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# TORTS AND RESTITUTION: LEGAL DIVERGENCE AND ECONOMIC CONVERGENCE

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*This Article explores the divergence in law and convergence in economics in dealing with harms and benefits. While tort law usually makes the injurer internalize wrongful harms through damages, restitution law does not enable the benefactor to internalize the benefits she confers on others without their request. In both harm and benefit cases, however, internalization seems to make economic sense for the same reason: injurers and benefactors alike will behave efficiently if they internalize the externalities that they create. The Article's main goal is to develop eight liability rules for harm and benefit cases and to point out the symmetry between the rules relating to harms and the rules relating to benefits. It also provides an explanation for the legal divergence between tort law and restitution law and makes the claim that the gap between these two fields should be narrowed. Finally, the Article relates these eight rules to the main relevant categories of harm and benefit cases in positive law and appraises their advantages and disadvantages.*

## INTRODUCTION

Tort law usually makes the injurer internalize wrongful harms through damages. In contrast, restitution law does not enable the benefactor to internalize the benefits she confers on others without their request, through damages, and only seldom allows her to recover the costs she incurs in

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creating those benefits. Thus, law is divergent in dealing with harms and benefits. In both kinds of cases, however, internalization seems to make economic sense for the same reason: injurers and benefactors alike will behave efficiently if they internalize the externalities that they create.<sup>1</sup> Since the economics is convergent, why is the law divergent? Can efficiency explain the law's divergent treatment of harms and benefits?<sup>2</sup>

This Article provides a detailed analysis of economic convergence in actual and possible rules of torts and restitution. A better understanding of economic convergence will lead to better understanding of legal divergence, as well as a critique of it. We will argue that legal divergence mostly makes sense, but a modest expansion in restitution's scope, which would increase convergence, would also increase efficiency.

In Part I we develop eight liability rules for harm and benefit cases and point out the symmetry between the rules relating to harms and the rules relating to benefits. Part II presents and discusses the divergence of tort and restitution laws and provides an explanation for this divergence. It makes the claim that the gap between the two fields should be narrowed. Part III relates the eight rules developed in Part I to the main relevant categories of cases in positive law and appraises their advantages and disadvantages.

## I. LIABILITY RULES FOR HARMS AND BENEFITS

In this Part we discuss and develop eight liability rules—half for harm cases and half for benefit cases. We start by presenting the eight rules by using two examples.

### A. INTRODUCING THE RULES

Consider the following cases:

*Example 1: Omitting a Test.* Doctor in a public hospital performs a beneficial procedure for a patient. In addition to the benefit, the procedure causes harmful side effects of 100. A test that costs Doctor 20 can prevent the harmful side effects. Doctor omits the test and the harm materializes.

*Example 2: Constructing a Garden.* Builder considers constructing a garden on her land that will increase the market value of her house and five

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1. Later we explain that sometimes compensation for costs incurred would be enough, or even better than full internalization, in encouraging efficient creation of benefits. See *infra* Sections I.C, I.E.

2. We do not discuss non-efficiency reasons, such as protecting autonomy. See Ariel Porat, *Private Production of Public Goods: Liability for Unrequested Benefits*, 108 MICH. L. REV. 189, 215–17 (2009) (discussing the concern that restitution would infringe on recipients' autonomy and suggesting various possible methods to mitigate it).

Neighbors' houses. The garden costs Builder 15. The increase in the value of Builder's house is 10, and the increase in the value of each Neighbor's house is 2.<sup>3</sup> The benefits are a public good: Builder cannot prevent Neighbors from enjoying the garden's benefits once it is created. Since each Neighbor knows that their own benefit from the public good does not depend on their contribution to its costs, they contribute nothing, hoping that Builder and the other Neighbors will pay for the garden. However, since all Neighbors reason in the same way, nobody pays. Nevertheless, Builder constructs the garden, conferring a total benefit to Neighbors of 10.

In both harm and benefit cases the law could make the actor—the injurer or the benefactor—internalize the externalities she creates. One possibility for the law is to make internalization unconditional on the behavior of the actor. In Example 1, unconditional internalization is a rule of strict liability for harm with compensatory damages (Rule H1). Under this rule Doctor is liable for the harm she causes, at the amount of that harm, regardless of whether she behaves negligently. Thus, even if the costs of administering the test were higher than expected harm and therefore there was no negligence on Doctor's part,<sup>4</sup> Doctor would bear liability for the harm caused to the patient. In Example 2, unconditional internalization is a rule of strict restitution for benefit with disgorgement damages (Rule B1). Under this rule Builder is entitled to restitution at the amount of the benefit she confers, regardless of whether she behaves reasonably. Thus, even if the costs of constructing the garden were higher than expected benefit, Builder would be entitled to disgorgement damages from Neighbors.

Another possibility is to condition internalization on whether the behavior of the actor is reasonable or not. In harm cases, this is a rule of negligent liability for harm with compensatory damages (Rule H3). According to this rule, in Example 1, Doctor will be liable for the harm she causes, at the amount of that harm, only if she is negligent, namely, only if her costs of care are lower than expected harm.<sup>5</sup> In benefit cases, this is a rule of reasonable restitution for benefit with disgorgement damages (Rule B3). According to this rule, in Example 2, Builder will be entitled to damages at the amount of the benefits she confers, only if she behaves reasonably, namely, only if her costs of constructing the garden are lower than expected

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3. We assume that the increase in the value of the houses fully capitalizes the value of the garden.

4. This is so under the Hand formula, first articulated in *United States v. Carroll Towing Co.*, 159 F.2d 169, 173–74 (2d Cir. 1947); see also RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL AND EMOTIONAL HARM § 3 cmt. e (AM. LAW INST. 2005) (suggesting that negligence can be asserted by a “risk-benefit test,” where the benefit is the advantage that the actor gains if she refrains from taking precautions, a balancing approach that is identical to the Hand formula).

5. See *Carroll Towing*, 159 F.2d at 173–74.

benefit.

To summarize, under the four rules discussed so far, both negative and positive externalities are internalized by their creators. While under the first two rules (H1 and B1) internalization is unconditional on the character of the creator's behavior, under the other two rules (H3 and B3) internalization is conditional on the reasonableness of her behavior (under Rule H3 unreasonableness entails internalization, while under Rule B3 reasonableness entails internalization).

