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## ARTICLES

### Tortfest

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*This Article argues that mass torts involving multiple tortfeasors can be welfare enhancing. It begins by investigating the role of “dilution of liability”—a phenomenon that has been condemned for its role in facilitating accidents. According to the literature, in alternative care situations where the damage to the victim is constant, dilution of liability leads to inefficient precaution levels and consequently to more (bad) accidents. The Article deviates from this literature and shows that dilution of liability can be welfare enhancing. This is so even in the quintessential case where dilution of liability has been denounced. The Article further shows that an activity that is socially undesirable and should give rise to liability can become desirable as the number of tortfeasors increases. Put differently, it shows that in some situations an activity that would and should be condemned if conducted by one tortfeasor may become socially desirable if done by many. The Article analyzes the conditions under which such desirable “tortfests” occur, and it has important implications to the salience literature. After investigating the impact of tortfests on actors’ precaution and activity levels, the Article examines mechanisms that would incentivize actors, in certain situations, to join a group wrongdoing or combine with others to initiate one. The result, it is argued, could increase societal welfare.*

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## INTRODUCTION

This Article argues that mass torts involving multiple tortfeasors can be welfare enhancing. It begins by investigating the role of “dilution of liability”—a phenomenon that has been condemned for its role in facilitating wrongdoing. Dilution of liability often occurs when multiple tortfeasors engage in a wrongful activity that results in an indivisible harm. Because liability is spread among the tortfeasors, the incentive to take care is reduced as the number of tortfeasors increases. If liability is imposed on a large enough number of tortfeasors, the expected liability of each tortfeasor may decrease to the point where no one would take care. The result, it is argued, is a net social loss.

The following example is illustrative. Assume that four bystanders, A, B, C, and D, can each avoid an expected harm of \$100 to the victim at a total cost of \$60. Taking precaution is socially desirable ( $60 < 100$ ). But even if all had a duty to furnish aid to the victim, *none* would. Because the total damage is spread among the bystanders such that each expects to be liable

for only a fraction of the damage, here one-fourth (or \$25),<sup>1</sup> taking precaution is just bad business. It simply does not make any sense to invest \$60 in precaution to avoid an expected liability of \$25. Each bystander would prefer to do nothing and face an expected judgment of \$25 rather than invest ex ante \$60 in precaution. Of course, if there were more bystanders on whom the law imposed a duty, the incentive to take precaution would decline even further. In the case of fifty bystanders, for example, none would invest in precaution more than \$2 (100/50). Or consider a situation where a gas supplier and a restaurant owner could have each avoided a \$100 damage to a patron if the former invested \$60 in a detection device or the latter purchased a \$70 fire extinguisher. Here, both tortfeasors are liable.<sup>2</sup> Each had a duty that was breached, resulting in a harm to the victim. Yet, neither will take precaution because the cost of precaution outweighs the expected judgment (60, 70 > 100/2).

Focusing on similar examples, the prior literature concluded that tort law imposes liability on one or a few salient tortfeasors in order to avoid the dilution of liability.<sup>3</sup> The salient tortfeasor may be the one who can avoid the accident at the lowest cost (for example, the gas supplier in the restaurant example). Or, it may be someone who is likely to be the best risk avoider (perhaps a bystander who has a “special relationship” with the victim). But the choice can be strictly arbitrary. In the examples above, imposing liability on the blue-eyed bystander or the tallest one could be as efficient.<sup>4</sup> Being solely responsible for the entire

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<sup>1</sup> With some simplifying assumptions, this result is independent of the apportionment regime. See J. Shahar Dillbary, *Apportioning Liability behind a Veil of Uncertainty*, 62 *Hastings L J* 1729, 1756–69 (2011).

<sup>2</sup> See William M. Landes and Richard A. Posner, *Joint and Multiple Tortfeasors: An Economic Analysis*, 9 *J Legal Stud* 517, 526–28 (1980). Note that efficiency requires that only one of the two, the lowest cost avoider (here the gas supplier), take care. This result can be achieved by holding both initially liable, but then using the doctrine of indemnity to shift the entire burden to the gas supplier. *Id.* at 526–27. See also text accompanying notes 20–24. A different approach would be to exempt the restaurant owner, the higher-cost avoider, from liability altogether.

<sup>3</sup> See, for example, Landes and Posner, 9 *J Legal Stud* at 526 (cited in note 2); Saul Levmore, *Waiting for Rescue: An Essay on the Evolution and Incentive Structure of the Law of Affirmative Obligations*, 72 *Va L Rev* 879, 937–38 (1986); Alon Harel and Assaf Jacob, *An Economic Rationale for the Legal Treatment of Omissions in Tort Law: The Principle of Salience*, 3 *Theoretical Inq L* 413, 414, 422 (2002); Assaf Jacob, *Dilution of Liability and Multiple Tortfeasors in the Context of Liability for Unrequested Precautions*, 108 *Mich L Rev First Impressions* 12, 13 (2009). See also Part I.

<sup>4</sup> See Harel and Jacob, 3 *Theoretical Inq L* at 429 (cited in note 3). The solution is imperfect. The “tallest person” criterion may lead to inefficiency if it is not clear who is the tallest and therefore who should take care. The “blue eye” criterion is easier in this

damage, the chosen bystander will invest \$60 in precaution to avoid paying \$100 in damages. The result may be hard to justify on moral grounds since all actors are assumed to be at fault. It may also contradict notions of corrective justice as the salience solution exempts all but one tortfeasor from liability based on an arbitrary criterion. But, the argument goes, it can be justified on economic grounds.<sup>5</sup>

The focus of the prior literature was on alternative care situations where any party could avoid the harm (for example, any of the bystanders could save the victim). In these situations, dilution of liability was condemned as resulting in inefficient precaution levels. This Article shows that dilution of liability is not just a “problem”<sup>6</sup> that must be remedied. Rather, it argues that dilution of liability can be socially desirable. Notably missing from the literature is an analysis of the impact of dilution of liability on beneficial activities. The bystanders and restaurant examples are situations where, if the accident occurs, society would undoubtedly be worse off. These are “bad” accidents in that they do not entail any benefits. They only impose a cost. Moreover, in these examples none of the actors was interested in causing the accident. The bystanders, the gas supplier, and the restaurant owner would have all preferred to avoid the accident and the resulting payment to the victim. They would have avoided the accident if their liability was not diluted or if they could have entered an agreement to share the cost of precaution.<sup>7</sup>

But not all accidents are the same. Some are socially desirable. Certain activities are so indispensable that, although they come at some cost to others, they are considered necessary evils that a modern society must accept. Power plant facilities, farming operations, sewer systems, landfills, gas stations, cellular

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respect (each bystander likely knows the color of her eyes), but it may lead to over-investment in precaution (if more than one person has blue eyes) or under-investment (if no one does). Even if the arbitrary criterion serves as an effective anti-dilution mechanism by singling out only one tortfeasor, it may not be optimal if the chosen one is not the best risk avoider.

<sup>5</sup> Id. See also text accompanying note 31. This is especially the case when the best risk avoider cannot be identified or where each of the agents is the best risk avoider as is the case in the bystanders example.

<sup>6</sup> Jacob, 108 Mich L Rev First Impressions at 14 (cited in note 3).

<sup>7</sup> In the bystanders example, if transaction costs were not prohibitive (and assuming all were liable in the eyes of the law), the four would agree to share the \$60 cost of precaution, rather than collectively be subject to an expected judgment of \$100.

phone towers, and cement factories are but a few examples.<sup>8</sup> Other activities confer benefits as well as costs that can be avoided, but as the number of actors increases, taking care may not be justified.

