precaution. This amount, however, could be lower than his profits. In those common cases (where profits exceed savings from wrongdoing), even without court errors, a savings compensation criterion cannot deter inefficient takings. Their argument may be adjusted as follows to cases where savings are lower than profits: taking court errors into account, where damages exceed injurer profits, the DA is preferable to the DoP criterion, but not to disgorgement of savings that might be much lower than profits.

¹³² Robert D. Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523 (1984); see also Arlen, *Tort Damages*, *supra* note 39, at 685.

¹³³ Jennifer Arlen & Bentley W. Macleod, *Torts, Expertise and Authority: Liability of Physicians and Managed Care Organizations*, 36 RAND J. ECON. 494 (2005).

¹³⁴ Massimo D'Antoni & Avraham D. Tabbach, *The Complementary Role of Liability and Safety Regulation* (Apr. 2017) (unpublished manuscript) (available at <https://eale.org/content/uploads/2017/05/liability-and-regulation.pdf>).

¹³⁵ A. Mitchell Polinsky & Steven Shavell, *Should Liability Be Based on the Harm to the Victim or the Gain to the Injurer?*, 10 J.L. ECON. & ORG. 427 (1994).

¹³⁶ *Id.* at 427.

¹³⁷ *Id.*

¹³⁸ *Id.* at 428–29.

¹³⁹ *Id.*

In cases of inefficient takings (where damages exceed profits), even without court errors, another relative advantage of the DA criterion is its ability to better insure potential victims' entitlement and distribute risks.¹⁴⁰

As mentioned above,¹⁴¹ the third component of the GR is that if the firm loses after paying the victim her damages, for example, where total profits are \$400 (before paying damages)—the taker pays the victim only her damages of \$600. This component is consistent with Polinsky and Shavell's argument. As argued below,¹⁴² however, taking court errors into account, the GR is the optimal criterion to deter inefficient and secure efficient takings, not only when damages exceed profits, but in all cases. It is less sensitive to court errors than DA, and with sufficiently low errors, leads to efficient takings and otherwise best mitigates error effects.¹⁴³

As mentioned in Part I, Aristotle's explanation—that forcing the injurer to pay damages eliminates wrongful gains—evokes a puzzle,¹⁴⁴ because the injurer's gains and victim's losses are not necessarily identical.¹⁴⁵ Weinrib argued¹⁴⁶ that Aristotle perceived the gains and losses of corrective justice as normative, and proposed the notion of normative gains and losses; his explanations, possible counter-arguments, and how the GR criterion solves this puzzle are discussed in detail below.¹⁴⁷ In brief, Weinrib explained¹⁴⁸ that the law chooses harm-based liability in tort law or gain-based liability in unjust enrichment law for normative reasons, and that

[i]n the Aristotelian account, the terms “gain” and “loss” are a way of representing the occurrence of the injustice that liability rectifies. What matters is whether the transaction can be regarded as yielding the defendant more and the plaintiff less than the parties ought to have, given the norm that should have governed

¹⁴⁰ See *supra* note 39 and accompanying text. For a discussion of the DA criterion's inability to meet those objectives using law and economics theories and my claim that the GR can meet them, see *infra* Section IV.A.

¹⁴¹ See Example 1.3, *supra* Section I.B. For the other two components, defining the rules of compensation for cases where profits exceed DA and where there are profits with negligible damages, see Examples 1.1 and 1.2, respectively, *supra* Section I.B.

¹⁴² See *infra* Section IV.A.2.

¹⁴³ Porat and Stein discussed as an alternative the notion of risk-based liability, meaning compensation for expected harm. See ARIEL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 101–29 (2001). They claim that in most cases, this criterion is hard to enforce and not implementable. See *id.*; see also Cooter & Porat, *supra* note 81, at 254–55.

¹⁴⁴ See *supra* notes 28–29 and accompanying text.

¹⁴⁵ Weinrib, *The Gains and Losses*, *supra* note 29, at 277–79.

¹⁴⁶ *Id.* at 286–89.

¹⁴⁷ See *infra* Section IV.B.1.

¹⁴⁸ Weinrib, *The Gains and Losses*, *supra* note 29, at 286–89.

their interaction. In tort cases, therefore, liability for injuring the plaintiff is predicated not on some parallel increase in the defendant's resources, but on the defendant's having unjustly inflicted that loss. Similarly, in the case of unjust enrichment, the plaintiff recovers the defendant's gain not when the plaintiff has suffered a corresponding material loss, but when the defendant's enrichment represents an injustice to the plaintiff.¹⁴⁹

B. *Disgorgement of Profits (DoP)*

As discussed above,¹⁵⁰ from the economic analysis of law perspective, DoP is required to bar inefficient takings by creating complete deterrence, and from the corrective justice perspective, it is a suitable normative answer to the taker's unjust gains. Hylton suggested¹⁵¹ eliminating injurers' gains as a measure of total deterrence and punishment in punitive damages cases where the offender usually gains less than the victim loses, as well as in punitive damages cases where gains exceed losses but there are substantial secondary losses,¹⁵² meaning indirect costs imposed on the society by the wrongdoing. A possible reason for this is the "[l]ong run effects and misperception by offenders."¹⁵³ He claimed that "[i]f the penalty is set at a level that eliminates gain—or at the level that internalizes loss when loss is greater than gain—no rational offender will commit an offense. There should be no need, then, to worry about possible long run effects."¹⁵⁴ Another reason is that measuring gains is often the easier and "least expensive policy to implement."¹⁵⁵

Sharkey argued¹⁵⁶ that Hylton's view of deterrence is inconsistent with optimal deterrence because Hylton permits punishments to promote total deterrence. As in Sharkey's analysis, my basic notion of wrongs as takings assumes there are many civil law cases where potential wrongdoers may impose risks on others, despite acting efficiently. Eliminating profits as a rule contradicts this basic understanding of the society's structure and operation.

A possible answer to any application of DoP in cases where damages exceed profits may derive from Polinsky and Shavell's research—taking court errors into account, the DA criterion (even with a multiplier) is preferable to DoP

¹⁴⁹ *Id.* at 286.

¹⁵⁰ *See supra* Section II.B.

¹⁵¹ *See Hylton, supra* note 73.

¹⁵² For a definition of secondary losses and justifications for compensation schemes based on gains where they are substantial, see Hylton, *supra* note 73, at 433–39.

¹⁵³ *Id.* at 431–33.

¹⁵⁴ *Id.* at 431.

¹⁵⁵ *Id.* at 433.

¹⁵⁶ *See Sharkey, Economic Analysis of Punitive Damages, supra* note 49, at 492–93.

(even with a multiplier).¹⁵⁷ Furthermore, as explained above, the DA criterion better insures potential victims' entitlement and distributes risks, whereas low gains (even with a multiplier) might not be high enough to repay the victim's costs.

Cooter and Porat proposed a compensation equal to an injurer's gain from untaken precaution divided by the probability of liability,¹⁵⁸ a scheme they named disgorgement of damages for accidents, or DDA. Their basic example is a medical malpractice case.¹⁵⁹ Consider, a medical test costs \$20. Omitting the test causes harm of \$1,000 to a patient with probability of 0.1. The doctor omits the test and the harm materializes. Under the DA criterion, the doctor pays \$1,000. Under the DDA criterion, he pays \$200 ($20/0.1$). They claimed that the latter is the minimum amount that would deter the doctor.¹⁶⁰ Cooter and Porat proposed

disallowing compensation and limiting damages to DDA in well-defined classes of cases satisfying two conditions: first, DDA is easier to measure than compensation, and, second, DDA creates better incentives. Incentives are better under DDA when reducing damages below compensation has positive effects on victims' precautions and activities that exceed any negative effects on injurers' precautions and activities.¹⁶¹

Notably, Cooter and Porat did not use DoP in its common application that requires the infringer to restore any gains earned from the wrongful act.¹⁶² Instead, as shown above, their example referred to disgorgement of savings. As they explained, "DDA is lower than compensatory damages."¹⁶³ In cases where DA exceeds profits (inefficient taking) and profits exceed DDA (where $DA > DoP > DDA$), the gap between profits and DDA might incentivize many inefficient takings. In Cooter and Porat's example, if the injurer's profit from

¹⁵⁷ See *supra* Section III.A.

¹⁵⁸ See Cooter & Porat, *supra* note 81. In Cooter and Porat, the probability of liability equals the probability of an accident. See *id.* at 250, 255. As they explained, this is different from previous literature, especially Cooter's and Polinsky and Shavell's research on cases where there is positive probability that injurers escape liability, which they named probability of enforcement. See Cooter, *supra* note 54; Polinsky & Shavell, *supra* note 55. For presentation of their arguments, see *supra* notes 53–56 and accompanying text; and Hylton, *supra* note 73.

¹⁵⁹ Cooter & Porat, *supra* note 81, at 250.

¹⁶⁰ *Id.* at 250–51.

¹⁶¹ *Id.* at 254. Cooter and Porat argued that medical malpractice cases often satisfy the two conditions. *Id.*

¹⁶² For the DoP criterion, see *supra* Section II.B.

¹⁶³ Cooter & Porat, *supra* note 81, at 250.

wrongdoing is \$500, then a DDA of \$200 would not deter him from gaining \$300 ($500-200$).¹⁶⁴

Furthermore, as Polinsky and Shavell argued, taking under-compensation due to court errors into account, where damages exceed DDA (and profits equal savings), the DA criterion does not induce inefficient takings while DDA does, and is therefore preferable. Notably, in those cases, the low amount calculated by DDA would not compensate the victim for her losses.

Several scholars called to expand the DoP rule in specific cases (including partial disgorgement). In his seminal article, *Restitution for Wrongs: The Measure of Recovery*, Friedmann discussed expanding the disgorgement remedy in civil cases.¹⁶⁵ He proposed an alternative that expands the wrongdoer's duty of disgorgement, even in specific cases of non-willing infringement, based on the principle of causality between the wrongful act and the wrongdoer's profits.¹⁶⁶ Furthermore, he suggested four alternative schemes to determine disgorgement: two similar schemes suggest the infringer should pay the profits to the plaintiff after deducting his investment.¹⁶⁷ The third scheme suggests paying the plaintiff the market value of her right.¹⁶⁸ An intermediate fourth scheme suggests dividing the profits between the plaintiff and defendant in accordance with their relative contribution (common in cases of wrongdoer and plaintiff joint-ventures).¹⁶⁹ In *The Liberal Commons*,¹⁷⁰ Dagan and Heller offered three similar possible solutions.

¹⁶⁴ This problem of DDA incentivizing inefficient takings is exacerbated by applying a multiplier not only to savings, but also to savings, profits, and damages. If, as in Cooter and Porat's example, "the probability of liability equals the probability of an accident caused by the doctor's omitted care," then analogically to Cooter's and Polinsky and Shavell's suggestion for cases where there is a positive probability that injurers escape liability, courts should use multipliers to correct under-deterrence where the probability of liability is lower than one. *Id.* at 250; *see also* Cooter, *supra* note 54; Polinsky & Shavell, *supra* note 55. For presentation of their arguments, *see supra* notes 53–56 and accompanying text. Thus, the estimated DA should be \$10,000 ($(1/0.1)1,000$) and the DoP criterion should lead to compensation of \$5,000 ($(1/0.1)500$). Therefore, a DDA of \$200 ($(1/0.1)20$) creates severe under-deterrence.