Instead of internalization, the law could aim to deter injurers from causing harms or encourage benefactors to confer benefits by removing their incentives to cause harms or not to confer benefits. In harm cases, the law could make the injurer disgorge her benefits from creating risks, thereby deterring her from engaging in such a behavior. It could be unconditional on the injurer's negligence (Rule H2) or conditional upon it (Rule H4). The first rule (H2) is strict liability for harm with disgorgement damages: damages are not at the amount of the harm caused but rather at the amount of the injurer's benefits from engaging in the risky behavior. The second rule (H4) is negligent liability for harm with disgorgement damages: damages are at the amount of the injurer's benefit from engaging in the negligent behavior. Thus, in Example 1, under both Rules H2 and H4, Doctor's liability is at the amount of 20, rather than 100.

In benefit cases, there are parallels to Rules H2 and H4. Thus, the law could make the benefactor entitled to damages at the amount of her costs in creating the benefits, thereby encouraging her to confer them, either unconditional (Rule B2) or conditional on her behavior being reasonable (Rule B4). Rule B2 is strict restitution for benefit with compensatory damages, and Rule B4 is reasonable restitution for benefit with compensatory damages. Thus, in Example 2, under both Rules B2 and B4, Builder is entitled to damages at the amount of 7.5 from Neighbors (1.5 from each), which is their relative share in the costs incurred by Builder.

The table below summarizes the eight liability rules (marking with an asterisk (\*) those rules which currently exist under the law). The next Section analyzes the eight rules in more detail.

TABLE 1. Liability Rules for Harms and Benefits

<i>Function of Rule</i>	<i>Harm Cases</i>	<i>Benefit Cases</i>
Strict Liability: Internalization	H1 (compensate)*	B1 (disgorge)
Strict Liability: Deterrence/Encouragement	H2 (disgorge)	B2 (compensate)
Negligent Liability: Internalization	H3 (compensate)*	B3 (disgorge)
Negligent Liability: Deterrence/Encouragement	H4 (disgorge)	B4 (compensate)*

*Note:* rules that currently exist under law are marked with an asterisk (\*).

### B. STRICT LIABILITY AND INTERNALIZATION (RULES H1 AND B1)

Under a rule of strict liability for harm with compensatory damages (Rule H1), the injurer is liable whenever his activity causes an accident, regardless of his level of care. Strict liability with perfectly compensatory damages causes the injurer to internalize the harm from accidents that he causes to victims. Consequently, the self-interested injurer has an incentive to take socially efficient precautions and maintain a reasonable activity level.<sup>6</sup> Conversely, under this rule, the victim externalizes the effects of her precautions and activity level. Consequently, the victim has no incentive to take precaution or restrain her activity levels. The victim's precaution is deficient and her activity is excessive relative to the social optimum. To illustrate, with strict liability with perfect compensatory damages, drivers take efficient precautions (for example, installing cost-justified safety devices in their cars) and their activity level is efficient (for example, driving at efficient frequency). Pedestrians, however, as potential victims, have no incentives to take precautions or restrain their activity, because they are fully compensated.<sup>7</sup>

Now we turn from torts to the equivalent analysis of restitution. Strict liability for harm with compensatory damages (Rule H1) corresponds to strict restitution for benefit with disgorgement damages (Rule B1). Disgorgement by the beneficiary causes the benefactor to internalize the effects on the beneficiary. Consequently, the benefactor has an incentive for the socially efficient benefaction. As in the standard tort model,

6. STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 179–80 (2004) (explaining that under a strict-liability rule injurers have incentives to minimize total social costs).

7. The common intuition is that, with a risk of severe bodily injury, victims will take care even if they are fully compensated. This intuition is right because with severe bodily injury compensation is in fact never perfect.

internalization by one party causes externalization by the other, so Rule B1 makes the beneficiary externalize the value of the gains from the benefaction. Consequently, the beneficiary has no incentive to increase the benefaction's value. The beneficiary's activities are deficient relative to the social optimum.<sup>8</sup>

To illustrate by Example 2, under Rule B1, Builder has efficient incentives to construct the garden in the most efficient way (for example, using adequate materials and labor). Also, her ancillary activity (or activity level)—which is mostly relevant if Builder is in the business of constructing gardens—will be efficient (for example, investing in finding adequate places for gardens). At the same time, however, Neighbors lack incentives to take steps that increase the value which they might derive from the garden (for example, by constructing the windows of their homes to face the garden), since the entire value would be disgorged to Builder.<sup>9</sup>

#### C. STRICT LIABILITY AND DETERRENCE OR ENCOURAGEMENT (RULES H2 AND B2)

Now we turn from internalizing harms and benefits to deterring harms and encouraging benefits. First, consider a rule of strict liability for harm with disgorgement damages (Rule H2). Disgorgement damages under this rule make the injurer give up his gain from imposing risk on the victim. If the injurer does not expect to gain by imposing risk on the victim, he might as well not impose any. Consequently, disgorgement damages are the minimum damages that deter the injurer from imposing the risk of an accident on the victim. However, efficiency usually requires the injurer to impose some risk on the victim, in which case damages are inefficient—they cause excessive precaution or deficient activity by the injurer. Also, with Rule H2, victims have deficient incentives for precaution and their activity is excessive compared to the social optimum because injurers do not impose any risks on them. To illustrate with Example 1, suppose the test necessary to prevent the side effects to the patient cost Doctor 200 rather than 20. Under Rule H2, Doctor would administer the test—although efficiency-wise, she should not—because not administering the test would cost her 200.<sup>10</sup>

Equivalently, consider the rule of strict restitution for benefits with

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8. Things might be different if it were possible to distinguish between the value produced by the benefactor and the value produced by the beneficiary.