Consider, for example, a situation where each camper in a heavily forested area values camping at \$50, and that each must invest \$40 in precaution to avoid a fire that would destroy the victim's \$90 cabin.<sup>9</sup> Assume further that if a number of campers fail to take care, the several fires would merge and destroy the cabin together. If one camper is on the premises, she would take care and she should ( $40 < 90$ ). With two campers, the expected liability each faces is much smaller, \$45 ( $90/2$ ), but the incentive to take care is still strong. Each would invest \$40 to avoid an expected judgment of \$45 and would realize a net expected gain of \$10 ( $50 - 40$ ). But if three campers are on the premises (and each believes or knows that the others or even just a large enough number of campers are present), none would take care, nor should they! Note that camping is still socially desirable because the total benefits from the activity outweigh the cost ( $50 \times 3 > 90$ ). Taking care, however, is not. It simply does not make sense to require each camper to invest \$40 up to a total of \$120 ( $40 \times 3$ ) to avoid damaging a \$90 cabin.

Dilution of liability here is the cure to what would otherwise be an over-investment in precaution. In the first step, liability is imposed on an individual cost-benefit analysis. Here, each camper who did not take care will be found liable because the cost of precaution is less than the expected harm to the victim. Then, as a second step, liability is diluted exactly at the point where the total cost of precaution would outweigh the benefit. Dilution of liability thus serves here as a sorting mechanism to distinguish between accidents that are socially net beneficial and those that are not. It incentivizes actors to avoid inefficient

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<sup>8</sup> See Restatement (Second) of Torts § 291, comment e (1965); *id.* at § 292, comment a (“The operation of railways and other public utilities, no matter how carefully carried on, produces accidents which kill or harm many people but the risk involved in the operation is more than counterbalanced by the service which they render the public.”); *id.* at § 822, comment g; *id.* at § 826, comments a, b, f (“In the case of a cement factory polluting the air with dust, the utility may be reflected in society’s need for building materials.”); *Loose v Buchanan*, 51 NY 476, 484 (1873) (after noting that members of society are compelled to give up many of their rights, the court explains that “[w]e must have factories, machinery, dams, canals and railroads”).

<sup>9</sup> The example is based on Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 27, comment a, illustration 1 (2010), and Restatement (Second) of Torts § 433A, comment i, illustrations 14–15.

accidents (in the case of one or two campers) but engage in cost-justified activities. This sorting mechanism comes at a low cost. The courts do not need to engage in the complicated task of measuring the total benefits from the actors' activity and the aggregate cost of precautions if care is taken. Nor do the courts need to identify the point where precaution should not be taken. Instead, the courts simply need to apply traditional tort theory to determine the liability of each tortfeasor based on an individual analysis—a task they perform regularly. The decisions to operate and to take care (and the risks that accompany these decisions) are then shifted to the actors themselves.

By focusing on such valuable activities, this Article shows that dilution of liability can serve a different role. Not only can it reduce the incentives of existing actors to take care, but in some situations it may even *incentivize* actors to join others in committing a wrongdoing—the Article uses the term “tortfest” to refer to such situations. What the prior literature missed is that dilution of liability may result in a tortfest, and that the tortfest can be socially desirable. Moreover, the Article shows that an activity that may be socially harmful if conducted by few can become desirable as the number of tortfeasors increases. Thus, the Article shows that in some situations an activity that should be condemned if conducted by one or a few tortfeasors may become socially and economically justifiable if conducted by many.

The rest of the Article proceeds as follows. Part I begins with a review of the prior literature. It shows that dilution of liability has been described as a concern mainly in situations (1) of alternative care where the entire harm can be avoided by any of the tortfeasors and (2) where the damage does not increase with the number of tortfeasors. It reveals that the analysis often ignored the gains to the tortfeasors and was doctrine specific, focusing on elements such as duty, apportionment rules, and defenses such as contributory negligence. Importantly, dilution of liability has been described as a problem that must be remedied: the problem is inefficient precaution levels. When liability is diluted, the argument goes, often too little or too much care is taken. The solution is described as an anti-dilution mechanism that singles out and imposes liability on one or a few salient tortfeasors.

The focus of the literature has been both too narrow and too broad. It is too narrow because dilution of liability is *not* limited to alternative care situations, nor is it necessary for the damage to be constant. The literature has been also too narrow because

dilution of liability is not always a “problem” that must be remedied. In deviation from the prior literature, Part II shows that dilution of liability can increase welfare by facilitating a tortfest that positively impacts *activity* levels. This is so even in the archetypical case—alternative care situations where the damage is constant—where dilution of liability has been denounced.

Specifically, Part II identifies two types of tortfests. The first type, discussed in Part II.A, is that of simultaneous tortfests. These are tortfests where a number of actors engage in a damaging activity at the same time. Part II.A shows that in simultaneous tortfests dilution of liability can increase welfare by ameliorating a coordination problem between tortfeasors, thereby allowing a harmful yet desirable activity to take place. In doing so, Part II.A also contributes to the literature that seeks to explain why the law imposes strict liability in nuisance cases where the parties are clearly not at fault. In many cases, it is clear that the injurers took care, even the utmost care, by employing the best and most recent methods of operation. Yet these injurers are nevertheless subject to (strict) liability. Traditional theory explains the need to impose liability (often referred as a “liability rule”) in high-transaction cost settings.<sup>10</sup> When the actor and the would-be victim cannot negotiate, a liability rule allows the actor to injure first and compensate later.<sup>11</sup> In the face of liability, the injurer would do so only if she expects a net gain, that is, only if the expected benefits from the activity outweigh the expected costs. Part II.A identifies a different form of cost that explains why the law prefers a faultless victim over a faultless injurer. It shows that, even when negotiating with the victim is possible, a liability rule combined with a dilution mechanism can alleviate a coordination problem between the tortfest participants: the would-be buyers.

Part II.B analyzes successive tortfests. These are tortfests where actors join an existing tortfeasor sequentially in time. Part II.B shows that although successive tortfests can be welfare enhancing, they may suffer from a free-riding problem. A marginal cost-benefit analysis—the very one pressed by law-and-economics champions—can exacerbate the problem to the point that a welfare-enhancing tortfest will not take place. In some situations it may even lead to welfare-decreasing tortfests. Part II.B discusses

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<sup>10</sup> See, for example, William M. Landes and Richard A. Posner, *The Economic Structure of Tort Law* 43, 48–51 (Harvard 1987).

<sup>11</sup> See text accompanying notes 61–62.

a number of possible solutions. In doing so, it sheds light on another debate: whether actual or prorated damages should be imposed in successive torts. Some jurisdictions employ a marginal analysis holding each tortfeasor liable for the damage she caused even in situations where it is hard, if not impossible, to determine the damages caused by each tortfeasor. Other jurisdictions apply a proration rule in these situations. Part II.B adds to this debate by showing that it may be justified to prorate the damage even when the damage caused by each tortfeasor is clearly and easily ascertainable at no cost. Moreover, it shows that, under certain circumstances, even a rule that imposes liability and subjects to damages actors who clearly did not cause *any* harm can be justified. Part II.C discusses some of the possible objections to facilitating beneficial tortfests. These include moral, legal, and economic considerations as well as alternative mechanisms.

Part III examines the claim that dilution of liability is limited to situations where each actor can single-handedly avoid the harm. This Part reveals, however, that the focus of the prior literature has been misplaced, and it concludes that dilution of liability can occur in a large number of settings. Part III also shows that dilution of liability can positively impact *precaution* levels. The Article concludes with final remarks.