¹⁶⁵ Daniel Friedmann, *Restitution for Wrongs: The Measure of Recovery*, 79 TEX. L. REV. 1879 (2001).

¹⁶⁶ *Id.* at 1910.

¹⁶⁷ *Id.* at 1923–25. For further discussion of Friedmann's alternative suggestions for determining disgorgement, *see infra* Section V.G.

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ Hanoch Dagan & Michael A. Heller, *The Liberal Commons*, 110 YALE L.J. 549, 589 (2001). For further discussion of Dagan and Heller's alternative suggestions for determining disgorgement, *see infra* Section V.G.

C. *The Golden Rule (GR) of Compensation: The Example of Patent Litigation*

I argue above¹⁷¹ that the reasonable royalty criterion—the most common in patent litigation—reflects the GR criterion and that both are theoretically equivalent. Patent litigation literature widely uses law and economics methodology and broadly perceives this criterion as an efficient remedy, because it mimics free negotiation between the parties and represents “market price” or “market value.”¹⁷²

The debate over applying the reasonable royalty criterion involves its retrospective nature. The literature discusses how to apply the Georgia-Pacific test to determine reasonable royalty—to mimic the bargaining that should have been performed before the infringement—without future information.¹⁷³ Conversely, the literature claims that using prior license agreements between PAEs and other parties might discourage PAEs from contracting potential low-rate agreements and invite strategic patentee behavior designed to increase future compensation, leading to shrinking markets and deadweight loss. Therefore, calculating damages on an ad-hoc basis is preferable.¹⁷⁴ Another call is for courts to determine the hypothetical bargaining outcome by ex-ante parameters, thus avoiding deadweight loss, although calculating it using all relevant information, including post-infringement data.¹⁷⁵

Furthermore, I argue¹⁷⁶ that the lost profits criterion—used where the patentee is a manufacturer, would have sold products in the absence of infringement, and can prove his losses (typically where the infringer uses a

¹⁷¹ See *supra* Section II.C.

¹⁷² For hypothetical bargaining as an efficient outcome and the value the parties would have agreed to as the “market price” or “market value,” see, for example, Lemley, *supra* note 99, at 661–69; Brian J. Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 920 (2009); and Melamed, *supra* note 107, at 61–63. Lee and Melamed acknowledged the efficiency of the reasonable royalty criterion but claimed adjustments are necessary. For example, in cases of innocent infringers, the remedy should be mitigated to correct the locked-in effect of the infringer who pays excessive royalties due to the costs of his dependence on the patent technology, as well as to correct the abuse of ex-post factors in determining the outcome of ex-ante hypothetical bargaining. Lee & Melamed, *supra* note 99, at 392–93, 413–27.

¹⁷³ For arguments in favor of using ex-ante information and correcting the biasing influence of the necessary use of ex-post information, see, for example, Cotter, *Reining in Remedies*, *supra* note 92, at 13–14 (calling not to take into account the change in plaintiff’s bargaining power following a judgment declaring the infringement of her right when determining reasonable royalty); Lee & Melamed, *supra* note 99, at 392–93, 413–27; and Melamed, *supra* note 107, at 61–63.

¹⁷⁴ See Hovenkamp & Masur, *supra* note 102, at 383.

¹⁷⁵ See Norman V. Siebrasse & Thomas F. Cotter, *A New Framework for Determining Reasonable Royalties in Patent Litigation*, 68 FLA. L. REV. 929, 929 (2016).

¹⁷⁶ See *supra* Section II.C.

competitor's patent)—may be perceived as applying the GR criterion, at least in the common cases subject to the lost profits criterion, where the patentee's costs exceed the infringer's profits. The literature on patent litigation usually considers the lost profits criterion suitable for cases of manufacturers losing market share due to patent infringement, seeing the manufacturer who owns a patent as entitled to exclusivity in the product market, as derived from her legal right.¹⁷⁷

Gordon analyzed intellectual property law from the corrective justice perspective¹⁷⁸ and suggested adopting the unjust enrichment foundations of intellectual property case law:

[T]he Supreme Court in dicta has defended state intellectual property law by pointing to an “unjust enrichment” rationale. The Court suggested that it can be a sufficient basis for requiring payment that the defendant had the use of “some aspect of the plaintiff” that had “market value” and for which the defendant normally would pay.¹⁷⁹

Restitutionary remedies of intellectual property law should be limited, however, by a set of minimum constraints suitable for cases involving “reaping” another's intangible.¹⁸⁰ For example, a requirement that the wrongdoer “knowingly copies an eligible intangible,”¹⁸¹ or cases of “asymmetrical market failure”¹⁸²—“in which the plaintiff, but not the defendant, faced barriers precluding use of the market.”¹⁸³ This theory also justifies the reasonable royalty criterion from corrective justice perspective.¹⁸⁴

In response, Coleman argued¹⁸⁵ that

[i]f the entitlement is relevant to the cause of action, then perhaps compensation is for the wrong done and for the loss that wrong creates rather than for the benefit secured. Is it the harm done or the benefit secured that is the basis of the claim to repair? If the

¹⁷⁷ See, e.g., Cotter, *Patent Remedies*, *supra* note 99; Lee & Melamed, *supra* note 99, at 394–95, 453–56; Lemley, *supra* note 99, at 657–61; Ryan, *supra* note 95, at 174–78.

¹⁷⁸ Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutionary Impulse*, 78 VA. L. REV. 149, 178–96 (1992).

¹⁷⁹ *Id.* at 183.

¹⁸⁰ *Id.* at 222–26.

¹⁸¹ *Id.* at 222.

¹⁸² *Id.* at 230.

¹⁸³ *Id.*

¹⁸⁴ See *id.* at 230, 231 n.318 and accompanying text.

¹⁸⁵ See Jules L. Coleman, *Intellectual Property and Corrective Justice*, 78 VA. L. REV. 283 (1992).

former, tort may be the appropriate model; if the latter, restitution may be. The relevance of the entitlement suggests the tort model, and nothing Professor Gordon says, including her hypothetical bargaining approach, convinces me of the appropriateness of the restitution model. After all, as economists have reminded us time and again, tort law also can be modeled in hypothetical contract terms.¹⁸⁶

In this article, my claim is that the GR criterion is the proper compensation scheme for all civil wrongs, applying law and economics theories and normative theories of corrective and distributive justice. A key justification for the GR criterion is that members of society have the right to sell their rights or entitlements by themselves, and the GR criterion is the only remedy that precisely compensates them for the value of their taken entitlements. Next, I present complete justifications for the GR criterion.

IV. JUSTIFICATIONS FOR THE GOLDEN RULE (GR) OF COMPENSATION:

A. *Law and Economics Justifications*

1. Bargaining Settings

i. *The Right to Sell Your Right in Bargaining Settings*

As described above, during their professional or personal activities, individuals, including firms, impose risks on other members of society. In this section, I assume they act non-willingly, albeit wrongfully. Potential wrongdoers and victims know the expected value of the infringer's profits ($E_0(V)$) and the expected value of the harm ($E_0(D)$). When the former act, the actual harm to the victims and their profits materializes. Under the GR criterion, the wrongdoer pays the victim her actual damages plus half the additional ANP¹⁸⁷ derived from the taking ($\frac{1}{2}(D_1+V_1)$) and estimates in advance that he would have to pay their expected value $\{\frac{1}{2}(E_0(D)+E_0(V))\}$.¹⁸⁸

¹⁸⁶ *Id.* at 292.

¹⁸⁷ For an explanation of the term ANP and its measurement criteria, see *infra* Section V.A.

¹⁸⁸ For a numerical example demonstrating the compensation calculation under DA, DoP, and GR criteria, see Example 1, *supra* Part I.

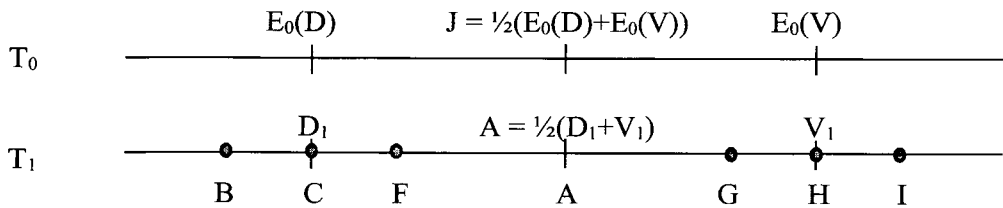


Figure 1: *The Realization of Victim's Damages and Infringer's Profits from a Taking*

Above, I claimed that in patent litigation between manufacturers and PAEs, the hypothetical bargaining criterion ex-ante reflects the GR criterion and both are theoretically equivalent.¹⁸⁹ Furthermore, in the literature, the hypothetical bargaining criterion is widely perceived as an efficient remedy.¹⁹⁰

My claim is that in all fields of civil law, the division of the added value after the taking according to the GR criterion (point A in Figure 1) leads the parties to act ex-ante based on the expected value of the actual payment to the victim subject to the GR (point J), which is theoretically equivalent to the hypothetical bargaining criterion. Those ex-post and ex-ante payments reflect the same equilibrium. According to the two main approaches to solving bilateral bargaining games, the outcome where the parties divide the expected bargaining pie is the only solution for the ex-ante bargaining (if it was performed). Basically, the concept of free agreements between parties as a main tool for Pareto-efficient transfer of rights—meaning that at least one of the parties' utility increases and no one's is reduced¹⁹¹—is fundamental in contract and property law. Free transfers enable a flow of resources to the individuals or firms that value them most and use them optimally for the benefit of society.¹⁹² Moreover, among all possible Pareto-efficient allocations of profits from the taking, the expected payment to the victim (point J) is the only focal point of the ex-ante bargaining game, a convention that may support a possible Nash equilibrium of the bargaining.¹⁹³ Another approach to solving bilateral bargaining is Rubinstein's

¹⁸⁹ See *supra* Section II.C. and especially the text accompanying notes 106–109.

¹⁹⁰ See *supra* note 172 and accompanying text.

¹⁹¹ For the Pareto-efficiency criterion see, for example, COOTER & ULEN, *supra* note 49, at 13–14; DAVID M. KREPS, *A COURSE IN MICROECONOMIC THEORY* 153–55 (1990); ROBERT S. PINDYCK & DANIEL L. RUBINFELD, *MICROECONOMICS* 602 (8th ed. 2013); POSNER, *supra* note 49, at 13–17; HAL R. VARIAN, *INTERMEDIATE MICROECONOMICS: A MODERN APPROACH* 310, 310–13 (9th ed. 2014); and Arlen, *Tort Damages*, *supra* note 39, at 683.

¹⁹² For the efficiency of exchange of rights and the role of contract and property law in supporting this process, see, for example, POSNER, *supra* note 49, at 39–55, 95–105; and COOTER & ULEN, *supra* note 49, at 70–94, 277–82.

¹⁹³ For the focal point as an equilibrium in bargaining games, see KREPS, *supra* note 191, at 554–56; ERIC RASMUSEN, *GAMES AND INFORMATION – AN INTRODUCTION TO GAME THEORY* 32–33 (4th ed. 2007). For experiments that demonstrate the existence of equal sharing equilibrium, see

alternating offers model, by which the expected payment to the victim is the only Nash equilibrium.¹⁹⁴ Notably, both solutions require the normative assumption that the parties have identical characteristics.