9. This assumes that it is not possible to distinguish between the values produced by each actor.

10. More accurately, she is indifferent toward administering or not administering the test. If, however, injuring the patient entails some additional costs (such as costs of reputational sanctions), she will probably administer the test.

compensatory damages (B2). Compensatory damages for unrequested benefits are the minimum damages that encourage the benefactor to maximize benefits to the beneficiary. When damages are perfectly compensatory, they exactly offset the benefactor's cost of supplying an unrequested benefit. Since the benefactor expects to bear no net cost from creating benefits for the beneficiary, the benefactor will maximize the benefaction without regard to the cost of doing so.<sup>11</sup> This inefficiency, however, might disappear if the benefactor creates at the same time benefits for herself and for others and is entitled only to the relative share of her costs proportionate to the benefits she confers on others. To illustrate with Example 2, under Rule B2, Builder would not invest excessively in constructing the garden because Neighbors compensate her for only a relative share of her costs, so that Builder bears the rest of it.<sup>12</sup>

Besides the benefaction, the benefactor's ancillary activities may increase the benefits to others without increasing her compensatory damages. Consequently, the benefactor's ancillary activity level will be deficient.<sup>13</sup> As to the beneficiary, his incentives would be efficient because he internalizes the benefits he creates.

#### D. NEGLIGENT LIABILITY AND INTERNALIZATION (RULES H3 AND B3)

Now we turn from strict liability to negligence, beginning with negligent liability for harm with compensatory damages (Rule H3). The incentive effects of a rule of negligence with compensatory damages are well known in torts literature. In the basic model, a negligence rule causes the injurer to avoid liability by satisfying the legal standard, which is assumed to be the efficient level of care. Having escaped liability, the injurer has no incentive to restrain his activity level. When the injurer escapes liability, the

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11. More accurately, she is indifferent toward providing or not providing the benefit.

12. In more detail: because for each dollar of more benefit for herself, Builder bears the corresponding costs of creating it, she stops creating benefits when marginal costs equal marginal benefits. See Omer Y. Pelled, *The Proportional Internalization Principle in Torts, Contracts, and Unjust Enrichment* 34–37 (2019) (unpublished manuscript) (on file with authors) (discussing such rule in a similar context).

13. This argument is valid under the assumption that the benefactor is not also the beneficiary as in Example 2. Otherwise, things would be different. See *supra* note 12 and accompanying text. Deficient ancillary activities by the benefactor correspond to excessive activity levels by the injurer. In more detail: strict restitution for benefits with compensatory damages causes deficient ancillary activities by the benefactor in the restitution model, and, equivalently, strict liability for harm with disgorgement damages causes excessive activity levels by the injurer in the torts model. Note, however, that under strict restitution for compensatory damages, the benefactor continues the benefaction until its marginal value is zero. If no more benefits are possible, there may be no need for more ancillary activities by the benefactor.

victim internalizes the harm from accidents, so she has incentives for socially efficient precaution and activity.<sup>14</sup>

The equivalent rule is reasonable restitution for benefits with disgorgement damages (B3). Under this rule, the benefactor enjoys restitution for her benefaction up to the legal standard, which is assumed to be efficient, and no restitution for additional benefaction beyond it. Therefore, the benefactor satisfies the legal standard and her benefaction is at the socially efficient level. Since she internalizes all the benefits she reasonably creates, her ancillary activity is also efficient. However, the beneficiary, on his part, has no incentives to increase the value produced by the benefactor since he disgorges any value he gains from reasonable benefaction.<sup>15</sup> To illustrate with Example 2, under Rule B3, Builder invests efficiently in constructing the garden and Neighbors have no incentives to increase its value even if they can do so.

#### E. NEGLIGENT LIABILITY AND DETERRENCE OR ENCOURAGEMENT (RULES H4 AND B4)

We conclude the analysis of negligent liability by considering damages that deter or encourage reasonable behavior, instead of internalizing it. Instead of compensation, consider disgorgement for unreasonable harms. Under a negligence rule, disgorgement damages make the injurer give up his expected gain from imposing unreasonable risk on the victim. This can be accomplished if damages amount to the savings in untaken precautions. Since the injurer does not expect to gain by imposing unreasonable risk on the victim, he might as well take reasonable care. Consequently, a rule of negligence for harm with disgorgement damages (Rule H4) causes efficient care by the injurer. To illustrate, in Example 1, Doctor's liability is 20, and this amount (plus epsilon) is enough to deter her from negligently omitting the test for the patient. The injurer's activity level, however, is excessive,<sup>16</sup> while the victim's incentives and activity levels are efficient.<sup>17</sup>

Now consider the equivalent rule of restitution, which is reasonable restitution for benefit with compensatory damages (Rule B4). Under this

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14. ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 207 (6th ed. 2012) (explaining how a negligence rule provides efficient incentives for both the injurer and the victim).

15. Things might be different if it were possible to distinguish between the value produced by the benefactor and the value produced by the beneficiary.

16. This is because he bears less than the social harm he creates (if he is not negligent, he bears no liability).

17. Once the injurer takes efficient care, the victim bears all the residual harm. For further discussion of the incentive effects of Rule H4, see generally Robert Cooter & Ariel Porat, *Disgorgement Damages for Accidents*, 44 *J. LEGAL STUD.* 249 (2015).

rule, the benefactor is compensated for the cost of conveying unrequested benefits to the beneficiary that are reasonable. So long as the benefaction is reasonable, damages exactly offset the benefactor's cost of supplying unrequested benefits. Since the benefactor expects to bear no net cost from creating benefits for the beneficiary up to the reasonable level, he might as well supply the reasonable level of benefits.

The rule of reasonable restitution with compensatory damages creates incentives for efficient benefaction. Although the benefactor receives compensatory damages for the benefaction, the benefactor receives no damages for ancillary activities that increase its value to the beneficiary, so he has socially deficient incentives for ancillary activities. The beneficiary, however, internalizes the benefits from her activities, so she has incentives for socially efficient activities.

#### F. SUMMARY

Table 2 summarizes the incentive effects of all eight liability rules. The rules are arranged to show the symmetry between liability for harm and for benefits. As the table shows, the symmetry is not perfect, especially when it comes to Rules H3 (negligent liability for harm with compensatory damages) and B3 (reasonable restitution for benefits with disgorgement damages).

The efficiency of the different rules depends crucially on the information available to the parties involved, as well as to courts applying the different rules. Because of space constraints we cannot analyze the informational hurdles systematically. Instead, we refer to them sporadically in the next Parts of this Article, whenever necessary.