#### I. DILUTION OF LIABILITY IN ALTERNATIVE CARE SITUATIONS

Dilution of liability has been described as a concern in situations of alternative care where any of the parties could have avoided the damages. As the bystanders and restaurant examples show, dilution of liability can result in sub-optimal precaution levels. Accidents that can and *should* be avoided by exercising due care won't be if liability is spread among too many tortfeasors. In fact, dilution of liability can also result in over-investment in precaution, as will be shown below. Either distortion represents an inefficiency. The law has not ignored these concerns. In fact, many tort doctrines have been explained as remedies to the problem of dilution of liability in alternative care settings, although not always explicitly so. Common to these doctrines is an attempt to mitigate the concern of dilution of liability by imposing liability on one salient tortfeasor.



Consider then-Professor Guido Calabresi's example on the effect of the comparative negligence defense.<sup>12</sup> Assume together with Judge Calabresi that an \$80 accident can be avoided if the victim or the defendant invested \$60 in precaution. Under a comparative negligence regime, assuming for simplicity that the parties are equally (or 50 percent) at fault, neither will invest in precaution. Because liability is split (or diluted), neither the plaintiff nor the defendant will invest \$60 in precaution to avoid an expected loss of \$40 (80/2). The solution is found in the sister doctrine of contributory negligence. Contributory negligence remedies the problem by imposing the entire burden on one party only.<sup>13</sup> If the plaintiff is at fault she will be the only one bearing the cost and therefore will purchase the precaution (60 < 80). If she is not at fault, the defendant, now the sole party at fault, will take precaution for the same reason.

Comparative negligence, at least under one interpretation that has now been rejected,<sup>14</sup> can also lead to over-investment in precaution. Consider with Judge Richard Posner a situation in which a \$1,000 accident can be avoided by the defendant at a cost of \$100 or the victim at a cost of \$50.<sup>15</sup> Initially one may conclude that under comparative negligence, and assuming for simplicity again that parties are equally at fault, both will invest in precaution (50, 100 < 500).<sup>16</sup> The result is that an

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<sup>12</sup> Guido Calabresi, *The Costs of Accidents: A Legal and Economic Analysis* 158 (Yale 1970). For a critical view of Judge Calabresi's example, see Daniel Orr, *The Superiority of Comparative Negligence: Another Vote*, 20 J Legal Stud 119, 119–20 (1991). Recent scholarship analyzing the contributory and comparative defenses concluded that in an ideal world of complete information (administrative issues aside) both regimes are efficient. See Steven Shavell, *Economic Analysis of Accident Law* 14–17 (Harvard 1987); Richard A. Posner, *Economic Analysis of Law* 222 (Aspen 8th ed 2011); Oren Bar-Gill and Omri Ben-Shahar, *The Uneasy Case for Comparative Negligence*, 5 Am L & Econ Rev 433, 434, 437–38 n 9 (2003); Giuseppe Dari-Mattiacci and Gerrit De Geest, *The Filtering Effect of Sharing Rules*, 34 J Legal Stud 207, 210–11 (2005).

<sup>13</sup> For a proposal to shift the entire burden to the injurer, see Bar-Gill and Ben-Shahar, 5 Am L & Econ Rev at 437–38 n 9 (cited in note 12).

<sup>14</sup> See id at 434, 437–38; Tai-Yeong Chung, *Efficiency of Comparative Negligence: A Game Theoretic Analysis*, 22 J Legal Stud 395, 395–96 (1993); Posner, *Economic Analysis of Law* at 222 (cited in note 12).

<sup>15</sup> Posner, *Economic Analysis of Law* at 219–20 (cited in note 12). See also Christopher J. Robinette and Paul G. Sherland, *Contributory or Comparative: Which Is the Optimal Negligence Rule?*, 24 NIU L Rev 41, 52 (2003).

<sup>16</sup> This was indeed Judge Posner's initial conclusion but it was corrected in later editions. Compare Richard A. Posner, *Economic Analysis of Law* 124 (Little, Brown 2d ed 1977), with Posner, *Economic Analysis of Law* at 220 (cited in note 12). See also Bar-Gill and Ben-Shahar, 5 Am L & Econ Rev at 437 (cited in note 12); Chung, 22 J Legal Stud at 399 (cited in note 14). But see note 129 and accompanying text.

accident that can be avoided at a cost of \$50 will be avoided at a cost that is 3 times higher. The inefficient result was thought to be the work of dilution of liability.<sup>17</sup> As recent scholarship explains, “The reason that comparative negligence was thought to generate inefficient incentives is that, by dividing the accident costs among the parties, it provides incentives for both . . . to exercise care.”<sup>18</sup> Contributory negligence was considered more efficient because by singling out one party, the cheapest cost avoider, the same accident would have been avoided at a cost of \$50. This conclusion, however, assumes that the law requires both parties to take care in the above example. But if the standard of care imposes a duty only on the cheapest cost avoider to take care, then even under a comparative regime the efficient result would occur.<sup>19</sup> The defendant will not have a duty to take care. And knowing this, the victim—the cheapest cost avoider—will invest \$50 in precautions to avoid the \$1,000 damage. Importantly, under both interpretations the efficient result is achieved by imposing liability on one party only, that is, by adopting an anti-dilution mechanism.

The doctrine of indemnity functions in a similar way.<sup>20</sup> It “shifts the [entire] burden from one joint tortfeasor to another who is better situated to avoid the accident, rather than dividing it between the tortfeasors.”<sup>21</sup> Imagine, for example, that a \$100 harm to the victim can be averted by A, a general contractor, at a cost of \$60 or by B, its subcontractor, at a cost of \$55. Either can avoid the damage, but it is clear that the preferred way would be for B, the more knowledgeable party who was hired to perform the task and the best cost avoider, to do so. But if the damage is apportioned equally between the parties, neither will take precaution (60, 55 > 50). If, on the other hand, the harm to the victim can be avoided by B at a cost of \$10 and the damage is apportioned between the parties such that A is responsible for 75 percent of the damage and B for 25 percent, both will take precaution (60 < 75, 10 < 25).<sup>22</sup> Neither result is efficient. The

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<sup>17</sup> Bar-Gill and Ben-Shahar, 5 *Am L & Econ Rev* at 437–38 (cited in note 12).

<sup>18</sup> *Id.* at 437.

<sup>19</sup> See *id.*; Chung, 22 *J Legal Stud* at 399–402 (cited in note 14); Shavell, *Economic Analysis of Accident Law* at 18 (cited in note 12); Posner, *Economic Analysis of Law* at 220 (cited in note 12).

<sup>20</sup> See Landes and Posner, 9 *J Legal Stud* at 519 n 5 (cited in note 2).

<sup>21</sup> Dillbary, 62 *Hastings L J* at 1744 (cited in note 1).