I showed that the outcomes of the GR criterion and ex-ante hypothetical bargaining are equal, and that it is the only solution for the bargaining game of dividing taking's added benefits and harms. With an addition of a negligible sum to the victim's DA, the latter is a possible outcome of hypothetical bargaining (with all bargaining power unilaterally allocated to the potential injurer).¹⁹⁵ It does not lead, however, to equilibrium. The same applies to the DoP criterion (with all bargaining power unilaterally allocated to the potential victim).

Next, I examine the effect of the competing criteria, DA, DoP and GR, on the efficiency of takings. If the law's purpose is to enable commercial and private acts so long as they are efficient, then DoP is inappropriate because it actually bans all the commercial and private wrongful acts by eliminating all added value from any taking. The DA criterion allows the act, which is also wrongful, with all added value going to the infringer, and the GR allows the act but divides the added value between the parties. I claim that in a bargaining setting, the GR is the unique socially optimal rule of compensation for all civil wrongs.

The GR is the only division of added value from the taking that gives the victim full value for her right to sell her right by herself. The bundle-of-rights approach to ownership in assets¹⁹⁶ perceives the right of disposition or alienation as an essential element.¹⁹⁷ It is recognized by law in the context of property rights and intellectual property.¹⁹⁸ My claim is that this right to transfer rights should

Alvin E. Roth & Francoise Schoumaker, *Expectations and Reputations in Bargaining: An Experimental Study*, 73 AM. ECON. REV. 362 (1983). For similar results, see Judith Mehta et al., *An Experimental Investigation of Focal Points in Coordination and Bargaining: Some Preliminary Results*, in DECISION MAKING UNDER RISK AND UNCERTAINTY: NEW MODELS AND EMPIRICAL FINDINGS 211 (John Geweke ed., 1992). For an evaluation of those experiments, see COLIN F. CAMERER, BEHAVIORAL GAME THEORY: EXPERIMENTS IN STRATEGIC INTERACTION 156–57 (2011); and KREPS, *supra* note 191, at 554–56.

¹⁹⁴ Ariel Rubinstein, *Perfect Equilibrium in a Bargaining Model*, 50 ECONOMETRICA 97 (1982). For an explanation of Rubinstein's solution for bargaining games, see KREPS, *supra* note 191, at 556–65; and Rasmusen, *supra* note 193, at 361–65. For experimental evidence regarding alternating offers, see KREPS, *supra* note 191, at 565–68.

¹⁹⁵ For the terms under which the DA criterion is Pareto-Efficient, see, for example, Arlen, *Tort Damages*, *supra* note 39, at 684–86.

¹⁹⁶ For the bundle-of-rights approach to defining asset ownership and its importance in property law theory, see, for example, Denise R. Johnson, *Reflections on the Bundle of Rights*, 32 VT. L. REV. 247 (2007); and James E. Penner, *The "Bundle of Rights" Picture of Property*, 43 UCLA L. REV. 711 (1996).

¹⁹⁷ See, e.g., Johnson, *supra* note 196, at 250, 254; Penner, *supra* note 196, at 734, 749.

¹⁹⁸ See, e.g., Lior Zemer, *What Copyright Is: Time to Remember the Basics*, 4 BUFF. INTELL. PROP. L.J. 54, 75–77 (2007).

be protected in all takings. The concept of potential victims' ownership of their entitlements should not be narrowed to property rights and intellectual property. Individuals usually exercise the power to transfer entitlements, for example, in taking risks by consenting to elective operations. Hence, its elimination by law, granting victims only their DA, undermines individuals' understanding of the economic value of their entitlements (even if not recognized formally as property rights).

An extensive literature explored the importance of property rights in assets, including law and economics theories justifying property rights as an essential tool for, inter alia, creating incentives to manufacture and maintain assets; solving problems of common goods; creating incentives to transfer goods by agreements leading to numerous Pareto-efficient improvements; offering an alternative to physical guarding; and hedging against risks.¹⁹⁹ Other theories justify property rights as protecting assets created by their owner's labor and effort,²⁰⁰ and as a means for developing an individual's personality.²⁰¹

The DA criterion fully eliminates the right of disposition in any wrongful taking and therefore undermines the purpose and value of ownership, whether of property, intellectual property, quasi-property, or individual right. Specially, it mitigates incentives to create and maintain assets that might be accidentally harmed, imposes a burden of too high a level of physical guarding, undermines the notion of free transfer's efficiency and removes the hedging value of the right. Conversely, the GR criterion fully promotes those purposes and protects the maximum value of the right of disposition included in the property rights bundle or the concept of ownership in any asset, and therefore is socially desirable. Notably, the taker equally shares the additional ANP with the victim: the victim's share is the value of her right of disposition and the remaining at the same amount is the taker's honest share of the additional value he initiates.

¹⁹⁹ See, e.g., POSNER, *supra* note 49, at 39–94; Abraham Bell & Gideon Parchomovsky, *Reconfiguring Property in Three Dimensions*, 75 U. CHI. L. REV. 1015 (2008); COOTER & ULEN, *supra* note 49, at 70–186; Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967); Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243, 1244 (1968).

²⁰⁰ For Locke's labor theory of property, justifying property rights based on their owner's investment of efforts in natural resources, see John Locke, *Second Treatise of Government* §25, in TWO TREATISES OF GOVERNMENT 203 (1690). For possible criticism of Locke's labor theory of property, see ROBERT NOZICK, ANARCHY, STATE AND UTOPIA 174–78 (1974).

²⁰¹ For Radin's personhood theory of property, see Margaret J. Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982).

ii. *The Golden Rule (GR) is the Best Rule to Overcome Under-Enforcement, Legal Criteria of Proving Damages, Litigation Biases and Court Errors*

The literature explores many reasons for under-compensation. One reason is victims are not always informed that a taking occurred, that the taking is wrongful, and that they have legal rights; or victims hesitate to sue for other reasons.²⁰² As mentioned above,²⁰³ the same under-compensation effect might occur due to legal criteria of proving damages, such as non-recognition of emotional harm caused to the victim's family; and due to measurement problems, such as conservative measurement methods and difficulties calculating noneconomic losses, particularly in cases of death and bodily injury.

While the DA criterion is highly sensitive to under-compensation and leads to too many inefficient takings, the GR criterion is located in the middle of the bargaining gap and is therefore the least sensitive point for both under- or over-compensation. Under DA, under-compensation leads to inefficient takings that GR would at least mitigate. Where there is under-compensation that does not lead to awards lower than actual DA (erasing the victim's share in the added value from the taking), the DA criterion leads to too many takings, many of them inefficient. In those cases, the GR as the reference point for total biases ensures that only efficient takings occur.

Often, the cumulative effect of biases from "pure" or accurate compensation measurement (by the DA or GR criterion) is unclear. As mentioned above, under-compensation is common in tort litigation.²⁰⁴ In other fields, however, measurement methods might cause over-compensation. Furthermore, litigation biases might lead to unknown deviation from the legal criterion. An extensive literature discusses reasons for takers and victims to agree in settlement before and during trial to payments different from the actual damages (assuming courts rule DA). These reasons include litigation costs;²⁰⁵ information asymmetry between takers and victims;²⁰⁶ uncertainty as to the

²⁰² See *supra* notes 51–52 and accompanying text.

²⁰³ See *supra* notes 43–50 and accompanying text.

²⁰⁴ See *supra* notes 43–50 and accompanying text.

²⁰⁵ See Bebchuk, *A New Theory*, *supra* note 128.

²⁰⁶ See Bebchuk, *Suing Solely to Extract*, *supra* note 129; Joseph A. Grundfest & Peter H. Huang, *The Unexpected Value of Litigation*, 58 STAN. L. REV. 1267 (2006); Avery W. Katz, *The Effect of Frivolous Lawsuits on the Settlement of Litigation*, 10 INT'L REV. L. & ECON. 3 (1990); Alon Klement, *Threats to Sue and Cost Divisibility under Asymmetric Information*, 23 INT'L REV. L. & ECON. 261 (2003).

ruling that might lead a risk-averse victim to compromise with a less risk-averse injurer,²⁰⁷ and parties' different subjective discount rates.²⁰⁸

Court errors might have the same effect. Kaplow and Shavell argued that if a risk-neutral potential taker expects court's DA assessment to be correct on average, his taking decision is expected to be efficient.²⁰⁹ However, as indicated above, there are many reasons for biased deviations, and lawyers from both sides are expected to be able to evaluate both before the taking and during litigation the cumulative effect of biases in each field, category of cases and specific parameters of the case. Under DA, if the cumulative result is under-compensation many inefficient takings might occur. The GR criterion optimally mitigates this phenomenon.

2. Competitive Settings and Thin Markets

Where a market for potential victims' entitlements exists, even a "thin market," government intervention is crucial for its existence. Without government intervention that protects victims' entitlements, potential takers would take entitlements by wrongful acts at no cost, and in turn, the entitlement markets would collapse or at least operate with major distortions. The government protects entitlement markets by establishing and maintaining a legal system that forces wrongdoers to pay compensation.

My claim is that government efforts notwithstanding, restoring entitlement markets is subject to the ability of the selected criterion to serve that purpose. The DA criterion usually directs takers to pay the victim's costs. In turn, the law forces *perfect price discrimination* of entitlement suppliers by forcing them to waive their entitlement at its costs, leaving them nothing from their potential profits from a possible transaction. Perfect price discrimination in product markets is usually attributed to a monopoly that has the marketing technology to set the price for each consumer individually at the highest possible level, taking all consumer surplus.²¹⁰ In the case of DA as a compensation scheme in wrongful entitlement takings markets, the law allows the entitlement

²⁰⁷ See, e.g., Richard Craswell & John E. Calfee, *Deterrence and Uncertain Legal Standards*, 2 J. L. ECON. & ORG. 279 (1986).

²⁰⁸ Osnat Jacobi & Avi Weiss, *The Effect of Time on Default Remedies for Breach of Contract*, 35 INT'L REV. L. & ECON. 13 (2013).

²⁰⁹ Kaplow & Shavell, *supra* note 131.

²¹⁰ For an economic explanation of perfect (or first-degree) price discrimination, the conditions for its existence, and its market effects, see, for example, GARY S. BECKER, *THE ECONOMICS OF DISCRIMINATION* (2d ed. 1977); PINDYCK & RUBINFELD, *supra* note 191, at 401–10; JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 52–133 (1988); VARIAN, *supra* note 191, at 481–87; V Bhaskar & Ted To, *Is Perfect Price Discrimination Really Efficient? An Analysis of Free Entry*, 35 RAND J. ECON. 762 (2004); and Meghan Busse & Marc Rysman, *Competition and Price Discrimination in Yellow Pages Advertising*, 36 RAND J. ECON. 378 (2005).

buyer to take it without bargaining at the price of the victim's damages and without any need to share profits, and therefore categorically dictates perfect price discrimination of entitlement suppliers.

DA leads potential wrongdoers to take each entitlement where the expected profits from the taking are higher than the expected costs of the entitlement. This leads to too many takings compared to a competitive market with all the profits in the wrongful takings market falling in the hand of the wrongdoers.