TABLE 2. Incentive Effects of Eight Damages Rules

<i>Rule</i>	<i>Actor's precaution or benefaction</i>	<i>Actor's activity</i>	<i>Reactor's precaution or benefaction</i>	<i>Reactor's activity</i>
H1: strict liability + compensate B1: strict restitution + disgorge	internalize	internalize	externalize	externalize
H2: strict liability + disgorge B2: strict restitution + compensate	deter/ encourage	externalize	irrelevant <sup>a</sup> / internalize	irrelevant <sup>a</sup> / internalize
H3: negligence + compensate B3: reasonable + disgorge	internalize	<b>externalize (harm)/ internalize (benefit)</b>	<b>internalize (harm)/ externalize (benefit)</b>	<b>internalize (harm)/ externalize (benefit)</b>
H4: negligence + disgorge B4: reasonable + compensate	deter/ encourage	externalize	internalize	internalize

*Note:* <sup>a</sup> With harm cases, internalization by the victim is irrelevant, since under Rule H2 the injurer creates no risks.

## II. TORTS AND RESTITUTION—A CONVERGENCE?

Having explained economic convergence in harms and benefits, we will now explain legal divergence. With zero transaction costs, legal rules do not affect efficiency, as explained by Professor Ronald Coase.<sup>18</sup> With few parties, however, transaction costs are typically low but not zero. When transaction costs are low, the law often encourages the parties to negotiate a contract rather than act unilaterally. In harm cases with two pre-identified parties, as in conversion and trespass cases, the injurer is not allowed to act unilaterally against the victim and pay for the harm done. Instead, the law deters the harm, notably through injunctions against trespass or conversion and disgorgement of benefits,<sup>19</sup> thereby channeling the parties into negotiations. The same is true with benefits. The benefactor is not allowed

18. See R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960).

19. See DAN B. DOBBS ET AL., *THE LAW OF TORTS* §§ 56, 73, 687 (2d ed. 2011).

to paint the beneficiary's fence and charge her accordingly. Instead, the law deters the benefactor from conferring the unrequested benefit by denying him any recovery, thereby channeling the parties into negotiations.<sup>20</sup>

Whereas the legal rule is symmetrical with respect to harm and benefits in these low transaction cost cases, it is asymmetrical in high transaction cost cases. Assume that high transaction costs preclude market transactions in harm and benefit cases, so the law cannot successfully channel the parties to negotiate. Without negotiations, it seems that injurers and benefactors alike should be allowed to act unilaterally, and the law should make them internalize the consequences or else deter them from behaving inefficiently (in harm cases) or encourage them to behave efficiently (in benefit cases). In fact, however, the law allows the unilateral imposition of harms and often requires internalization by the injurer, whereas the law allows the unilateral conferral of benefits, but does not require internalization by the benefactor, and seldom requires reimbursing her costs.<sup>21</sup>

Can efficiency explain the law's divergent treatment of harms and benefits?<sup>22</sup> One possible reason could be difficulties in measuring benefits. Thus, in harm cases the plaintiff-victim possesses information about the negative externalities (the harms), while in benefit cases the defendant-beneficiary possesses information about the positive externalities (the benefits). Perhaps courts can measure the former easier than the latter so that courts allow recovery more readily for harms than for benefits.<sup>23</sup>

This argument, however, cannot survive scrutiny. Calculating the harm to the victim of an injury is not systematically easier for the court than calculating the benefit to the beneficiary. Differences in the difficulty of measuring damages seem too random and small to explain systematic and large differences in the scope of liability for harms and benefits.<sup>24</sup>

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20. See RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT ch. 3, intro. (AM. LAW INST. 2011) (explaining that a person who seeks compensation for benefits intentionally conferred needs to show that the benefits were requested and that the recipient has agreed to pay for them).

21. See ROBERT D. COOTER & ARIEL PORAT, GETTING INCENTIVES RIGHT: IMPROVING TORTS, CONTRACTS, AND RESTITUTION 151–64 (2014) (providing a full account of the categories of cases in which the prevailing law of restitution imposes liability for the conferral of unrequested benefits); Porat, *supra* note 2, at 195–98 (same). For the argument to the contrary, see generally Saul Levmore, *Explaining Restitution*, 71 VA. L. REV. 65 (1985) (justifying the law's different approaches to harm and benefit cases).

22. See *supra* text accompanying note 2.

23. See Richard A. Epstein, *Positive and Negative Externalities in Real Estate Development*, 102 MINN. L. REV. 1493, 1512–13 (2018) (arguing that the differences in people's location, view, and preferences make it hard to treat all individuals as though they were the same).

24. See Porat, *supra* note 2, at 210–13 (suggesting the various possible methods of mitigating the risk of overvaluation).

A more plausible reason for the systematic legal differences is enforcement and litigation costs. If the legal rule for harms is negligence then most injurers do not behave negligently, so few victims can claim damages.<sup>25</sup> In contrast, if the legal rule for benefits is strict restitution or reasonable restitution, many benefactors can claim damages. Thus, we expect many claims by benefactors in the few types of cases where restitution law allows recovery.<sup>26</sup> Perhaps restitution law restricts recovery to a few types of cases in order to avoid a flood of claims.

This explanation of the difference between harm and benefit cases works best when small and unequal benefits accrue to many beneficiaries. However, this difference cannot explain the large asymmetry between torts and restitution. It works poorly when uniformly high benefits accrue to a small group of well-defined beneficiaries.<sup>27</sup> Also, the assertion that harms induce fewer claims applies to a negligence rule but not to a rule of strict liability where many victims of harm can claim damages.<sup>28</sup>

The next reason, in our view, is convincing and more complete. It concerns the difference in costs of market transactions in harm and benefit cases. In a typical harm case with high transaction costs, there is one injurer and many victims. If the law prevents injurers from acting unilaterally without first obtaining consent from the victims, each victim will have veto power over the risky activity. Each victim has an incentive to hold out for a high payment as a condition for consenting. Thus, holdouts will block many socially efficient activities that risk harm to multiple victims.<sup>29</sup> Therefore, the law allows injurers to act unilaterally. However, it also forces them to compensate the victims for the resulting harm or wrongful harm. With permission to act unilaterally, but with no duty to compensate, injurers would not restrain their injurious activities.<sup>30</sup>

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25. See *infra* text accompanying note 28.

26. See generally Giuseppe Dari-Mattiacci, *Negative Liability*, 38 J. LEGAL STUD. 21 (2009) (arguing that, under a rule of negligence, it is sufficient for the law to have one sanction at its disposal since in equilibrium, there is no negligence and the sanction is never implemented; in contrast, arguing that, in benefit cases, the subsidy should be implemented again and again whenever a benefit is created by one person for another person).