<sup>22</sup> See Landes and Posner, 9 *J Legal Stud* at 527–28, 532–37 (cited in note 2). For the introduction of the effects of strategic behavior in this context, see *id.* at 527.

former case is one of under-investment in precaution whereas the latter is one of over-investment. The two situations correspond to the two examples provided by Judges Posner and Calabresi in the injurer-victim context. It is therefore not a surprise that indemnity employs a similar anti-dilution solution. In the above example, it avoids dilution of liability and its ills—inefficient precaution levels—by singling out one tortfeasor. Even if the victim recovered her injury from A and B, A will be able to indemnify from B, the “active” tortfeasor.<sup>23</sup> Importantly, Professor William Landes and then-Professor Posner explain that indemnity is required *only* in alternative care situations.<sup>24</sup>

More recently, Professors Assaf Jacob and Alon Harel sought to explain why tort law attributes liability primarily to acts but not to omissions.<sup>25</sup> They examine why, for example, bystanders (usually) do not have a duty to furnish aid to a person in need whereas a person who voluntarily takes an action may be subject to liability under a theory of negligence.<sup>26</sup> They conclude that this anomaly (imposing liability on those who act but not on those who fail to act) can be explained as an attempt to reduce the risk of dilution of liability. Once again, the authors focus on alternative care settings. Relying on a variant of the bystanders example discussed in the Introduction, they conclude that if the law imposed a duty on all bystanders, requiring each to take precaution, none would.<sup>27</sup> If the law imposed liability on four bystanders who can single-handedly avert a \$100 harm at a cost of \$60, none would take care ( $60 > 25$ ).<sup>28</sup> But if instead the law singled out one person, based on a simple salient feature, the chosen one would take care and the harm would be avoided ( $60 < 100$ ).<sup>29</sup> The salient feature can be the person who voluntarily decided to act (and thereby singled out herself), someone with a special relationship with the victim (an easy-to-verify sorting device), or the cheapest cost avoider (the economist’s

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<sup>23</sup> See *id.* at 533, citing *Muth v Urricelqui*, 60 Cal Rptr 166, 171–72 (Cal Ct App 1967).

<sup>24</sup> Landes and Posner, 9 J Legal Stud at 532 (cited in note 2) (arguing that “the key to understanding when indemnity will be allowed and when it will be denied is the economic difference between joint-care and alternative-care situations”). For a survey of indemnity decisions, see *id.* at 535.

<sup>25</sup> Harel and Jacob, 3 Theoretical Inq L at 415 (cited in note 3).

<sup>26</sup> *Id.* See also Jacob, 108 Mich L Rev First Impressions at 12–13 (cited in note 3); Levmore, 72 Va L Rev at 937–38 (cited in note 3).

<sup>27</sup> Harel and Jacob, 3 Theoretical Inq L at 428–29 (cited in note 3).

<sup>28</sup> See note 1 and accompanying text.

<sup>29</sup> Harel and Jacob, 3 Theoretical Inq L at 429–30 (cited in note 3).

choice).<sup>30</sup> But it can also be a completely arbitrary feature, such as singling out the blue-eyed or the tallest bystander.<sup>31</sup> Indeed, any salient feature that allows easy pre-selection of one actor may solve the problem.<sup>32</sup> Those who are not subject to liability will not take care; the one who was singled out will take care to avoid the crushing liability.

While the prior literature made a more modest claim, trying to identify isolated examples where dilution of liability reduces incentives to take care, Professors Jacob and Harel take a more general approach. They explain that their insight on the differential treatment of acts and omissions in tort law is just “a proxy” or an attempt to highlight a “broader phenomenon in tort law, namely, the special treatment of multiple injurers in alternative care situations.”<sup>33</sup> In their view, dilution of liability merits condemnation<sup>34</sup> in (1) alternative care cases (2) where the damage is constant and (3) liability is spread (or diluted) across a large enough number of tortfeasors—conditions that are met by the bystanders and restaurant examples.<sup>35</sup> In these situations,

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<sup>30</sup> Choosing the cheapest cost avoider, albeit the most efficient solution, is not always feasible. In some cases, identifying that cheapest cost avoider can be a daunting or even impossible task. In others, it would not solve the problem at all. (For example, if all bystanders can avoid the accident at the same cost, choosing the cheapest cost avoider cannot serve as a selective mechanism.)

<sup>31</sup> Harel and Jacob, 3 *Theoretical Inq L* at 429, 432, 436 (cited in note 3). See also Bar-Gill and Ben-Shahar, 5 *Am L & Econ Rev* at 437–38 n 9 (cited in note 12) (discussing a similar situation and noting that “[t]his [inefficiency] could be avoided, however, if the law were willing to place the burden of care arbitrarily on one party (say, the injurer), even if both parties can prevent the harm at the same cost”).

<sup>32</sup> As noted earlier, the solution is imperfect. See note 4.

<sup>33</sup> Harel and Jacob, 3 *Theoretical Inq L* at 414, 420 (cited in note 3). See also *id* at 414:

[T]he article interprets the differential treatment of acts and omissions in tort law as a proxy for a more fundamental distinction between harms caused by multiple injurers, where each one can single-handedly prevent the harm (either by acting or failing to act), and harms caused by a single injurer (either by acting or failing to act).

<sup>34</sup> *Id* at 451.

<sup>35</sup> *Id* at 414:

Attributing liability to too many injurers in alternative care situations leads to dilution of liability. Since the overall cost to which a group of injurers is exposed is constant, attributing liability to many injurers reduces the portion each has to pay and, consequently, reduces the injurers’ incentives to take precautions.

*id* at 422:

Since the overall cost to which a group of tortfeasors in alternative care situations is exposed is constant, increasing the number of liable tortfeasors will reduce the compensation paid by each one and, consequently, each one’s

they argue, the result is a suboptimal investment in precaution and consequently a decrease in societal welfare. The solution: imposing liability on one or few actors.<sup>36</sup>

Professors Jacob and Harel make an important contribution by providing a general methodology that explains the law's attempt to curb some of the detrimental effects of dilution of liability. Their conclusion, however, is both too broad and too narrow. It is too broad because dilution of liability, even in alternative care situations where the damage is constant—the archetypical case that merits condemnation according to the authors—can be desirable and if so, should be applauded, not condemned. It is too narrow because dilution of liability is not limited to alternative care situations. Nor is it limited to situations where the damage is constant.

## II. TORTFESTS

In the bystanders and restaurant examples, no party wanted to bring about the harm. All were interested in avoiding the accident and the liability that came with it. The parties would avoid the accident if they could negotiate with each other.<sup>37</sup> But there are occasions when the parties are in fact interested in combining and causing the harm to the victim and yet the acts, which can be intentional or unintentional, are efficient even if they give rise to liability. This Part analyzes such situations. It shows that in some situations what is and should be condemned if done by one (or a few) is socially desirable if conducted by many. Moreover, this Part reveals that liability serves as a sorting mechanism and that it should be imposed on actors of inefficient as well as efficient tortfests. In the former case, liability has a deterring effect. In the latter case, liability enables an efficient tortfest to take place, but only if the victim is compensated.

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incentives to take precautions. Assigning liability to too many tortfeasors in alternative care situations therefore will lead to dilution of the liability.

<sup>36</sup> *Id.* at 429.

<sup>37</sup> This is not the case, however, with the campers. There, not taking precaution was the efficient result even if transaction costs allowed the parties to negotiate. See Introduction.

## A. Simultaneous Tortfests

## 1. Negligent tortfeasors and the coordination problem.

To see how dilution of liability can be desirable, consider first the following example. Suppose a factory can avoid an expected damage of \$800, the value of a neighboring lake, if it invests \$450 in a filtering device. Here, the factory will be held liable if it fails to take care, which is also the socially desirable result ( $450 < 800$ ). But assume now that instead of one factory, two factories are located on the banks of a river that leads to the lake. Note that the total expected damage does not increase with the number of factories (that is, it remains \$800, the value of the lake). To ensure it is an alternative care situation,<sup>38</sup> assume further that the filtering device can only be placed on a section of the river where the pollutants and debris from both factories commingle so that *any* of the factories can avoid the entire damage by installing a filter. As with one factory, efficiency requires that the \$450 filter be installed to prevent the expected \$800 harm. Failing to take precaution would give rise to liability against both factories since each can avoid the expected damage of \$800 by investing \$450.<sup>39</sup> Yet, neither factory will take

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<sup>38</sup> The assumption is not necessary and is later relaxed. See Part II.B.