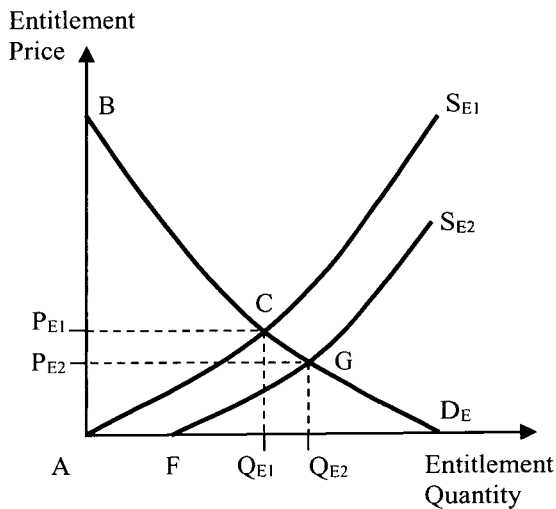


Figure 2: Supply and demand in the wrongful entitlement takings market

If an entitlement market is competitive, the buyers see a market price (P_{E1} in Figure 2), act accordingly and purchase entitlements at the efficient quantity (Q_{E1}). However, with perfect price discrimination in the wrongful entitlement takings market, a price is not available and many entitlement transfers are performed below the artificial market price, at a price identical to the entitlements' costs (below P_{E1}). Moreover, many potential wrongdoers may reconsider entitlement transfers performed above the artificial market price (above P_{E1}). Cumulatively, the wrongdoers purchase entitlements at different prices with a total quantity higher than the efficient level ($Q_{E2} > Q_{E1}$).

According to welfare economics, inefficiency in commodity markets leads to inefficiency in product markets that use those commodities for manufacturing.²¹¹ Similarly, those distortions in wrongful entitlement takings

²¹¹ This outcome derives from the first fundamental theorem of welfare economics, stating that a set of competitive markets leads to an efficient allocation of resources. For economic definition

markets might affect other markets as well. If takers use entitlements inefficiently and consume them at a higher than optimal level, then they are expected to produce inefficiently in the markets where those entitlements serve as commodities.

If the law considers entitlement costs as a criterion for compensation, manufacturers might decide to pay suppliers costs and save search costs by forcing inefficient takings, for example, of rights to clean air, to safe working environment and of intellectual property rights. The GR criterion may restore the wrongful entitlement takings markets. By forcing a hypothetical market price that ensures the victim's entitlement costs and further divides the added profits from the taking, it optimally mimics the operation of free and competitive markets. Simultaneously, the GR offers both potential takers and entitlement owners their normal profits from the taking and ensures efficient takings and just division of profits from each transaction in entitlement markets, and in turn, efficient allocation of resources.²¹²

Notably, where a taker wrongfully acts and a victim's entitlement is taken, under certain conditions, a compensation scheme that forces the taker to pay the entitlement market price may be an optimal remedy. The conditions are as follows: (1) the entitlement is by itself a product traded in a fully competitive market, meaning a market with a unified product and perfect information;²¹³ and (2) the product is a perfect substitute for the taken entitlement (that the victim is able to adjust to her operation at the infringer's expense). My claim is that if those conditions are met, the payment reflects a "real" market price and therefore the GR criterion.²¹⁴

3. Behavioral Economic Considerations

Risks estimation is crucial for all human behaviors, private or commercial. Its importance rapidly grows, since in modern life, the cycle of technology changes is becoming rapidly shorter. Cognitive psychology shows that risk estimation is biased due to mechanisms such as the *availability*

and explanation, see, for example, COOTER & ULEN, *supra* note 49, at 37–38; KREPS, *supra* note 191, at 199–200 (1990); PINDYCK & RUBINFELD, *supra* note 191, at 595–615; and VARIAN, *supra* note 191, at 604–12.

²¹² For further discussion of tortious examples as examples for the superiority of the GR criterion, see Sher, *supra* note 25.

²¹³ For economic definition, conditions and analysis of competitive markets, see, for example, COOTER & ULEN, *supra* note 49, at 28–29; KREPS, *supra* note 191, at 187–92; PINDYCK & RUBINFELD, *supra* note 191, at 317–28; and VARIAN, *supra* note 191, at 292–95.

²¹⁴ For further discussion of the conditions for using the entitlement's "market price" as a desirable criterion that reflects the GR criterion in highly competitive markets, see *infra* Section V.F.

heuristic,²¹⁵ a cognitive mechanism that enables individuals to assess probabilities of event occurrences by the speed they can draw them from memory. For example, this mechanism might cause managers to underestimate the risks of occupational injuries. Research identified other cognitive biases that might cause individuals to underestimate probabilities of negative events, even where accurate and objective information is available, including *over-optimism*²¹⁶ and *overconfidence* that lead individuals to overestimate the validity of the information they receive and the accuracy of their assessments.²¹⁷ Small probabilities might be completely ignored (*no-risk bias*)²¹⁸ as can small differences between probabilities (*insensitiveness*).²¹⁹ All those phenomena might lead to underestimation of risks and to too many wrongful takings, many of them inefficient.²²⁰

With technology rapidly changing, it is important to find efficient debiasing mechanisms. However, findings show that motivated reasoning biases such as *confirmation bias* cause individuals to ignore incoming negative information and interpret it in a way that confirms their erroneous prejudgment,²²¹ and that designing legal debiasing mechanisms is an elusive task.²²²

²¹⁵ The availability heuristic was first introduced in Amos Tversky & Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, 185 SCI. 1124, 1127–28 (1974). For its effect on individual judgment, see JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 168–208 (Daniel Kahneman et al. eds., 1982). See also Norbert Schwarz & Leigh Ann Vaughn, *The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information*, in HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT 103–19 (Thomas Gilovich et al. eds., 2002).

²¹⁶ For a review of the literature on over-optimism and its effects on legal issues, see Sean Hannon Williams, *Probability Errors: Overoptimism, Ambiguity Aversion, and the Certainty Effect*, in THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 335, 335–53 (Eyal Zamir & Doron Teichman eds., 2014).

²¹⁷ For overconfidence, see JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES, *supra* note 215, at 287–353.

²¹⁸ See Jonathan Baron et al., *Attitudes Toward Managing Hazardous Waste: What Should Be Cleaned Up and Who Should Pay for It*, 13 RISK ANALYSIS 183 (1993); see also Barbara Luppi & Francesco Parisi, *Behavioral Models in Tort Law*, in HANDBOOK OF BEHAVIORAL LAW AND ECONOMICS (Joshua Teitelbaum & Kathryn Zeiler eds., 2013).

²¹⁹ See Eric A. Posner, *Probability Errors: Some Positive and Normative Implications for Tort and Contract Law*, 11 SUP. CT. ECON. REV. 125 (2003).

²²⁰ For further discussion of behavioral economic arguments for the superiority of the GR criterion, see Sher, *supra* note 25.

²²¹ See JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES, *supra* note 215, at 339; Margit E. Oswald & Stefan Grosjean, *Confirmation Bias*, in COGNITIVE ILLUSIONS: A HANDBOOK ON FALLACIES AND BIASES IN THINKING, JUDGEMENT AND MEMORY 79 (Rüdiger F. Pohl ed., 2004).

²²² See Christine Jolls & Cass R. Sunstein, *Debiasing Through Law*, 35 J. LEGAL STUD. 199 (2006).

My claim is that the DA criterion is not an efficient debiasing mechanism. In everyday individual and corporate life, wrongdoers perform takings, often without any negative effect and especially without damages. Often, the wrongdoing remains unknown. This common occurrence is a *moral luck problem*.²²³ The DA criterion prevents victims from suing the takers and does not provide incentives for victims to invest in revealing the facts. Therefore, due to this failure of law to compensate, individuals and firm managers constantly learn to err.

Where technology changes, and managers and individuals react by estimating risks in new settings, the GR criterion may serve as an effective debiasing mechanism. The GR gives numerous victims of minor wrongful takings with small damages an incentive to sue, and thereby makes all members of society agents for discovering errors in takers' risk assessments in a timely manner. If, for example, workers have proper incentives to sue when a new technology is adopted and managers underestimate risks, suboptimal safety measures are taken, and accidents happen with negligible and minor damages—the error may be discovered and corrected in time, before a fatal accident occurs.

Out of all possible allocations of the added value from the taking, from giving the victim her damages to giving her damages plus all the added value from the taking, the GR criterion is the only acceptable alternative that can serve as a debiasing mechanism because it is the only criterion based on individuals' conception of fairness. Notably, experiments that questioned criteria of sharing in bargaining settings demonstrated the existence of an equal sharing equilibrium.²²⁴

B. Normative Theories

1. Corrective Justice

In this Section, I claim that that normative theories of both corrective and distributive justice lead to the same unique socially optimal GR compensation criterion. Elsewhere,²²⁵ I claimed that the GR is a unique criterion for courts and juries to determine the proper pecuniary remedy for tortious cases, supported by legal and economic as well as normative theories, including

²²³ For an introduction to the moral luck problem, see THOMAS NAGEL, *MORTAL QUESTIONS* 24–38 (1979); Thomas Nagel, *Moral Luck*, in *MORAL LUCK* 57 (Daniel Statman ed., 1993); BERNARD WILLIAMS, *MORAL LUCK* 20–39 (1981); and Bernard Williams, *Moral Luck*, in *MORAL LUCK* 35 (Daniel Statman ed., 1993). For moral luck in tort law, see John C.P. Goldberg & Benjamin C. Zipursky, *Tort Law and Moral Luck*, 92 *CORNELL L. REV.* 1123 (2007); and Christopher Jackson, *Tort, Moral Luck, and Blame*, 60 *CLEV. ST. L. REV.* 57 (2012).

²²⁴ See references *supra* notes 193–194.

²²⁵ See Sher, *supra* note 25.

corrective and distributive justice. Next, I argue that corrective justice²²⁶ supports the uniqueness of the GR as a criterion for compensation for all civil wrongs.

As mentioned above,²²⁷ the perception of wrongs as takings is suitable for modern commercial and private activities, where a firm or individual hope to gain and their activities impose risks to potential victims. This description applies to all civil wrongs, and is suitable for analysis informed by normative theories going back to Aristotle. It is consistent with Aristotle's notion of corrective justice that focuses on correcting wrongs by eliminating the infringer's wrongful gains and the correlative losses caused to the victim.²²⁸

The literature discusses corrective justice justifications for many fields of law,²²⁹ including tort,²³⁰ intellectual property,²³¹ unjust enrichment,²³² and property law.²³³ In all, wrongful taking basically means that where a wrong leads correlatively to infringer's gains and victim's losses, the taker should correct the

²²⁶ For corrective justice theories, see, for example, Jules L. Coleman, *Tort Law and Tort Theory: Preliminary Reflections on Method*, in PHILOSOPHY AND THE LAW OF TORTS 183 (Gerald J. Postema ed., 2001) [hereinafter Coleman, *Tort Law and Tort Theory*]; Jules L. Coleman, *The Mixed Conception of Corrective Justice*, 77 IOWA L. REV. 427 (1992); Jules L. Coleman, *The Practice of Corrective Justice*, 37 ARIZ. L. REV. 15 (1995); George Fletcher, *Corrective Justice for Moderns*, 106 HARV. L. REV. 1658, 1658–78 (1993); Stephen Perry, *The Moral Foundations of Tort Law*, 77 IOWA L. REV. 449 (1992); Weinrib, *Emerging Consensus*, *supra* note 2; and Ernest J. Weinrib, *Corrective Justice in a Nutshell*, 52 U. OF TORONTO L.J. 349 (2002).

²²⁷ See *supra* Part I.

²²⁸ See *supra* notes 28–29 and accompanying text.

²²⁹ For the broad range of corrective justice theories' effects, see, for example, Ernest J. Weinrib, *Corrective Justice*, 77 IOWA L. REV. 403, 425 (1992); and Weinrib, *The Gains and Losses*, *supra* note 29, at 277–78.