27. See COOTER & PORAT, *supra* note 21, at 161 (“[W]hen the group of recipients is tightly defined and the benefits uniformly high . . . enforcement costs should not preclude restitution.”).

28. See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 65 (1987).

29. Porat, *supra* note 2, at 201 (“[A]llowing injurers to force transactions on victims by unilaterally creating risks for them and then bearing all or a substantial proportion of the costs associated with those risks is essential for the occurrence of many important activities in modern society.” (emphasis omitted)).

30. *But see* Epstein, *supra* note 23, at 1512–13. Professor Richard Epstein argues that occasionally injurers are constrained by the risks their injurious activities impose on themselves, while such a constraint is absent when benefactors create benefits for which they are compensated by the beneficiaries.

Switching from harms to benefits, in a typical benefit case with high transaction costs, there is one benefactor and many beneficiaries. If the law allows the benefactor to act unilaterally without requiring the beneficiaries to pay damages to the benefactor, each beneficiary will have an incentive to free ride on the contributions of others. The free-riding problem will reduce the supply of benefits but not block them.<sup>31</sup> To illustrate, in cases represented by Example 2 (Constructing a Garden), if three out of the five neighbors would share in the costs of construction, even with no liability imposed on the other two (free-riding) neighbors, the garden might be constructed.

As explained, the typical transaction costs in harm cases are holdout, while the typical transaction costs in benefit cases are free riding. Free riding on benefits is less socially destructive than holding out consent to risky activities. The greater legal scope of liability for harms relative to liability for benefits is explained by the greater destructiveness of withholding consent to risky activities compared to free riding on benefits. This fact could provide an explanation for why there are broad rights in the law for the unilateral creation of harms coupled with their internalization and broad rights for the unilateral creation of benefits but only rarely coupled with liability on the part of the beneficiaries.

In our view, however, the law would better promote social welfare with a broader liability for unrequested benefits. In Part I we explained how different liability rules could be applied to harm and benefit cases. In the next Part we apply those rules to the main categories of cases of torts and restitution and show how, by allowing broader liability for unrequested benefits, the asymmetry between torts and restitution should be narrowed.

### III. APPLICATIONS: COMPENSATE OR DISGORGE?

In this Part we analyze the main types of cases that pose two questions: (1) Should the law compensate or disgorge? And (2) should liability depend on reasonableness? The first type of cases involves accidental harms, and the second type involves benefits, either accidental or intentional. For all cases, we assume that transaction costs preclude contracts.

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*Id.* We disagree: first, very often injurers do not impose risk on themselves, and even if they do, just bearing their self-risk is not deterring enough; second, there is no reason for benefactors to create excessive benefits as long as they are compensated for the costs they incurred rather than the benefits they conferred.

31. Porat, *supra* note 2, at 201–02.

## A. ACCIDENTAL HARMS

The most common harm cases that tort law deals with are accidents. Under current law, liability for accidental harms is either strict or conditioned on the injurer's negligence. If liable, the injurer must compensate the victim for the resulting harm, which implies the internalization of harms (either Rule H1 or H3). The choice between strict liability and negligence rules has been thoroughly discussed in law and economics (and other) literature.<sup>32</sup> In contrast, the choice between compensatory and disgorgement damages for accidents went unanalyzed until a few years ago. Is disgorgement of the injurer's gains from omitting precaution an adequate remedy? The following example, discussed in the Introduction of this Article (with a small adjustment relating to the probability of infliction of harm) and borrowed from a previous article,<sup>33</sup> illustrates the dilemma whether to allow disgorgement damages for accidents.

*Example 1A. Omitting a Test.* Doctor in a public hospital performs a beneficial procedure for a patient. In addition to the benefit, the procedure risks harmful side effects. A test that costs Doctor 20 can prevent the harmful side effects. Omitting the test causes harm of 1,000 to the patient in 10 percent of cases. Doctor omits the test and the harm materializes.

In this example, courts apply Rule H3 (negligent liability for harm with compensatory damages) and award damages of 1,000. With this rule doctors have efficient incentives to take care, so the doctor in Example 1A will administer the test as efficiency requires. Theoretically, the law could adopt instead Rule H1: strict liability for harms. With this rule, the doctor in Example 1A will also administer the test.

Consider now the possibility of applying the rules of disgorgement damages for accidents (DDA) to Example 1A: either Rule H4 (a negligence rule) or Rule H2 (a strict liability rule). Under Rule H4 Doctor's liability is 200, rather than 1,000.<sup>34</sup> With DDA (plus epsilon), the doctor will administer the test as efficiency requires. Liability for 200 instead of 1,000 might provide doctors with incentives to increase their activity level. On many occasions this is a shortcoming of Rule H4, but with doctors' liability it might be a virtue, since doctoring produces positive externalities.<sup>35</sup> Also, if

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32. See, e.g., Steven Shavell, *Strict Liability Versus Negligence*, 9 J. LEGAL STUD. 1, 1 (1980) (comparing the incentive effects of strict liability and negligence rules); see also LANDES & POSNER, *supra* note 28, at 54–84.

33. Cooter & Porat, *supra* note 17, at 250–51.

34. Such a liability rule would be economically equivalent to disgorging the gains to the doctor from omitting the test regardless of whether harm materializes or not.

35. See Robert D. Cooter & Ariel Porat, *Liability Externalities and Mandatory Choices: Should*

doctors are subject to chilling effects and as a result are overdeterred or practice defensive medicine, liability of 200 rather than 1,000 would ameliorate the problem.<sup>36</sup>

Rule H4 would also improve victims' incentives to take precautions and reduce their activity levels. In Example 1A, liability of 200 (undercompensation) would provide patients with stronger incentives than liability of 1,000 to take precautions and reduce their risks.<sup>37</sup>

In order to apply Rule H4, courts need information about the costs of untaken precautions and the probability of harm if precautions are not taken.<sup>38</sup> In Example 1A this information might be available to courts. In other cases, it is not available and the compensatory negligence rule (H3) might be easier to implement.