<sup>39</sup> See Restatement (Second) of Torts § 433A, illustrations 14–15 (stating that, where there are multiple wrongdoers, a victim can recover the full amount of damages from each tortfeasor or both); Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 26, comments a, c, d, h; *id.* at § 27, comments a, f, illustration 4; Richard W. Wright, *The Logic and Fairness of Joint and Several Liability*, 23 Memphis St U L Rev 45, 55–61 (1992) (noting that when a defendant's tortious behavior was sufficient for the occurrence of the injury, as in the case where each of two defendants put enough poison in the victim's drink to kill her, the parties are jointly and severally liable for the entire harm); Brief Amici Curiae of American Law Professors in Support of Respondents, *Norfolk & Western Railway Co v Ayers*, No 01-963, \*13–18 (US filed Aug 19, 2002) (available on Westlaw at 2002 WL 1964118) (“Professors Brief”); Richard W. Wright, *Once More into the Bramble Bush: Duty, Causal Contribution, and the Extent of Legal Responsibility*, 54 Vand L Rev 1071, 1100–01, 1106–08 (2001). See also *Velsicol Chemical Corp v Rowe*, 543 SW2d 337, 343 (Tenn 1976) (allowing a defendant accused of polluting a park to implead five defendants who operated plants at the same area and holding that “joint and several liability [applies] when an indivisible injury has been caused by the concurrent, but independent, wrongful acts or omissions of two or more wrongdoers, whether the case be one of negligence or nuisance”); *Landers v East Texas Salt Water Disposal Co*, 248 SW2d 731, 731–34 (Tex 1952) (imposing joint and several liability on two defendants who independently but concurrently and negligently polluted the plaintiff's lake, killing the fish and rendering it useless); *Phillips Petroleum Co v Hardee*, 189 F2d 205, 211–12 (5th Cir 1951):

[W]here persons acting independently are guilty of negligence, and the results of their negligence combine to set up a chain of causation resulting in the

precaution because the cost of precaution outweighs the expected liability each factory faces ( $450 > 400$ ). The expected liability and the incentive to take care will be diluted even further if the number of tortfeasors increases. With  $n$  tortfeasors, the expected liability each faces would be  $800/n$ , which means that in the case of 400 factories no one would take care even if the filter costs \$3 ( $3 > 800/400$ ).

Similar examples have been used by others to show the detrimental effects that result from dilution of liability.<sup>40</sup> However, missing in these examples is the fact that in inflicting harm in the form of pollution, the factories also garner some *benefits*: each makes a profit. The introduction of a profit analysis reveals that dilution of liability can help incentivize actors to engage in

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complained of damage, these persons . . . are yet joint tort-feasors and, as such, are liable for the damage caused by the conjunction of their separate negligence, just as in collision cases, persons acting separately and independently are none the less liable for the whole damage caused where their negligence concurs to produce the result.

Dan B. Dobbs, *The Law of Torts* § 171 at 415 (West 2000); 61C Am Jur 2d Pollution Control § 1908 at 966–67 (2010) (noting that in some jurisdictions “when the acts of two or more persons, although done independently, combine to cause pollution, those persons are liable both jointly and severally for the resulting injury, particularly when the damages are indivisible”); *Prairie Oil & Gas Co v Laskey*, 46 P2d 484, 486 (Okla 1935):

If concurrent negligence of two or more persons combined together results in an injury to a third person, they are jointly and severally liable and the injured person may recover from either or all; the concurring negligence of one is no excuse or defense to another; each is liable for the whole; even though another was equally culpable, or contributed in a greater degree to the injury.

*Michie v Great Lakes Steel Division, National Steel Corp*, 495 F2d 213, 215 (6th Cir 1974) (a nuisance suit alleging that air pollutants from defendants’ manufacturing plants across the Detroit River combined and created a nuisance); *Oakwood Homeowners Association, Inc v Ford Motor Co*, 258 NW2d 475, 484–85 (Mich Ct App 1977) (imposing joint and several liability in a nuisance suit for pollution against a car manufacturer, a petroleum refinery, a lime processing plant, and a salt company); notes 82–83 and accompanying text (discussing the imposition of liability in successive cases). But see Restatement (Second) of Torts § 433A, illustration 5 (identifying circumstances in which liability is apportioned based on the relative fault of the tortfeasors).

<sup>40</sup> See, for example, Harel and Jacob, 3 Theoretical Inq L at 429 (cited in note 3). The authors provide two examples of alternative liability situations involving actions (as opposed to omissions) to show the detrimental effects of dilution of liability. In the first, one hundred people each emit one spark, each of which is necessary together with the other sparks to cause a fire. *Id.* at 430. In the second, “several factories pollute the shared water source, but it is only the accumulation of the pollution from all the factories that causes significant damage to the water.” *Id.* at 430 n 39. In such cases, they argue “it may be justifiable to excuse tortfeasors in order to prevent the risk of dilution of liability.” *Id.* The authors, however, do not discuss the effect of the profits to the tortfeasors (for example, the factories). See also Jacob, 108 Mich L Rev First Impressions at 13 (cited in note 3) (providing an example with two polluting agents).

certain “wrongful,” yet welfare-enhancing activities, or as referred to here, tortfests.

This can be easily shown by assuming, for example, that each factory profits \$300 from the activity. As before, investing in a filtering device is socially desirable ( $450 < 800$ ). Yet, if one factory alone is located on the lakeshores, it will not operate at all. The fear of liability (\$800) if it does not take precaution or the cost of the filter (\$450) if it does is enough to deter the factory, as both outweigh the expected profit (\$300). With two factories, the analysis changes.<sup>41</sup> Now, engaging in the activity and taking precaution is the socially desirable result ( $450 < 300 \times 2$ ). Note that here neither factory alone would be willing to purchase the filter ( $450 > 300$ ). Rather, to purchase the filter, the parties must share its cost. This can be done if the parties agree (or are forced) to do so, or if the law allows one factory to purchase the filter ex ante and then force the other to share its cost ex post.<sup>42</sup> Absent such (voluntary or forced) cost-sharing mechanisms and assuming again that coordination costs are high, the parties will avoid the activity altogether. The result will be a suboptimal activity level and a net social loss.<sup>43</sup>

TABLE 1. THE SOCIAL COSTS AND BENEFITS FROM POLLUTING

Number of Factories Operating Concurrently	Total Benefits	Without Precaution		With Precaution	
		Total Costs/Loss	Net Social Gain/Loss	Total Costs/Loss	Net Social Gain/Loss
1	300	800	-500	450	-150
2	600	800	-200	450	150
3	900	800	100	450	450

<sup>41</sup> The sequential analysis is discussed in Part II.B.

<sup>42</sup> See Ariel Porat, *Private Production of Public Goods: Liability for Unrequested Benefits*, 108 Mich L Rev 189, 190–91 (2009) (proposing to modify current law to recognize a regime of Expanded Duty of Restitution (EDR) under which “recipients would compensate benefactors for unrequested benefits”); Jacob, 108 Mich L Rev First Impressions at 12 (cited in note 3) (arguing that the EDR “provides an interesting and provocative solution to the dilution of liability puzzle”).