²³⁰ For justifications of tort law based on corrective justice theories, see, for example, Coleman, *Tort Law and Tort Theory*, *supra* note 226; PETER M. GERHART, TORT LAW AND SOCIAL MORALITY (2010); Perry, *supra* note 226; and Weinrib, *Emerging Consensus*, *supra* note 2.

²³¹ For justifications of intellectual property rights and protection based on corrective justice theories, see, for example, Stephen R. Munzer, *Corrective Justice and Intellectual Property Rights in Traditional Knowledge*, in NEW FRONTIERS IN THE PHILOSOPHY OF INTELLECTUAL PROPERTY 58 (Annabelle Lever, ed., 2012); and Jules L. Coleman, *Intellectual Property and Corrective Justice*, 78 VA. L. REV. 283 (1992).

²³² For justifications of unjust enrichment law based on corrective justice theories, see, for example, DOBBS, LAW OF REMEDIES, *supra* note 15, at 171–72; Emily Sherwin, *Restitution and Equity: An Analysis of the Principle of Unjust Enrichment*, 79 TEX. L. REV. 2083, 2104–08 (2001); and Weinrib, *Restitutory Damages*, *supra* note 80, at 1.

²³³ For justifications of property law based on corrective justice theories, see, for example, PETER M. GERHART, PROPERTY LAW AND SOCIAL MORALITY (2014); Eric R. Claeys, *On Corrective Justice and Rights in Property: A Comment on Property Law and Social Morality*, 2 TEX. A&M J. REAL PROP. 205 (2015); and Gordley, *supra* note 80.

wrong by compensating the victim.²³⁴ As mentioned above, modern theorists explained that since the injurer's gains and victim's losses are not necessarily identical, Aristotle's explanation evokes a puzzle.²³⁵

Scholars have dealt with the question of how to solve Aristotle's puzzle. Weinrib proposed,²³⁶ in context of torts and unjust enrichment, a distinction between material and normative gains and losses:

One possibility is that gain and loss are variants from each litigant's antecedent resources. We may call this the 'material' conception of gain and loss, because it focuses on the extent to which the litigant is materially better or worse off than before the wrong. . . . In its material aspect, a gain is an increase in a party's resources; a loss is a decrease.

A second possibility is what we may call the 'normative' conception of gain and loss. Under this conception, gains and losses refer to discrepancies between what the parties have and what they should have according to the norm governing their interaction. The baseline for normative gains and losses is one's due under the relevant norm. A gain is an excess over, and a loss a shortfall from, one's due.²³⁷

Weinrib argued that Aristotle perceived the gains and losses of corrective justice as normative.²³⁸

And what is the role of material damages, if any? After the wrongdoing has occurred, Weinrib explained,²³⁹ the victim's actual losses must be measured to enforce their correction.²⁴⁰ Furthermore, this is also the role of material gains in the context of unjust enrichment.²⁴¹

²³⁴ This relation between the outcome to the victim and the harm caused by the injurer is known as "the correlativity principle." See, e.g., Coleman, *The Practice of Corrective Justice*, *supra* note 226, at 26–29; Weinrib, *Emerging Consensus*, *supra* note 2, at 110–12, 116–19.

²³⁵ Weinrib, *The Gains and Losses*, *supra* note 29, at 277–79.

²³⁶ *Id.* at 282–86.

²³⁷ *Id.* at 282–83.

²³⁸ *Id.* at 286–89.

²³⁹ *Id.*

²⁴⁰ *Id.* at 288.

²⁴¹ *Id.* at 289. In another article, Weinrib discussed the concept of normative gains and losses in the context of unjust enrichment. See Weinrib, *Restitutionary Damages*, *supra* note 80. Weinrib explained that the normative conception of the goal of corrective justice may justify disgorgement in proper cases "when the potential for gain is an incident of the right that the wrongdoer violated." *Id.* at 37. For criticism, see Dagan, *supra* note 80; and Gordley, *supra* note 80. For situations where it is appropriate to apply the criterion of full disgorgement, see *infra* Section V.G.

Hershovitz argued²⁴² that Weinrib's distinction and emphasis on normative gains and losses to explain the basis for tort liability is circular:

On Weinrib's picture, corrective justice calls for undoing normative gains and losses. What are the normative gains? They are the gains that corrective justice requires that we undo. Weinrib is attempting to solve the problem of the missing gain by fiat. Corrective justice itself creates the gain needed to offset the victim's loss.²⁴³

Furthermore, Hershovitz claimed Weinrib did not explain how losses could be corrected.²⁴⁴

I argue that Weinrib's coherent theory relies on the assumption that in torts, after correcting the wrong by paying the victim her damages, the tortfeasor may gain all the added value from his action. Furthermore, in unjust enrichment cases, the wrongdoer is obliged to pay only his profits, even if they are lower than the victim's damages. My idea is that those corrections to wrongdoings are insufficient in term of corrective justice.²⁴⁵

The main element of the GR is that in cases of wrongs with taker's profits higher than victim's damages, in all civil wrongs, the GR allows the victim her damages plus her share in the added value from the taking. This amount is the precise value of her infringed right that includes the value of her right to sell her right by herself, namely her right of disposition. Furthermore, in those cases, correcting wrongs using the GR allows the taker his honest share of the taking—the added value from the taking created by his efforts. In my basic

²⁴² Scott Hershovitz, *Corrective Justice for Civil Recourse Theorists*, 39 FLA. ST. U. L. REV. 107, 113–17 (2011).

²⁴³ *Id.* at 114.

²⁴⁴ *Id.* Alternatively, Hershovitz argued that understanding tort law goals should be based on Goldberg and Zipursky's Civil Recourse Theory, which he claims is actually a corrective justice theory. *Id.* at 117–26. This theory views the tort system as a civil resources mechanism whereby the state has to provide victims with the tools for recovery by placing them in a state as similar as possible to where they could have been if not for the misfortunate interaction with the injurer. *Id.* For the Civil Recourse Theory, see John C. P. Goldberg & Benjamin C. Zipursky, *Unrealized Torts*, 88 VA. L. REV. 1625, 1643 (2002); Benjamin C. Zipursky, *Rights, Wrongs, and Recourse in the Law of Torts*, 51 VAND. L. REV. 1, 82 (1998); and Benjamin C. Zipursky, *Civil Recourse, Not Corrective Justice*, 91 GEO. L.J. 695, 709–13 (2003). Zipursky explains, however, that his is not a corrective justice theory, *inter alia*, since the tort system also offers remedies such as punitive damages, which do not have corrective characters. For criticism of the theory's arguments against traditional corrective justice theories and for possible answers, see Erik Encarnacion, *Corrective Justice as Making Amends*, 62 BUFF. L. REV. 451 (2014). For further discussion of Hershovitz's claims against Weinrib, see Sher, *supra* note 25.

²⁴⁵ My argument for the superiority of GR applies also to Hershovitz's suggestion to understand tort law goals based on the Civil Resources Theory, whereby the state has to provide victims with tools for recovery. For Hershovitz's suggestion, see Hershovitz, *supra* note 242.

example,²⁴⁶ the gap between taker's profits of \$1,000 and victim's damages of \$600 demonstrates Aristotle's puzzle—a compensation that equals the profit gives the victim all the added value from the taking, including that part created by the taker's efforts, while DA gives the taker all the added value from the taking and does not eliminate his revenues from wrongdoing. Under the GR criterion, the taker pays the victim \$800 ($600 + \frac{1}{2}(1,000 - 600)$), and the victim receives her damages of \$600 and her part of the added value from the taking to equal \$200 ($\frac{1}{2}(1,000 - 600)$). The latter is the value of her right to sell her entitlement that has materialized at the time of the taking. The taker pays the true value of the victim's entitlement and receives that part of the added value from the taking of \$200 ($1,000 - 800$) that was created solely by his efforts.

This solution to Aristotle's puzzle is valid even where the victim suffered only negligible damages. In this case, the parties share their luck that creates the highest value to each of them: the taker pays the victim \$500 ($0 + \frac{1}{2}(1,000 - 0)$) and gains \$500 ($1,000 - 500$).²⁴⁷

The third component of the GR is that if the firm loses after paying the victim her damages—for example, where the total profits are \$400 (before paying the victim's damages)—the taker pays the victim only her damages of \$600.²⁴⁸ Because the realization of profits and damages has not created any added value, the value of the right to transfer this entitlement is zero, and the victim is not entitled to any added value beyond her damages. The wrongdoer's losses of \$200 were caused by his misjudgment and rush to impose risk on another individual, and it is therefore justifiable for him to bear all the losses.

Above, I claimed that in patent litigation, the hypothetical bargaining criterion precisely reflects the GR criterion.²⁴⁹ Furthermore, it is commonly applied in cases where the patent owner is not a manufacturer and is unable to prove her losses.²⁵⁰ Thus, this criterion serves as a measurement tool to calculate the value of the intellectual property right, including its owner's right to sell it by herself. As explained above, applying this measurement tool is theoretically equivalent to measuring the outcome by paying the victim her damages plus half the additional ANP derived from the infringement.²⁵¹ Therefore, in light of Gordon and Coleman's discussion,²⁵² my reply is that the hypothetical bargaining criterion is the correct value of the infringed property right, without considering restitutionary goals.

²⁴⁶ See Example 1.1, *supra* Section I.B.

²⁴⁷ See Example 1.2, *supra* Section I.B.

²⁴⁸ See Example 1.3, *supra* Section I.B.

²⁴⁹ See *supra* Section II.C.

²⁵⁰ *Id.*

²⁵¹ *Id.*

²⁵² See *supra* notes 178–186 and accompanying text.

2. Distributive Justice

For distributive justice theories reasoning,²⁵³ I apply Rawlsian²⁵⁴ criteria of justice as fairness²⁵⁵ to show that the GR is a unique criterion for courts and juries to determine the proper pecuniary remedy for all civil wrongs.²⁵⁶ As mentioned above,²⁵⁷ I describe wrongs as takings—in modern life, potential wrongdoers are also manufactures of goods and providers of services who act to increase their gains, and hopefully social welfare, and simultaneously impose risks on others, and forcibly appropriate their entitlements. The GR fairly divides the added value created by takings and therefore meets Rawls's criterion of the hypothetical social contract, which states that a social arrangement is just if it is adopted by rational and reasonable members of society.²⁵⁸ The GR meets this criterion by allowing beneficial activities, both private and commercial, to take place. And by dividing the gains of those activities, it promises a fair price to potential takers and entitlement owners. Where gains exceed damages, DA

²⁵³ Distributive justice is a theory that aims to provide moral guidance for law, institutions, and policies that affect the distribution of economic benefits and burdens in societies. *See, e.g.*, MICHAEL ALLINGHAM, *DISTRIBUTIVE JUSTICE* 1–11 (2014); JOHN ARTHUR & WILLIAM H. SHAW, *JUSTICE AND ECONOMIC DISTRIBUTION* 1 (1978); JOHN E. ROEMER, *THEORIES OF DISTRIBUTIVE JUSTICE* 51–53 (1996).