Returning to accidental harm, suppose now that liability for disgorgement damages is strict (Rule H2) rather than conditioned upon the doctor's negligence (Rule H4). In accident cases, would strict liability with disgorgement damages (Rule H2) have advantages over strict liability with compensatory damages (Rule H1)? Under Rule H2, the injurer's liability is the cost of untaken precautions divided by the probability of harm. Thus, assume that the doctor could have reduced the risk to the patient to zero by taking tests that cost 200 rather than 20. Under Rule H2, if Doctor omits the tests and harm materializes, Doctor's liability would be 2,000 (which is twice the harm caused to the patient). As precautions are taken, Doctor's liability continues to fall even when precaution exceeds the efficient level. Consequently, there are excessive incentives to take care. Indeed, Doctor has an incentive to take care up to the accident-eliminating level of care, which is 200 and reduces the patient's risk by only 100. Rule H2 is therefore inefficient: it provides excessive precautions for injurers to take care and reduce their activity level. It also encourages victims not to take care, since injurers will eliminate any risk they create (assuming no contributory or comparative negligence defense is available).

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*Doctors Pay Less?*, 1 J. TORT L. 1, 1 (2006) (arguing for reducing liability of doctors because of the positive externalities they create).

36. See *id.* at 6 ("For activities with positive externalities like some medical specialties, incentives are optimal when damages are less than 100% of the victim's actual harm.")

37. See Cooter & Porat, *supra* note 17, at 261–62 (arguing that under DDA, victims internalize more of the costs of their activities so they engage in less activity, and their activity levels are more efficient).

38. To apply this rule, courts must know the probability that harm will occur, but it is not necessary to establish causation between omitting the test and the harm suffered by the patient. See *id.* at 267.

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## B. RESCUE CASES

### 1. Reasonable Restitution for Benefits

The rule that benefactors who conferred unrequested benefits on beneficiaries are not entitled to any compensation from them has a few exceptions. One is rescue cases, including cases in which the benefactor protected the recipient's life, health, property, or other economic interest when the latter's timely consent could not be obtained. Timely consent is impossible in emergencies. Under certain conditions, the law allows the benefactor to recover a reasonable charge for beneficial actions.<sup>39</sup>

Consider the following case:

*Example 3. Rescuing a Car.* During a storm Rescuer, a bystander, observes Recuee's car being swept into the river. Getting Recuee's consent is impractical, so Rescuer takes reasonable steps and saves the car. Rescuer's efforts cost 20, while the value of the car which was saved is 100. The probability of the rescue's success at the time it took place was 100 percent.

Under current law Rescuer is entitled to compensation of 20, which equals the reasonable costs he spent for saving the car (Rule B4).<sup>40</sup> Under an alternative rule, Rescuer would be entitled to disgorgement of 100 (the value of the car), given his reasonable efforts in rescuing the car (Rule B3).

Under Rule B4 Rescuer has efficient incentives to save the car because he would be able to recover his cost of 20. Alternatively, if precautions had cost, say, 200, so that the rescue had been inefficient, Rescuer would not have saved the car because he could not have recovered more than reasonable costs.

Note that in Example 3 the probability of the success of the rescue is 100 percent. If instead it were less than 100 percent, Rule B4 would allow Rescuer to recover more than his costs. Specifically, he would recover his costs divided by the probability of success. Rule B4 deviates from prevailing law under which the magnitude of Rescuer's damages does not depend on

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39. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT §§ 20–21 (AM. LAW INST. 2011) (discussing situations of protection of another's life or health and protection of another's property, in which the law allows the benefactor to recover a reasonable charge for his beneficial actions); 2 GEORGE E. PALMER, THE LAW OF RESTITUTION 374–83 (1st ed. 1978). *See generally* Hanoch Dagan, *In Defense of the Good Samaritan*, 97 MICH. L. REV. 1152 (1999) (analyzing rescue cases and supporting a broad duty of restitution).

40. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT § 21(2) (AM. LAW INST. 2011) (“Unjust enrichment under this section is measured by the loss avoided or by a reasonable charge for the services provided, whichever is less.”).

the probability of success.<sup>41</sup> (We do not consider another possibility with equivalent incentives: the rescuer recovers his costs whenever he attempts a rescue, regardless of whether the attempt succeeds or fails; the parallel alternative in harm cases is to impose liability for expected rather than materialized harm.)<sup>42</sup>

Rescuer, however, under Rule B4, does not have efficient incentives for his ancillary activity of rescue since he gains nothing from saving the car. Thus, if Rescuer is a professional rescuer, who could invest in equipment for rescue before any specific rescue becomes concrete or increase his rescuing activity by, say, making intensive searches to find people in need of a rescue, with only compensation for his reasonable efforts, he would not do any of those activities.

What about Rescuer's incentives? When Rescuer makes efficient efforts to rescue, Rescuer internalizes the increases in the rescue's worth due to his own actions, so Rescuer has efficient incentives for precautions. Thus, if reasonable efforts by Rescuer will leave the saved car with some harm, and Rescuer could take steps and prevent that harm, Rescuer would take those precautions if they cost less than the expected harm to be saved by them.

Rescuer would also have an efficient activity level. In conducting his activity, Rescuer will take into account that he might need a rescue, and that he would bear the costs of such a rescue (by compensating Rescuer). Internalizing the costs of rescue thus provides him with incentives for an efficient activity level.

Applying Rule B4 requires the court to observe the burden of the rescue, the probability that the benefit materializes, and whether the rescuer's efforts do not exceed the efficient level. This information is often available to courts.

Imagine now that instead of Rule B4 (compensation), courts apply Rule B3 (disgorgement). According to this rule, as long as Rescuer invests efficiently in rescuing, he is entitled to disgorgement damages at the amount of 100 (the car's value). Under this rule, Rescuer's incentives are efficient: he invests in the rescue at the efficient level, which in Example 3 is 20, but would not invest 200. Furthermore, Rescuer's ancillary activity (investing in equipment and conducting searches for people in need of rescue) is also

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41. *See id.*

42. *See* ARIEL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 103–10 (2001) (discussing the possibility of imposing liability for creating risk and arguing that this substitution of the traditional damage-based liability might provide the solution for a number of problems that remain unsolved under the prevalent tort law doctrine).

efficient since under Rule B3 Rescuer fully internalizes the benefits of his rescuing activity.