<sup>43</sup> The social loss is \$150, the total profit of \$600 ( $300 \times 2$ ) minus the \$450 cost of precaution.



But if three factories engage in the tortfest, even if transaction costs are high such that the parties would not (agree or be forced to) purchase the filter together, they would nevertheless engage in the activity, because the gain for each would outweigh their private expected cost ( $800/3 < 300$ ). Here, dilution of liability facilitates a desirable activity. Because the total cost remains constant (the value of the lake is capped at \$800), the expected liability of each factory decreases as the number of tortfeasors increases ( $800/n$ ). Thus, if enough tortfeasors joined the tortfest, an activity that was once socially undesirable (in the case of one factory) would become desirable. Table 1 above summarizes the results and shows how total welfare increases with the number of tortfeasors.

The factory example is similar to the bystanders and restaurant examples in that, because the harm is constant, liability is diluted as the number of tortfeasors increases. The factory example, however, is fundamentally different. To begin with, in the restaurant and bystanders examples, dilution of liability resulted in an inefficient accident. Because liability was diluted, no one took precaution and the result was a decrease in total welfare. Dilution of liability was thus a *problem* that was remedied by imposing liability on one actor only. In the factory example, on the other hand, dilution of liability is the *solution*. Dilution of liability allows a desirable and welfare-enhancing activity to take place. It mitigates a cooperation problem between tortfeasors who, due to high transaction costs, cannot combine to purchase the filtering device. The genius of this mechanism is that dilution of liability incentivizes actors to join the festivity in situations where the benefits from the joint activity outweigh the cost to the victim. If the number of actors is too small, the crushing liability would deter the would-be tortfeasors from acting. Put differently, dilution of liability serves here (again) as a sorting device that allows good accidents to take place but deters bad ones.

Second, as in the campers example,<sup>44</sup> dilution of liability allows the courts to reach an efficient result by engaging in an individual cost-benefit analysis while freeing the courts from engaging in the more complicated cost-benefit analysis of the precautions, damages, and benefits. It also frees the courts from

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<sup>44</sup> See Introduction, notes 125–30 and accompanying text.

the daunting task of determining the exact number of actors that renders the tortfest net beneficial. But while in the campers example dilution of liability impacted the level of *precaution*, here it impacts the *activity* level. In the factory example, dilution of liability ensures that, if the total benefit from the activity outweighs the cost, the activity takes place. In the case of three factories, an individual analysis will lead to a judgment against each of the factories ( $450 < 800$ ), but the dilution of their expected liability ( $800/3 < 300$ ) would promote their operation.

Third, in the restaurant and bystanders examples, no actor wanted the accident to occur. The bystanders, the restaurant owner, and the gas provider would have all preferred to avoid the accident if they could negotiate rather than be subject to liability. In the factory example, the opposite is true. The factories have the incentive to participate in a tortfest with as many actors as possible.<sup>45</sup>

Finally, it is important to note that in the above example dilution of liability provides a second-best solution. Ideally, the factories should purchase a filter if they decide to produce. This, as Table 1 demonstrates, would increase total welfare from \$100 to \$450 in the case of three factories. As the next Section shows, however, dilution of liability may even lead to a first-best solution.

## 2. Liability without fault.

The examples thus far analyzed were situations in which the actors were negligent. The bystanders, the campers, the restaurant suppliers, and even the factories all failed to take care and for this reason they were found liable. But some activities are so important (or beneficial) to society that the law allows their operation even though they clearly come at a cost to innocent parties. Power plant facilities, alternative energy (solar and wind) plants, farming operations, and cement factories are but a few examples of activities that often result in damage to others, but their operation is tolerated.<sup>46</sup> Yet, despite a trade-off that

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<sup>45</sup> If, for example, one hundred factories engaged in the tortfest, each would profit \$300, be subject to an expected liability of \$8 ( $800/100$ ), and therefore expect a net profit of \$292 ( $300 - 8$ ). Total welfare would increase by \$29,200 ( $300 \times 100 - 800$ ).

<sup>46</sup> See note 8 and accompanying text; Richard A. Epstein, *Two Fallacies in the Law of Joint Torts*, 73 Georgetown L J 1377, 1386 (1985) (noting that "it is far from clear that one wants a world in which there is zero loss from toxics, given that the marginal costs of prevention needed to obtain that situation are exceedingly high, while the last unit of

favors the harming activity, even if the actors take the utmost care that foresight and vigilance would require, the actors are nevertheless labeled “tortfeasors” and are held liable.<sup>47</sup>

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benefit is apt to be very low” and explaining that in some situations there is no way a firm could avoid pollution “even if it tried, short of not generating or shipping wastes altogether—which would mean the cessation of all manufacturing of such essential products as chemicals and food”). The Second Restatement also acknowledges this trade-off. “A slaughterhouse,” it notes, “may be indispensable to the community, but it usually renders other land in its immediate vicinity unfit for residential use and enjoyment.” Restatement (Second) of Torts § 827, comment g. The operation of farms and factories “is ultimately as essential to the general public good as the operation of hospitals and fire departments.” Id at § 828, comment e.

<sup>47</sup> This is often the case under the nuisance doctrine. To somewhat simplify, a private nuisance is a substantial invasion of another’s interests in the use and enjoyment of her land. Restatement (Second) of Torts § 821F. Liability in nuisance can be based on negligence, or it may be based on a theory of strict liability if the defendant maintained an abnormally dangerous activity. A third basis for liability, and the one of interest here, is where the invasion is *intentional and unreasonable*. Dobbs, *The Law of Torts* § 464 at 1324–25 (cited in note 39); Restatement (Second) of Torts § 821F; *Copart Industries, Inc v Consolidated Edison Co of New York*, 362 NE2d 968, 971 (NY 1977):

[O]ne is subject to liability for a private nuisance if his conduct is a legal cause of the invasion of the interest in the private use and enjoyment of land and such invasion is (1) intentional and unreasonable, (2) negligent or reckless, or (3) actionable under the rules governing liability for abnormally dangerous conditions or activities.

To count as an intentional nuisance it is enough that the actor is “substantially certain that his activities will cause” an invasion to the victim’s land. Dobbs, *The Law of Torts* § 464 at 1324–25 (cited in note 39). Ill will is not required. Id at 1325; Restatement (Second) of Torts § 825, comments c, d, illustration 2. Thus, where the damage is certain or very likely to happen, exercising “extraordinary care,” even using “the best technology available” does not exempt the defendant from liability. Dobbs, *The Law of Torts* § 464 at 1325 (cited in note 39). Professor Dan Dobbs explains that such intentional nuisance “works as a soft version of strict liability.” Id. See also *Amore v Ohio Turnpike Commission*, 955 NE2d 410, 414 (Ohio Ct App 2011) (analogizing nuisance to strict liability). The intentional nuisance must also be “unreasonable,” but what is “unreasonable” in nuisance is different than what is “unreasonable” in the tort of negligence. In negligence, unreasonableness refers to the injurer’s conduct. Liability is found if the injurer failed to take care where she should. In nuisance, the term “unreasonable” refers to the harm to the victim. Restatement (Second) of Torts § 822, comment b; Dobbs, *The Law of Torts* § 465 at 1326 (cited in note 39); *Smith v Jersey Central Power & Light Co*, 24 A3d 300, 310 (NJ Super Ct 2011) (“[L]iability for negligence is based on a want of proper care, while, ordinarily, a person who creates or maintains a nuisance is liable for the resulting injury to others regardless of the degree of care or skill exercised to avoid such injury.”), quoting *Monaco v Comfort Bus Line, Inc*, 49 A2d 146, 149 (NJ Ct App 1946). An invasion is unreasonable if “the gravity of the harm [to the victim] outweighs the utility of the actor’s conduct.” Restatement (Second) of Torts § 826. The invasion is also unreasonable if “the harm caused by the conduct is serious and the financial burden of compensating for this and similar harm to others would not make the continuation of the conduct not feasible.” Id. This test, like the gravity-utility analysis, ensures that the act is Kaldor-Hicks efficient. In the face of liability that actor would engage in the activity only if the expected gain outweighs the expected loss.