²⁵⁴ Rawls's theories of distributive justice informed studies of legal arrangements. In tort law, see, for example, Gregory C. Keating, *Reasonableness and Rationality in Negligence Theory*, 48 *STAN. L. REV.* 311 (1996). Based on Rawlsian social contract theory, Keating developed a social contract conception of due care. *Id.* at 312–13; *see also* Arthur Ripstein, *Torts: The Division of Responsibility and the Law of Tort*, 72 *FORDHAM L. REV.* 1811 (2004). Ripstein argued that “Rawls offers us the basis of an account that enables us to understand the normative significance of ideas about private wrongdoing and, more importantly, to locate that significance in relation to the ideas of freedom and equality that more conspicuously animate *A Theory of Justice*.” *Id.* at 1811–12. For application of Rawlsian reasoning to support property law arrangements, see Joseph William Singer, *Democratic Estates: Property Law in a Free and Democratic Society*, 94 *CORNELL L. REV.* 1009, 1043–44 (2009). In the intellectual property context, Merges, *inter alia*, relied on Rawls to explain the foundation of intellectual property law. *See* ROBERT P. MERGES, *JUSTIFYING INTELLECTUAL PROPERTY* 102–36 (2011); *see also* Justin Hughes & Robert P. Merges, *Copyright and Distributive Justice*, 92 *NOTRE DAME L. REV.* 513 (2016). For the limits of distributive justice in explaining civil law, see Hanoch Dagan, *Qualitative Judgments and Social Criticism in Private Law: A Comment on Professor Keating*, 4 *THEORETICAL INQUIRIES. L.* 89 (2003).

²⁵⁵ *See* JOHN RAWLS, *A THEORY OF JUSTICE* (1971) [hereinafter RAWLS, *A THEORY OF JUSTICE*]; *see also* JOHN RAWLS, *JUSTICE AS FAIRNESS: A RESTATEMENT* (Erin Kelly ed., 2001).

²⁵⁶ For my argument that, in torts, the GR criterion meets Rawlsian criteria of justice as fairness, see Sher, *supra* note 25.

²⁵⁷ *See supra* Part I.

²⁵⁸ For the hypothetical social contract criterion of justice, see RAWLS, *A THEORY OF JUSTICE*, *supra* note 255, at 10–15. For further explanation, see, for example, SAMUEL FREEMAN, *JUSTICE AND THE SOCIAL CONTRACT: ESSAYS ON RAWLSIAN POLITICAL PHILOSOPHY* 17–44 (2007); and THOMAS POGGE, *JOHN RAWLS: HIS LIFE AND THEORY OF JUSTICE* 60, 62, 64–65 (2007).

encourages too many takings, and DoP bars takings that contribute to society, without considering the true value of the forcibly purchased entitlements.

Furthermore, the GR best meets Rawls's criterion of *veil of ignorance*—by which a social arrangement is just if individuals, who do not know their position in advance, commit themselves to it as free and equal persons who jointly agree to accept it.²⁵⁹ Individuals who do not know in advance whether they would become takers or victims prefer an arrangement that considers both possibilities. The DA criterion allows too many takings, imposes higher than necessary risks on potential victims, and gives all added value from the risk-imposing acts to the takers. Therefore, potential victims are not expected to accept it. The DoP criterion bars contributory acts and gives all added value to the victims and therefore is unacceptable by potential takers. For individuals who do not know in advance whether they would become takers or victims, the GR is the safest. Notably, risk-averse individuals who do not know their position in advance strictly prefer the GR criterion.

Next, I turn to explore the implementation of the GR in specific categories of cases, including possible ways to measure compensation by this criterion, and reasons to shift to the DoP criterion or injunctions.

V. THE GOLDEN RULE (GR) CRITERION: IMPLEMENTATION RULES

A. *Where Measurable Gains Exceed Measurable Damages*

I argue above²⁶⁰ that the GR compensation criterion should be applied to all civil wrongs. Under the current civil law, there are fields where, to compensate victims, courts and juries measure DA²⁶¹ and others where they measure gains.²⁶² In many cases or case categories, they measure both and apply the higher.²⁶³ In some cases or categories, determining profits is easier and more accurate than measuring DA and vice versa.²⁶⁴

The first component of the GR is that where the infringer's gains exceed the victim's losses, the infringer should be obliged to pay the victim's damages plus half of the additional ANP derived from the taking. In Example 1.1,²⁶⁵ the

²⁵⁹ For the veil of ignorance criterion of justice, see RAWLS, A THEORY OF JUSTICE, *supra* note 255, at 136–41. For further explanation, see, for example, FREEMAN, *supra* note 258, at 32–36; and POGGE, *supra* note 258, at 64–67.

²⁶⁰ See *supra* Part IV.

²⁶¹ See *supra* Section II.A.

²⁶² See *supra* Section II.B.

²⁶³ See *supra* note 82 and accompanying text.

²⁶⁴ See, e.g., Hylton, *supra* note 73, at 432–33.

²⁶⁵ See Example 1.1, *supra* Section I.B.

profits are \$1,000, the DA are \$600, and the taker pays the victim \$800 ($600 + \frac{1}{2}(1,000 - 600)$).

Where the taker is a corporation, the parameters of its profits include gross and net profits as presented in its financial statements.²⁶⁶ Other parameters, such as salaries and value of immovable property and inventory, may be viable. The most important are parameters that may be useful in measuring the infringer's ANP.²⁶⁷ Example 2 demonstrates how the infringer's ANP should be determined in common cases where the taker's gains are derived from the taking but also from other sources, including the taker's work and property. *Example 2.* Assume a firm increases its manufacturing with an added profit of \$2,000, uses commodities at a price of \$600, pays \$600 as salary to a worker, and acts wrongfully by failing to install safety equipment; consequently, the worker or someone else suffers damages of \$600. Under the GR, the employee's contribution could be calculated based on her salary relative to other costs that are at the same amount (\$600). Therefore, the infringer's ANP are \$1000 ($\frac{600}{600+600} \times 2,000$), and the compensation remains \$800 ($600 + \frac{1}{2}(1,000 - 600)$).²⁶⁸

Example 2 demonstrates the importance of using objective parameters such as salaries, which are not necessarily correlated with her damages that she has to prove in court, to determine the victim's contribution.²⁶⁹ Allegedly, in the example, using DA (\$600) would lead to the same victim's contribution (half of the total profit of \$1,000) and to the same compensation. Determining victim's compensation based on DA, however, will dramatically expose the compensation amount to court's errors.

To illustrate the importance of using objective parameters to measure ANP, assume that in Example 1.1—where profits equal ANP—the profits are determined correctly at \$1,000. Furthermore, assume that in Example 2—based on a 1:1 ratio between employee salary and employer costs—the infringer's ANP

²⁶⁶ See FRANK WOOD & ALAN SANGSTER, *FRANK WOOD'S BUSINESS ACCOUNTING: VOL. 1*, 187–89 (14th ed. 2018), for an accounting definition and calculation of gross and net profits.

²⁶⁷ This is analogical to the principle that “the unjust enrichment of a conscious wrongdoer . . . is the net profit attributable to the underlying wrong.” RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 51(4) (AM. LAW INST. 2011). “The object of restitution in such cases is to eliminate profit from wrongdoing while avoiding, so far as possible, the imposition of a penalty.” *Id.* For a comprehensive explanation, under unjust enrichment principles, of the infringer's contribution to his actual gains from wrongdoing—which is analogical to the ANP that I use to measure the GR—and for related measurement criteria, see Friedmann, *supra* note 165, at 1887–1903, 1923–25. Notably, in his research, Friedmann also presented another concept—attributed gains—which are gains that never fully materialized. *Id.* at 1883–87, 1923–25.

²⁶⁸ $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP)$.

²⁶⁹ For other examples demonstrating the importance of determining the taker's ANP based on objective parameters that are not correlated with proven DA, see *infra* Section V.B—discussing cases where damages are negligible—and Example 3, *infra* Section IV.D—discussing cases where determining damages is an elusive task.

are determined at \$1,000. If the court systematically estimates damages at 90%, 80%, or 70% of their true value, as is common in several case categories, such as in determining noneconomic losses and in cases of death and serious bodily injury,²⁷⁰ then compensation under the GR criterion drops to \$770, \$740, or \$710, respectively (see Col. 3 in Table 1 below). This under-compensation is not expected to be severe, as a low rate of measurement errors keeps compensation above the DA level (of \$600).

Proven DA		Compensation in cases where the taker's ANP are	
(Col. 1 – %)	(Col. 2 – \$)	fixed (Col. 3 – \$)	correlated with the proven DA (Col. 4 – \$)
70	420	710	622
80	480	740	684
90	540	770	744
100	600	800	800
110	660	830	854
120	720	860	905
130	780	890	955

Table 1: Compensation under the GR criterion where the court errs in determining DA

If in Example 2, however, the court uses proven DA to determine the infringer's ANP, then if the court systematically estimates damages at 90%, 80%, or 70% of their true value, the infringer's ANP decreases accordingly. Hence, compensation under the GR drops sharply to \$744, \$684, or \$622, respectively (see Col. 4 in Table 1 above). To conclude, this under-compensation due to DA measurement errors is more severe where the court uses proven DA to determine the infringer's ANP instead of objective parameters such as salaries.

The problem of measuring the relative contribution of the infringed entitlement is common in patent litigation where courts apply the hypothetical bargaining criterion, particularly with patents included in information

²⁷⁰ See *supra* notes 48–50 and accompanying text.

technology (IT) products.²⁷¹ Lemley and Melamed explained that

especially in the IT industry, products commonly use technologies claimed by thousands of patents. In principle, patent damages could take account of the multiplicity of technologies in a product and allocate value among them accordingly, but that rarely happens. Practical or court-ordered limits on the length of trials usually prevent a full exploration of all the technologies and value contributors in a product.²⁷²

They further explained that, in trial, the focus on the infringed patent leads to overestimation of its relative value.²⁷³ Again, this problem may be addressed by determining objective parameters such as salaries, investment in R&D, or value of property and inventory in the taker's financial statements.

As discussed above,²⁷⁴ in patent infringement litigation, in cases where damages measured by the lost profits criterion are lower than the taker's profits, the added value of the taking should be shared. Although it is not a common case in patent infringement litigation, where taker's profits and patent owner's damages are measurable with relative accuracy, and the first exceed the second, applying the ex-post GR criterion should be considered.

B. Where Measurable Gains Exceed Negligible Damages

The second component of the GR is that where the infringer's gains exceed the victim's losses, and these are negligible, the former still has to pay the amount of the victim's damages plus half the additional ANP derived from the taking. In Example 1.2,²⁷⁵ the profits are \$1,000, the DA are negligible, and therefore, under the GR, the taker pays the victim \$500 ($0 + \frac{1}{2}(1,000 - 0)$). In those cases, determining the victim's contribution based on objective parameters (such as salaries) that are not correlated with her proven damages is crucial. Otherwise, the compensation would be negligible and would fail to achieve the GR point of maximum social welfare.

As I discuss above,²⁷⁶ this component of the GR is crucial in order to address common *moral luck problems* and errors in judgment due to cognitive biases leading to risk underestimations underlying the law enforcement's difficulties. This component of the GR requires, however, a major change in

²⁷¹ See, e.g., Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117, 2143–44 (2013).

²⁷² *Id.* at 2144.

²⁷³ *Id.*

²⁷⁴ See *supra* Section II.C.

²⁷⁵ See Example 1.2, *supra* Section I.B.

²⁷⁶ See *supra* Section IV.B.

current law²⁷⁷ as well as the development of mechanisms aimed to balance its advantages with its potential costs. For example, to avoid suits where the victim files for compensation for past negligible damages with no actual future risks that the infringer wrongfully imposes, the law may require the plaintiff to prove meaningful risks to her and to others by the same continuous wrongdoing.