So far it seems that Rule B3 is more efficient than Rule B4. This impression changes once Rescuer's incentives are considered. With Rule B3 (disgorgement), Rescuer has no incentives to take precautions to increase the rescue's value (such as preventing some harm to the car if rescued) since that value would go to the rescuer. Furthermore, he would take excessive precautions to rescue himself to avoid being in need of rescue in the first place and might also take too low of an activity level. The reason for this is that if he is in a need of rescue, he is rescued, but still loses the value which has been rescued instead of just paying for the costs of the rescue (as under Rule B4 (compensation)).

Applying Rule B3 requires the court to observe the value saved and assess whether the rescuer's efforts do not exceed the efficient level. This information is often available to courts.

In sum, while Rule B3 is better than Rule B4 with respect to Rescuer's incentives for his ancillary activity, this rule is much worse with respect to Rescuer's incentives for both his precautions and activity level. Our comparison between the two rules might explain why professional rescuers—such as doctors who provide first aid—are entitled to more than just costs of rescue.<sup>43</sup> By allowing damages higher than costs, professional rescuers' activity levels are improved.

Our discussion in this Section has two policy implications:

First, when Rule B4 (compensation) is applied, Rescuer should recover more than his costs if the rescue's probability of success was less than 100 percent (or alternatively, Rescuer would be allowed to recover his costs regardless of success).

Second, the choice between Rule B4 (compensation) and Rule B3 (disgorgement) should depend on the tradeoff between better incentives for Rescuer's ancillary activity (Rule B3), and better incentives for Rescuer (Rule B4). An amount between compensation and disgorgement might sometimes be a good compromise, as in cases of professional rescuers.

Our recommendations for higher compensation than actual costs, either according to the first or second policy implications above, are limited to

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43. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT §§ 20(1) (AM. LAW INST. 2011) ("A person who performs, supplies, or obtains professional services required for the protection of another's life or health is entitled to restitution from the other as necessary to prevent unjust enrichment, if the circumstances justify the decision to intervene without request.").

cases in which there are no prior relationships or interactions between the parties and manipulation is not plausible. If this is not the case, other considerations should count as well. If Rule B3 (disgorgement) applies, there is a risk that rescuers would put rescuees in peril and then rescue them and gain profits.<sup>44</sup> If Rule B4 (compensation) applies and allows recovery which is higher than actual costs (when probability of success is less than 100 percent), rescuers might also put rescuees in peril, then rescue them, and manipulate the court by underestimating the probability of success.

## 2. Strict Restitution for Benefits

Suppose now that rules of strict restitution for benefits are applied. According to Rule B2 (compensation), Rescuer is entitled to recover any costs, reasonable or not, that he spent on the rescue; according to Rule B1 (disgorgement), Rescuer is entitled to recover disgorgement regardless of the costs he spent on the rescue.

Rule B2 (compensation) provides incentives for rescuers to invest too much in the rescue, since the rescuer is entitled to compensation for all his costs divided by the probability of rescue. Thus, Rescuer is indifferent to all levels of efforts, reasonable or not, and if he is paid a bit more than his costs divided by the probability of rescue, he has excessive incentives to rescue (still, his ancillary activity is deficient for the reasons elaborated on above<sup>45</sup>). Rescuer's incentives are also inefficient: knowing he would pay for rescue beyond reasonable costs, Rescuer would overinvest in rescuing himself or avoiding the need of rescue and might even reduce his activity level. Thus, Rule B2 has no advantages whatsoever.

Rule B1 (disgorgement), in contrast, provides efficient incentives for rescuers with respect to both precautions and ancillary activity. The reason for this is simple: with full internalization of costs and benefits, Rescuer will behave efficiently.

Rule B1, however, is problematic for Rescuer's incentives for the same reason that Rule B3 is problematic:<sup>46</sup> Rescuer knows that when he is in need of a rescue and is rescued, he still loses the value which was rescued instead of paying for the social costs of his rescue. As a result, he would not try to increase the value of the rescue; he would take excessive precautions to

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44. See Saul Levmore, *Waiting for Rescue: An Essay on the Evolution and Incentive Structure of the Law of Affirmative Obligations*, 72 VA. L. REV. 879, 886–87 (1986) (arguing that one of the reasons for the prevailing law not providing large rewards to rescuers is the moral hazard that potential rescuers will create the demand for their own services).

45. See *supra* Section III.A.

46. See *supra* Section III.B.1.

rescue himself or avoid the need for rescue and would reduce his activity level.

### C. COMMON FUNDS AND ANALOGOUS CASES

Another category of cases in which the law allows benefactors to recover for unrequested benefits is “common funds.” Common funds are monies obtained through legal proceedings initiated by one party (or the party’s attorney) against which others can assert claims.<sup>47</sup> Under certain conditions, the initiator of the legal proceedings who incurred expenses to benefit a group of people can collect an equal share from each of them, even if they refused to back these efforts at the outset.<sup>48</sup> An illustration is the case of an heir who initiates legal proceedings resulting in an increase in the value of the estate, to the benefit of the other heirs.<sup>49</sup> Liability in common fund cases is aimed at overcoming the free-riding problem which might hinder the preservation or creation of a common fund; without legal intervention each beneficiary would hope to free ride on other beneficiaries’ efforts, so no one would act to preserve or create the common fund.

In previous publications<sup>50</sup> we argued that efficiency considerations justify expanding the duty of restitution beyond common fund cases to require compensating benefactors for unrequested benefits when the following conditions are met: (1) high transaction costs preclude reaching an agreement for payment of benefits between the benefactor and beneficiaries; (2) risk of overvaluation is low; (3) enforcement costs do not exceed the benefit of the expanded duty of restitution; (4) the benefits will not be created either by other state action or by market mechanisms; and (5) the beneficial activity does not have offsetting welfare-reducing effects.<sup>51</sup>

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47. John P. Dawson, *Lawyers and Involuntary Clients: Attorney Fees from Funds*, 87 HARV. L. REV. 1597, 1603–12 (1974) (presenting the development of the “common fund” mechanism); Levmore, *supra* note 21, at 95–99 (presenting attorney-creators of common funds under prevailing law).

48. RESTATEMENT (THIRD) OF RESTITUTION & UNJUST ENRICHMENT § 30(2)(b) (AM LAW INST. 2011) (allowing recovery in cases where “the recipient obtains a benefit in money,” thereby substantially broadening the common-funds category of cases); *id.* § 29 (setting out specific conditions under which a person who has incurred expenses or rendered services to preserve or create a “fund” in which others are interested may require the others, in the absence of contract, “to contribute to the reasonable and necessary expense of securing the common fund for their benefit, in proportion to their respective interests therein, as necessary to prevent unjust enrichment”).