*Madison v Ducktown Sulphur, Copper & Iron Co*<sup>48</sup> is such a case.<sup>49</sup> In *Madison*, residents and owners of small farms, relying on a nuisance theory, sought damages and injunctive relief enjoining the operation of two copper plants that emitted large volumes of smoke. The court found that the copper operations interfered with the plaintiffs' enjoyment of their property, the value of which was approximately \$1,000.<sup>50</sup> Against this fact, the court found that the plants conducted their business in a lawful way<sup>51</sup> and at appropriate locations;<sup>52</sup> that they used "the only known method by which these plants can be operated and their business successfully carried on";<sup>53</sup> that the method the plants used was "the only method known to the business or to science";<sup>54</sup> and that the plants "ha[d] made every effort to get rid of the smoke and noxious vapors," including an experiment conducted by one of the defendants at a cost of \$200,000 to that end with no result.<sup>55</sup> The court also found that the utility from the plants' operations was substantial. The two plants accounted for 50 percent of the county's tax revenue and conducted an industry upon which the entire population in the county was "practically dependent."<sup>56</sup>

The first chancellor dismissed the plaintiffs' request to enjoin the defendants' operations. Despite the great value of the defendants' activities, the Court of Chancery Appeals reversed and issued a perpetual injunction.<sup>57</sup> The question before the Supreme Court of Tennessee was whether

in order to protect by injunction several small tracts of land, aggregating in value less than \$1,000, [the court should issue an injunction that would stop] . . . two great mining and manufacturing enterprises, that are engaged in work of very great importance, not only to their owners, but to the state, and to the whole country as well, to depopulate a large

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<sup>48</sup> 83 SW 658 (Tenn 1904).

<sup>49</sup> See also *Bliss v Anaconda Copper Mining Co*, 167 F 342, 364 (D Mont 1909).

<sup>50</sup> *Madison*, 83 SW at 666–67.

<sup>51</sup> *Id* at 660.

<sup>52</sup> *Id* at 660, 666–67 ("The defendants cannot reduce their ores in a manner different from that they are now employing, and there is no more remote place to which they can remove.").

<sup>53</sup> *Id* at 660.

<sup>54</sup> *Madison*, 83 SW at 660.

<sup>55</sup> *Id*.

<sup>56</sup> *Id* at 661.

<sup>57</sup> *Id*.

town, and deprive thousands of working people of their homes and livelihood, and scatter them broadcast.<sup>58</sup>

The court answered in the negative. It explained,

[I]f the injunctive relief sought [were to] be granted, the defendants will be compelled to stop operations, and their property will become practically worthless, the immense business conducted by them will cease, and they will be compelled to withdraw from the state. It is a necessary deduction from the foregoing that a great and increasing industry in the state will be destroyed, and all of the valuable copper properties of the state become worthless.<sup>59</sup>

The court refused to issue an injunction against the defendants in light of their great social value which, it believed, outweighed the harm they caused the victims. Yet, despite the fact that the defendants were clearly not at fault, and despite the fact that they had taken all possible precautions, the Supreme Court of Tennessee held them liable, labeled them as tortfeasors, and recognized the victims' right for damages.<sup>60</sup>

The result is puzzling. If society is interested in such operations, why should the operators be liable for harm they caused but could not avoid? Put differently, between the two faultless parties, the innocent victim and the actor from whom society commissioned (or acquiesced to) an operation knowing that by doing so it invites a harm, why should the actor bear the burden?

The law-and-economics literature explains the imposition of liability in high-transaction cost settings that prevent a deal between the injurer and the victim. Nuisance reduces transaction costs between a would-be seller and a would-be buyer by allowing the injurer (the would-be buyer) to pollute first and compensate the victim (the would-be seller) later. The conclusion is often backed by examples involving a single injurer and a single

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<sup>58</sup> *Madison*, 83 SW at 666–67.

<sup>59</sup> *Id* at 660.

<sup>60</sup> *Id* at 662. The court concluded that “there can be no doubt” that the plaintiffs proved a nuisance that entitled them to damages. *Id*. It explained that in nuisance cases a judgment of damages is “a matter of absolute right.” *Id* at 664. An injunction, on the other hand, is discretionary and will not be given where damages can adequately compensate the victim. *Id* at 662.

victim,<sup>61</sup> or one injurer and multiple victims, to illustrate the holdout concern that may prevent a transaction.<sup>62</sup>

Dilution of liability can shed some light on this issue and help clear some of the confusion between nuisance and negligence.<sup>63</sup> In no-fault liability cases, dilution of liability may play an important role. It helps bring about cost-efficient operations in settings where high transaction costs between the tortfeasors themselves are prohibitive. By facilitating beneficial tortfests, dilution of liability can help maintain the very delicate but often hard to measure trade-off that society engages in.

To illustrate, suppose that as before a factory, call it F1, is located next to an \$800 lake and that over a certain period of time the factory expects to gain \$300, but that in doing so it will completely destroy the lake. Assume further that no known methods can mitigate or avoid the harm; only stopping the activity will. F1 will thus be liable (perhaps under a theory of negligence<sup>64</sup> but more likely under a nuisance regime<sup>65</sup>) because the

<sup>61</sup> See, for example, A. Mitchell Polinsky, *An Introduction to Law and Economics* 17–27 (Wolters Kluwer 4th ed 2011) (providing an excellent overview on the tort of nuisance); Landes and Posner, *The Economic Structure of Tort Law* at 43, 48–51 (cited in note 10).

<sup>62</sup> See, for example, Posner, *Economic Analysis of Law* at 78 (cited in note 12); Porat, 108 Mich L Rev at 192–93, 201–03 (cited in note 42).

<sup>63</sup> On the difference between the prior literature on nuisance and the explanation offered in this Article, see text accompanying notes 10–11; notes 71–72 and accompanying text.

<sup>64</sup> Taking precaution usually means that one must drive slower or purchase a safety device such as a filter without changing the activity levels: the number of miles driven or the number of units produced. But an actor may be found negligent for not altering her activity levels, for example, when the benefits from the activity are very slight compared to the loss generated by the activity. See Posner, *Economic Analysis of Law* at 226 (cited in note 12); Restatement (Second) of Torts § 297, comment a:

A reasonable man would recognize that there is an inescapable risk in driving down a narrow and illkept mountain road, winding along precipices unguarded by walls or railings, particularly if rain, snow, or ice has rendered the road slippery. The mere use of such a route under the circumstances described may be negligent unless the utility of the route is very great.