C. *Where Measurable Damages Exceed Gains*

The third component of the GR is that where the victim's losses exceed taker's gains the taker should be obliged to pay the victim the amount of her damages. In Example 1.3, the profits are \$400, the victim suffers damages of \$600 that exceed the infringer's profits, and therefore, under the GR, the taker pays the victim her damages (\$600) and loses \$200 ($400-600$).²⁷⁸ Notably, in those cases, determining the victim's contribution based on objective parameters (such as salaries) is still important, and over-estimation of the victim's contribution to profits might lead to over-compensation. The amount of total compensation, however, is more sensitive to errors in determining DA.

D. *Where Measuring Damages or Gains is Elusive*

As discussed above, in some cases or categories of cases, determining profits is easier and more accurate than measuring DA, and vice versa.²⁷⁹ There are also cases or categories where this task is elusive, such as determining damages in tortious cases of noneconomic losses or for death and serious bodily injury that usually lead to under-compensation.²⁸⁰ If measuring damages is expected to be an elusive task, and determining the infringer's ANP is clear, then it is possible to use the ANP data to calculate the compensation by the GR criterion.

To do so, where the taker's ANP was calculated, and the victim suffers lower damages, of which precise estimation is elusive, courts may apply the NPM ratio, defined as the taker's net profits divided by his net sales.²⁸¹ Example 3 demonstrates the GR criterion in cases where measuring damages or gains is elusive. *Example 3.1.* Assume a firm increases its manufacturing acts wrongfully by failing to install safety equipment, and consequently someone suffers

²⁷⁷ For the current law requiring damages as a common remedy, see *supra* Section II.A.

²⁷⁸ See Example 1.3, *supra* Section I.B.

²⁷⁹ See Hylton, *supra* note 73, at 432–33.

²⁸⁰ See *supra* notes 48–50 and accompanying text.

²⁸¹ For NPM, see, for example, Michaël Dewally & Yingying Shao, *Industry Cluster and Performance Sensitivity*, 39 J. ECON. & FIN. 824 (2015); and Louis de Mesnard, *Profit Margin Ratio, Markup and Profit Margin Per Unit as Objectives for the Firm: An Economic Point-of-View* (Univ. Burgandy Inst. Bus. Admin. Dijon, Working Paper, 2017), <http://ssrn.com/abstract=2579727>.

damages. The infringer’s ANP is \$1,000 and measured at reasonable accuracy, the DA are known to be less than \$1,000, but are elusive; and the taker’s NPM ratio is 0.2 (20%). Based on the NPM ratio, the DA are estimated at $\$833.3 \left(\frac{1}{1+0.2}1,000\right)$, and under the GR criterion, the taker pays the victim $\$916.6 \left(1,000 - 0.5\left(1,000 - \frac{1}{1+0.2}1,000\right)\right)$.²⁸² This, without directly measuring DA in circumstances where it is costly, inaccurate, and sometimes impossible.

The same rule applies in cases or categories of cases where determining profits is an elusive task. Furthermore, if determining the taker’s NPM ratio is also difficult, courts may use the specific industry’s net profits margin ratio to calculate compensation. *Example 3.2.* Now assume that the proven damages are \$600 and are expected to be relatively accurate, that it is difficult to calculate the taker’s ANP, which is known to be higher than the proven damages, and that the specific industry’s NPM ratio is 0.2 (20%). Hence, under the GR criterion, the taker pays the victim $\$660 \left(600 + 0.5(1.2 \times 600 - 600)\right)$.²⁸³

E. Applying Hypothetical Bargaining Where Measuring Damages and Gains is Elusive

For all civil wrongs, in cases where severe under- or over-compensation is expected due to the court’s inability to measure damages and gains and in turn apply the ex-post GR criterion, including using NPM ratios, courts may use its ex-ante equivalent, namely the hypothetical bargaining criterion—which is the court’s practical implication of the reasonable royalty criterion of patent litigation.²⁸⁴ As described above,²⁸⁵ in patent infringement litigation, the lost profits criterion of compensation applies only when strict requirements are met: where the patentee is a manufacturer, would have sold products in the absence of infringement, and is able to prove his losses; otherwise, the court determines reasonable royalties by the hypothetical bargaining criterion. This criterion is also applied in copyright infringement litigation.²⁸⁶ Likewise, in all typical civil

²⁸² $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP) = ANP - \left(\frac{1}{2}\left(1 - \frac{1}{1+NPM}\right)\right)ANP = \frac{1}{2}\left(1 + \frac{1}{1+NPM}\right)ANP$,

where $DA = \frac{ANP}{1+NPM}$

²⁸³ $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP) = DA + \left(\frac{1}{2}\left(1 + NPM\right)\right)DA = \left(1 + \frac{1}{2}NPM\right)DA$, where $ANP = \left(1 + NPM\right)DA$.

²⁸⁴ For my claim that reasonable royalty is the most common compensation criterion in patent litigation, that, in requiring the court to perform hypothetical bargaining between the infringer and patent owner based mainly on ex-ante parameters, it reflects the GR criterion, and that, where the hypothetical bargaining is performed between identical parties, they are theoretically equivalent, see *supra* Section II.C.

²⁸⁵ See *supra* notes 99–104 and accompanying text.

²⁸⁶ See *supra* note 121 and accompanying text.

wrong cases, the terms for shifting from the ex-post to ex-ante bargaining criterion should be determined.

The transfer from ex-post measuring of compensation by the GR criterion to ex-ante hypothetical bargaining is not suitable for all case categories. For example, it is not suitable for death and serious bodily injuries where the insurance and welfare distribution aims of compensation are crucial. It is more suitable to commercial disputes, especially where the taker wrongfully infringes upon an entitlement that is similar in nature to a license. It may be suitable to many workers or inhabitants suing a manufacturer who wrongfully imposes risks to the working or city environment, albeit with small harm to each individual.

To apply the hypothetical bargaining criterion for all civil wrongs, courts may develop a “book of wisdom” suitable to each category of cases—ex-ante factors adjusted to each category, similar to the process of determining the *Georgia-Pacific* 15-factor test of patent litigation.²⁸⁷ While some of those factors aim to determine the value of a patent’s license and usually are not directly applicable outside intellectual property law,²⁸⁸ others may be adjusted for different context. An example for the former may be Parameter 1 of *Georgia-Pacific*: “[t]he royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.”²⁸⁹ An example for the latter may be Parameter 11: “[t]he extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.”²⁹⁰ This may be adjusted, *mutatis mutandis*, to infringement of an entitlement that is dissimilar in nature to a license.

Notably, similar to the debate over using ex-post data to determine hypothetical bargaining outcomes by ex-ante parameters,²⁹¹ using post-infringement data may be considered for the hypothetical bargaining “book of wisdom” for all civil wrongs.

Another debate derived from the discussion of hypothetical bargaining involves the question of the necessity of the parties’ bargaining power parameter and the way to apply it in determining reasonable royalty. Siebrasse and Cotter argued²⁹² that where parties’ bargaining power has changed between the time of the infringement and the trial, it is necessary to identify the particular source of

²⁸⁷ For the *Georgia-Pacific* 15-factor test, see *supra* notes 106–107 and accompanying text. Bendix argued that, in calculating reasonable royalties in copyright law, courts may use the patent law’s *Georgia-Pacific* factors as a baseline and adjust them to copyright context. See Bendix, *supra* note 119, at 547–57.

²⁸⁸ See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modifying judgment*, 446 F.2d 295 (2d Cir. 1971).

²⁸⁹ *Id.*

²⁹⁰ *Id.*

²⁹¹ See Siebrasse & Cotter, *supra* note 175 and accompanying text.

²⁹² *Id.* at 988–90.

that change to determine whether the royalty payment should be adjusted. They claimed, for example, that an infringer should not be rewarded with a reduction in reasonable royalty if the patentee suffered financial difficulties at the time of the infringement and therefore had low bargaining power.²⁹³ Inter alia, they suggested²⁹⁴ that in *VirnetX, Inc. v. Cisco Systems, Inc.*,²⁹⁵ the court rejected the common reliance of experts in their testimony on the Nash Bargaining Solution as a model for reasonable royalty damages. The court held:

The Nash theorem arrives at a result that follows from a certain set of premises. It itself asserts nothing about what situations in the real world fit those premises. Anyone seeking to invoke the theorem as applicable to a particular situation must establish that fit, because the 50/50 profit-split result is proven by the theorem only on those premises.²⁹⁶

Siebrasse and Cotter argued that the court's approach is consistent with their argument that "bargaining power' needs to be unpacked before one can usefully apply it in assessing reasonable royalty."²⁹⁷ My claim is that the taking's added value should be shared. I argue²⁹⁸ that the ex-post GR criterion is socially desirable and should be applied to all civil wrongs. Hypothetical bargaining is its theoretical equivalent, without directly applying relative bargaining power considerations.

The desirable ex-ante theoretical equivalence could be precisely achieved where the court can accurately estimate the value of the expected damages and profits, or at least one of them (and use NPM ratios). In those rare cases, the court may estimate the accurate expected compensation and divide the expected added value from the taking ($J = \frac{1}{2}(E_0(D) + E_0(V))$ in Figure 1 above).

In common cases, expected damages or profits are elusive, and to address this difficulty, courts may apply a direct estimation of the hypothetical bargaining outcome. To do so, they may estimate compensation by developing parameters suitable for this task, such as the *Georgia-Pacific* test. Again, without directly applying relative bargaining power, considerations might cause a bias from the desirable point of compensation. As research showed,²⁹⁹ the parties' bargaining power already influences the 15 factors of the *Georgia-Pacific* test,

²⁹³ *Id.* at 989.

²⁹⁴ *Id.* at 989 n.175.

²⁹⁵ *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1331–34 (Fed. Cir. 2014).

²⁹⁶ *Id.* at 1332.

²⁹⁷ See Siebrasse & Cotter, *supra* note 175, at 989 n.175.

²⁹⁸ See *supra* Part IV.

²⁹⁹ See Sebastian Zimmeck, *A Game-Theoretic Model for Reasonable Royalty Calculation*, 22 ALB. L.J. SCI. & TECH. 357, 404–05 (2012); see also Siebrasse & Cotter, *supra* note 175, at 988–90.

and further consideration might increase the bias of the court's estimation from the desirable ex-ante theoretical equivalence to the ex-post GR criterion.

F. *Applying the Market Value Criterion*

In some case categories, the law uses market value as a compensation criterion. For example, in cases of trespass, the court may grant DA measured by the rental value of the land during the period of trespass.³⁰⁰ Where the trespasser removed minerals, timber, or crops, the court may grant DA measured by the value of any article severed, so long as it has a provable separate value.³⁰¹ In case of harm to personal property, the court usually measures DA based on the market value of repairing or replacing the property.³⁰² I claim,³⁰³ however, that the DA criterion undermines the structure and operation of free and competitive entitlement markets, creating *perfect price discrimination* of entitlement suppliers and leading to too many takings, many of them inefficient, and to inefficient allocation of resources. The GR criterion is designed to mitigate this failure.

Even where substitutes are available, replacing the lost good by one bought in the market usually does not give the victim the full value of the entitlement. Even in those cases, courts should consider obliging the taker to repay the victim her damages at the amount of the good's price plus half the additional ANP derived from the taking. Only where entitlement markets are highly competitive and the taken entitlement is a uniform good that may be perfectly substituted by the market alternative (that the victim is able to adjust to her operation at the infringer's expense)—for example, a regular pen³⁰⁴—may market value serve for applying the GR criterion.