49. For examples of suits brought by an heir against his or her co-heirs, see *id.* § 29 illus. 23–25; PALMER, *supra* note 39, at 428–30.

50. Porat, *supra* note 2, at 194.

51. Another condition requires the finding that the beneficiary’s autonomy interest is not unduly compromised, a criterion not strictly relevant to the efficiency analysis we pursue here. For discussion on the beneficiary’s autonomy interest, see Porat, *supra* note 2, at 215–17.

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The main application for this expanded duty of restitution is the private production of public goods when, absent legal intervention, free riding and other transaction costs bar their production.

Consider the following example discussed in the Introduction:<sup>52</sup>

*Example 2: Constructing a Garden.* Builder considers constructing a garden on her land that will increase the market value of her house and five Neighbors' houses. The garden costs Builder 15. The increase in the value of Builder's house is 10, and the increase in the value of each Neighbor's house is 2. The benefits are a public good: Builder cannot prevent Neighbors from enjoying the garden's benefits once it is created. Since each Neighbor knows that her benefit from the public good does not depend on her contribution to its costs, she contributes nothing, hoping that Builder and the other Neighbors will pay for the garden. However, since all Neighbors reason in the same way, nobody pays. Nevertheless, Builder constructs the garden, conferring a total benefit to Neighbors of 10.

Legal intervention under restitution law could take several forms, including the adaptation of any of Rules B1–B4. To avoid repetition, we will consider two rules only: Rule B4 (compensating for reasonable costs) and Rule B3 (disgorging the benefits accrued due to the benefactor's reasonable efforts).

Under Rule B4 (compensation) Builder should recover costs of 7.5 from Neighbors (1.5 from each) because they are reasonable. Consequently, she has efficient incentives to construct the garden.<sup>53</sup>

Things become more complicated if Builder could affect the distribution of the benefits between her and Neighbors in unverifiable ways: she is likely to construct the garden in such a way that more benefits go to her rather than to Neighbors, even if such construction is inefficient. We assume that such behavior would be verifiable and if she does so it would adversely affect her amount of recovery from Neighbors.

Also, Builder's activity level might be inefficient. To see why, imagine that Builder is in the business of developing residential areas and creating public goods, such as gardens. She needs to make investments in locating the right places for development. Since she does not internalize the full benefits she creates, she will invest inefficiently in locating the right places. In

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52. For discussion of a similar example, see Porat, *supra* note 2, at 191.

53. Since Builder creates at the same time benefits for herself and for others, also under Rule B2 (strict restitution for benefits with compensatory damages), Builder has efficient incentives to construct the garden as long as she is compensated for a relative share of her costs. See *supra* note 12 and accompanying text.

contrast, Rule B3 (disgorgement) would provide Builder with efficient incentives for both constructing the garden efficiently and for her activity level. Therefore, if it were just for Builder's incentives, Rule B3 would be more efficient than Rule B4.

But when it comes to Neighbors' incentives, the efficiency effects of the two rules reverse: Rule B4 (compensation), rather than Rule B3 (disgorgement), is the one providing Neighbors with more efficient incentives.

To see why, imagine that Neighbors can take steps and enhance the benefits of the garden for them (say, by constructing the windows of their homes to face the garden). Also, new neighbors could come and build homes in the area. If Rule B3 (disgorgement) applies, Neighbors should disgorge all the benefits created by Builder, so they would not incur costs in constructing windows to face the garden, and some new neighbors that would have come to the neighborhood if they had been allowed to retain at least some of the garden's benefits would not come.

Things would be different under Rule B4 (compensation). Under this rule, Neighbors pay just for the costs of creating the benefits for them. Given this, they will take efficient measures to enhance their benefits, since those benefits will be fully internalized by them. Also, Neighbors' decisions whether to live in the area will be efficient.<sup>54</sup>

To summarize, the choice between the two rules depends on whether Builder's activity level incentives are less or more important than Neighbors' incentives. Thus, if Builder is a professional in the business of developing residential areas, the optimal solution would be more than just covering costs. A compromise between the two rules might be to allow Builder a recovery somewhere between compensation and disgorgement.

Note that difficulties in verifying the benefits and the probability of their creation (in cases of probabilistic benefits), and whether Builder's efforts are lower or higher than the efficient level might change the conclusion and affect the choice between the two rules.

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54. Note that Neighbors would have efficient incentives to enhance the value of living near the garden if they paid Builder a fixed amount, unrelated to their actual benefits from the garden. If this fixed amount were set at the level of Neighbors' expected benefits from the garden given an efficient level of efforts to enhance their benefits from the garden, both Builder and Neighbors would have efficient incentives to increase social welfare. Still, Neighbors' activity levels (their incentive to move to the area) would be too low.

## CONCLUSION

This Article developed eight liability rules for harm and benefit cases and pointed out the symmetry between the rules relating to harms and the rules relating to benefits. This Article also provided an explanation for the legal divergence between tort law and restitution law and made the claim that the gap between these two fields should be narrowed. Finally, this Article applied the eight rules to the main categories of harm and benefit cases and appraised their advantages and disadvantages. The simplest model of a liability rule, which this Article uses (most of the time), assumes two actors (injurer and victim, or benefactor and beneficiary) and two actions (precaution and activity level, or benefaction and ancillary activity level). One future extension of our model would increase the number of actors and actions. Instead of two-by-two, the extension would encompass collective choice.<sup>55</sup>

As noted, this Article assumes that transaction costs preclude bargaining among the parties. Consequently, this Article is framed in terms of liability rules in the law of torts and restitution. Another future extension would relax this assumption and allow bargaining among the parties. Instead of framing the eight liability rules as mandatory rules of torts or restitution, the future extension would frame them as alternative contracts. We hope to consider circumstances in which parties can contract into each of the eight liability rules.

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55. See, e.g., Ariel Porat & Robert E. Scott, *Can Restitution Save Fragile Spiderless Networks?*, 8 HARV. BUS. L. REV. 1, 5 (2018) (developing an informal model that specifies rights of restitution for network members).