As discussed above,³⁰⁵ Friedmann explored the possibility of applying the disgorgement remedy in civil cases, in some cases even for innocent infringements.³⁰⁶ His examples highlight the difference between DA, DoP, and GR. *Example 4.1*. Friedmann argued as follows:

³⁰⁰ See, e.g., DOBBS, LAW OF REMEDIES, *supra* note 15, at 529–32; see also Friedmann, *supra* note 165, at 1880–81, 1892–97; Weinrib, *Restitutory Damages*, *supra* note 80, at 12–18.

³⁰¹ DOBBS, LAW OF REMEDIES, *supra* note 15, at 510–11.

³⁰² *Id.* at 545–75.

³⁰³ See *supra* Section IV.A.2.

³⁰⁴ See Arlen, *Tort Damages*, *supra* note 39, at 683 (explaining that where, due to a tortious act, the victim has lost a good that has a perfect market substitute, current court rulings grant her the good's market price as her DA).

³⁰⁵ See *supra* Section III.B.

³⁰⁶ See Friedmann, *supra* note 165.

The normal measure of recovery for the temporary use of another's property is the rent or hire rate, but it is possible to imagine instances in which recovery of profits could be allowed. Consider an example. The defendant rents the plaintiff's property to a third party. The plaintiff may recover the full amount of the rent—even if it exceeds the usual amount payable for this type of property. This result may be reached irrespective of whether the defendant was a conscious wrongdoer or whether he acted innocently. . . . The contribution of the wrongdoer is likely to be considered too meager and may be disregarded, even if he acted innocently.³⁰⁷

Under the GR criterion, however, the court may allow lower payment for innocent infringement: the amount of the victim's damages calculated as the usual rent for this type of property plus half the additional ANP (the full rent amount minus the usual rent for this type of property). Assuming he acts as a real estate broker, his contribution is estimated at 6% of the value of the \$1,000 paid for the full rent, while the usual rent for this type of property is estimated at \$600. Under the GR, the infringer's ANP is \$940 ($0.94 \times 1,000$), and the compensation is \$770 ($600 + \frac{1}{2}(940 - 600)$).³⁰⁸ Sharing the additional ANP creates an optimal solution for innocent infringements.

Example 4.2. Friedmann argued that where the land is vacant and unused, and the infringer uses it for his business—for example, “builds a huge circus tent, and runs a circus business that yields him considerable profits”—

[i]f he acted consciously and simply decided to take it without permission, his liability need not be limited to the amount he would have been required to pay had he made a contract with the owner. . . . A proper solution might be to award against the conscious wrongdoer an amount exceeding the ordinary rent but falling short of his full profits.³⁰⁹

The GR could address Friedmann's notion. Assume that the infringer innocently rented the land from a real estate broker. His contribution is estimated at 80% of the circus's net profits of \$10,000, while the usual rent for this type of property, which he paid to the agent, is \$1,000. Under the GR, the infringer's ANP is \$2,000 ($0.2 \times 10,000$), and the compensation is \$1,500 ($1,000 + \frac{1}{2}(2,000 - 1,000)$).³¹⁰ In this case, if we accept the notion that the intentional infringer should pay his full ANP, he pays \$2,000. Next, I discuss in detail the notion that the intentional infringer should pay his full ANP.

³⁰⁷ *Id.* at 1892.

³⁰⁸ $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP)$.

³⁰⁹ See Friedmann, *supra* note 165, at 1893.

³¹⁰ $GR = DA + \frac{1}{2}(ANP - DA) = \frac{1}{2}(DA + ANP)$.

G. *Moving to the Full Disgorgement Criterion and the Case of Intentional Takings*

As discussed above, from the economic analysis of law perspective, DoP seeks complete deterrence in cases of inefficient takings, while from the corrective justice perspective, it is a suitable normative answer to the taker's unjust gains.³¹¹ Furthermore, the victim is often entitled to compensation at the amount of her DA or to the disgorgement of the taker's profits, whichever is higher. The law usually permits DoP in cases of intentional wrongdoing.³¹² There are fields, however, where the rule is DoP even without intent, as in copyright infringement.³¹³ Moreover, in other fields, the taker's intent does not usually lead to the disgorgement of his profits (without a suit of unjust enrichment or particular wrong in intentional torts)—for example, under negligence law.³¹⁴

Dobbs argued³¹⁵ that, in intentional torts, eliminating profits from the wrong is more relevant to the goal of deterrence than any punitive damage-to-DA ratio. From the perspective of economic analysis of law, Posner argued³¹⁶ that DoP is a suitable remedy for intentional torts that are similar to crimes; however, where the probability of apprehending the taker is less than one, punitive damages or criminal penalty should be added to provide adequate deterrence. From the corrective justice perspective, Weinrib argued that intentional wrong could be perceived as the manifestation of a donative intent, and therefore, “justice between the parties allows the proprietor to keep what has thus been given gratuitously.”³¹⁷

There are calls in the literature to expand the rule of restitution of gains. Hylton suggested³¹⁸ eliminating injurers' gains as a measure of total deterrence and punishment in tort cases where the offender gains less than the victim loses.

³¹¹ See *supra* Section II.B.

³¹² See *supra* Section II.B.

³¹³ See *supra* note 93 and accompanying text.

³¹⁴ *Id.*; see also James Edelman, *Non-Compensatory Damages for Breach of Contract and Torts*, 76 AUSTRALIAN L.J. 328 (2002); Edward M. Iacobucci & Michael J. Trebilcock, *An Economic Analysis of Waiver of Tort in Negligence Actions*, 66 U. OF TORONTO L.J. 173 (2016). For this approach in Australia and the Commonwealth, see Edelman, *supra* note 314; Richard S. Markovits, *Liberalism and Tort Law: On the Content of the Corrective-Justice-Securing Tort Law of a Liberal, Rights-Based Society*, 2006 U. ILL. L. REV. 243, 282–83 (2006); and Michael Tilbury, *Reconstructing Damages*, 27 MELBOURNE U. L. REV. 697, 703–05 (2003).

³¹⁵ See, e.g., Dan B. Dobbs, *Ending Punishment in “Punitive” Damages: Deterrence-Measured Remedies*, 40 ALA. L. REV. 831 (1989).

³¹⁶ See POSNER, *supra* note 49, at 239–45.

³¹⁷ See Weinrib, *Restitutionary Damages*, *supra* note 80, at 27. For criticism of Weinrib's arguments and for other corrective justice justifications for DoP, see Gordley, *supra* note 80.

³¹⁸ See Hylton, *supra* note 73. For a discussion of Hylton's proposal, see *supra* Section III.B.

As we have seen, Cooter and Porat proposed³¹⁹ DDA. And as discussed above,³²⁰ a possible criticism of Hylton's argument is that it does not allow efficient takings, and a possible counterargument to Cooter and Porat's proposal is that DDA do not create sufficient deterrence to achieve optimal social welfare or correction of wrongs.

As presented above,³²¹ Friedmann considered the advantages of expanding the application of the disgorgement remedy in civil cases, in some cases even for innocent infringements,³²² and proposed four alternative schemes to determine disgorgement.³²³ Dagan and Heller proposed³²⁴ three similar possible solutions to a division of profits from common property like family farms, where one commoner autonomously decided to use the commons's resources without his partners' consent.

According to the classification in this article, there are three main schemes of compensation in Friedmann's and in Dagan and Heller's theories: full disgorgement (the net profits to the right's owner), DA (the right's owner receives its market value) and the intermediate schemes of sharing in accordance with commoners' relative contribution. The latter is restricted to a specific context of joint ventures or common property where each commoner share is determined in advance, for example, by an investment contract. Therefore, in the context of predetermined shares in common property rights, it is a rule of accession and not disgorgement.³²⁵

This article showed that the GR is applied and that it is the unique socially optimal rule of compensation for all civil wrongs, based on law and economics, as well as normative theories. All theories lead to the same socially desirable point and compromise between the theories is unnecessary. While the basic compensation rule may be clear, the reasons for moving from the GR criterion to full disgorgement (or another remedy) and the trigger to applying it might be different for each theory and require further research.

³¹⁹ See Cooter & Porat, *supra* note 81, at 249–50. For a discussion of Cooter & Porat's proposal, see *supra* Section III.B.

³²⁰ See *supra* Section III.B.

³²¹ See *supra* Section III.B.

³²² See Friedmann, *supra* note 165.

³²³ *Id.* at 1924–25. For Friedmann's alternative suggestions for determining disgorgement, see *supra* Section III.B.

³²⁴ See Dagan & Heller, *supra* note 170.

³²⁵ For a discussion of the advantages of applying the accession rule in intellectual property disputes between an innocent buyer of a product and an owner of intellectual property whose right has been integrated in the product by a producer, without her consent, see Erez Shaham & Noam Sher, *A Purchaser of a Product v. an Owner of Stolen Intellectual Property: The Revival of the Accession Rule*, 28 WHITTIER L. REV. 319 (2006).

VI. CONCLUSION

Using both law and economics theories—including game theory, microeconomics, and behavioral economics—and normative theories of corrective and distributive justice, I demonstrated that a socially efficient and just criterion for compensation for all civil wrongs exists and called it the Golden Rule (GR).

The article presented the notion that members of society have the right to sell by themselves their rights or entitlements—property, intellectual property, or individual rights, namely the right of disposition. When taking occurs, the value of this right should be protected by law. Where the law uses the damages awards (DA) criterion for compensation, it eliminates the value of the right to negotiate, grants it solely to the taker, and allocates all business and gain opportunities to the takers of the society. This distorts the process of free allocation of resources in all markets.

We began³²⁶ with Einstein insisting that the moon exists not only when he looks at it, an analogy for his belief that particles have properties whether or not they are measured. We then proposed another analogy, namely the existence of an efficient and just welfare point in civil law, regardless of our ability to observe and to measure it. The current law usually ignores it and gives manufacturers and other potential takers license for unlawful takings from individuals at a payment equal to the entitlement's costs.

Following Bohr and Engard's notion of the applicability of the physical principle of complementarity to human phenomena,³²⁷ my research question examined law and economics and normative theories for similarities and differences, in search for the optimal rule of compensation for all civil wrongs, and found that the same GR appeared in all.

Based on further research, the reasons and conditions for moving to another compensation criterion, such as the higher between full disgorgement of profits (DoP) and DA, could be different between law and economics theories and normative theories, as well as between different wrongs. The existence of a foundation and exit point, namely the GR unique point, however, may have important reciprocity implications for many issues. The need for additional research of the reasons and conditions for transition from one rule to another, based on the various theories, applies to the shift from the GR compensation remedy to injunctions, using, for example, the United States Supreme Court's influential *eBay* ruling.³²⁸

³²⁶ See *supra* Part I.

³²⁷ See *supra* notes 2–3 and accompanying text.

³²⁸ For the influential *eBay* ruling, see *supra* note 97 and accompanying text. Elsewhere, I argued that in the torts context, the GR criterion makes the outcomes of bargaining under liability and property rules similar, albeit not identical, and reduces the transaction costs of their application. I claimed that liability and property rules should serve the GR as the proper goal of

For all civil wrongs, there is only one socially optimal, efficient, and just compensation criterion. For implementation, and as a foundation to further research, the law should respect it and aim to share the additional attributed net profits derived from wrongful takings.

tort law and be employed in a specific case or category of cases if best suitable for this objective. See Sher, *supra* note 25.