<sup>65</sup> See *McFarlane v City of Niagara Falls*, 160 NE 391, 391–92 (NY 1928) (Cardozo) (holding that “[o]ne who emits noxious fumes or gases day by day in the running of his factory may be liable to his neighbor though he has taken all available precautions. . . . He is not to do such things at all, whether he is negligent or careful”); *Bell v Gray-Robinson Construction Co*, 62 NW2d 390, 392–93 (Wis 1954) (“A nuisance does not rest on the degree of care used . . . but on the degree of danger existing even with the best of care.”); *Pennoyer v Allen*, 14 NW 609, 613 (Wis 1883) (holding that in nuisance cases “it is no defense to show that such business was conducted in a reasonable and proper manner,” but rather, “[i]t is the interruption of such enjoyment and the destruction of such comfort that furnishes the ground of action”); *Jost v Dairyland Power Cooperative*, 172 NW2d 647, 652 (Wis 1969) (“[A] continued invasion of a plaintiff’s interests

benefits from shutting down the facility and avoiding the \$800 damage clearly outweigh the opportunity cost: forgoing a gain of \$300. If a second identical factory, F2, joins the festivity concurrently, both will be held jointly and severally liable for the indivisible harm.<sup>66</sup> Because each factory's expected liability would be \$400 ( $800/2$ ), \$100 more than the benefits each garners from the activity (\$300), neither would engage in the polluting activity ( $400 > 300$ ). The result would be to deter both factories from the activity.

Unlike the example discussed in Part II.A.1, deterring F1 and F2 from engaging in the polluting activity is socially desirable.<sup>67</sup> With two factories there is an expected net social loss of \$200: the total expected benefit is \$600 ( $300 \times 2$ ) compared to the \$800 expected loss from destroying the lake. But if a third factory, F3, joined the festivity, things would be different. Now the expected benefits from the joint activity would outweigh the expected damage ( $800 < 900$ ). And because liability is diluted—each factory faces an expected liability of only \$267 ( $800/3$ )—all factories would now be willing to engage in the activity ( $267 < 300$ ).<sup>68</sup>

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by non-negligent conduct, when the actor knows of the nature of the injury inflicted, is an intentional tort, and the fact the hurt is administered non-negligently is not a defense to liability.”); *Smith*, 24 A3d at 310 (“[A] defendant’s conduct may be found to have constituted a nuisance even though the conduct has sufficient social utility to be considered reasonable so long as damages are paid to the party whose use and enjoyment of land has been interfered with by this conduct.”); *Boomer v Atlantic Cement Co*, 257 NE2d 870, 875 (NY 1970).

<sup>66</sup> See note 31.

<sup>67</sup> In the example provided in Part II.A.1 and summarized in Table 1, the best solution for the two factories was to produce and invest (together) \$450 in precaution that would save the lake, thereby bringing total welfare to \$150 ( $300 \times 2 - 450$ ). As noted, however, absent some voluntary or forced cooperation neither party would do so alone ( $450 > 300$ ).

<sup>68</sup> Here, liability is imposed on the actors although the total benefit from the activity outweighs the loss. See *Boomer*, 257 NE2d at 875 (awarding damages to neighbors of a polluting factory but denying an injunction); *Smith*, 24 A3d at 310; *King v Columbian Carbon Co*, 152 F2d 636, 641–42 (5th Cir 1945):

As a concession to industrial progress and social utility the law will not abate a useful and lawful enterprise even though it be a nuisance, but . . . [i]t still requires payment for unwarranted, unreasonable, and substantial damage done to the property of another which is caused by the construction and operation, however skillful, of an industrial plant in a locality undevoted and unadapted thereto.

*Comar Oil Co v Hackney*, 250 P 93, 99–100 (Okla 1926) (acknowledging that defendants, oil companies, could not by any means prevent the pollution of a creek that neighbored with the plaintiffs’ lands, but ordering defendants to compensate the victims despite a finding that the pollution was done knowingly although without malice). See also note 65.

Here, dilution of liability brings about the most efficient result, a first best. It ensures that the faultless parties would engage in the activity when the total expected benefits from their combined activities outweigh the total expected cost of their operation. By holding all actors strictly liable, the law helps ensure that the societal trade-off is net positive and that welfare-enhancing activities are allowed, and it does so at low cost. Instead of engaging in the daunting task of measuring the total costs of all operations and comparing those costs to the expected benefits, it leaves the analysis in the hands of the market players. It shifts the decision making and the error that comes with it to the tortfeasors. If the tortfeasors believe that their activities are worthwhile, they will build their polluting facilities and pay the price (in the form of liability) that comes with it. If they are wrong, they will be subject not only to liability, but to such a crushing liability that it would result in a net private loss.<sup>69</sup>

### 3. Group wrongdoing and (no) moral indignation.

A tortfest enabled by dilution of liability comes with additional benefits. First, the actors-tortfeasors would have the incentive to cluster around the same lake and act in concert. To use a term that rings moral indignation, they would have an incentive to combine and engage in group wrongdoing. A large enough number of tortfeasors will dilute the expected liability each faces and ensure that taking the risk to operate is worthwhile by increasing the expected net benefits each tortfeasor garners from the activity. In the above example, if there are three factories, each will expect a gain of \$33.33 ( $300 - 800/3$ ) whereas if there are 100 factories, each will expect a gain of \$292 ( $300 - 800/100$ ).

A tortfest, if facilitated by a cooperative mechanism (for example, regulation), may also incentivize the parties to innovate and invest in cost-reducing technologies and devices, as doing so would increase their profits even further. In the example above, the parties would be willing to invest \$100 to develop a filtering device that would avoid the damage to the lake, even if such a device, once developed, would cost \$600. Between facing a total liability of \$800 (the value of the lake) and spending \$700

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<sup>69</sup> In the above example, if two factories decide to operate, they will incur a net loss ( $400 > 300$ ), but if a third factory joins the festivity, each of their respective operations will become profitable even in the face of liability ( $800 < 900$ ,  $267 < 300$ ).



(600 + 100) on precaution that would save it, the latter is a clear winner.

Moreover, the actors would also have an incentive to find the “best location” for their operation where location is important. An isolated location far from any residential neighborhood, or one that is amenable to current or future preventative technologies, would allow the tortfest members to reduce their expected liability and increase their profits.

A tortfest may also ensure that an essential activity takes place. Building on the above example, assume that three cement factories are required to satisfy the demand for construction. If each of the factories is located next to a different lake, the result would be a net social loss ( $800 \times 3 > 300 \times 3$ ). Here, producing cement cannot be justified, which means that society would have to forgo the construction of skyscrapers and modern housing. Congregating around two lakes would be welfare decreasing for the same reason ( $800 \times 2 > 300 \times 3$ ). However, the demand for cement can be satisfied without decreasing societal welfare if the three factories operate in the same vicinity, thereby ensuring that the \$800 cost from destroying a single lake is justified by the \$900 (aggregate) benefit from the activity. Here, the lake is sacrificed for the greater good. It is a necessary evil that must be accepted in a modern society, and both private and social interests are aligned to bring about this result.<sup>70</sup>

A tortfest, even if done intentionally with full awareness of the damage that would accrue, should therefore not subject the tortfeasors to punitive damages if it is welfare enhancing. It should be applauded and promoted, not condemned. This is especially the case in strict liability cases where all parties, the victim and the injurers, are faultless. The fact that the victim is compensated may also bring some comfort to those who are concerned with distributive justice. By subjecting the tortfest participants to liability and, at the same time, ensuring that such liability is diluted, the law promotes efficient activities while compensating the injured.

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<sup>70</sup> For types of pollutants that may justify the aggregation of polluting agents, see Arden Rowell, *Allocating Pollution*, 79 U Chi L Rev 985, 1022 (2012) (discussing the conditions under which “bunching,” a strategy of exposing a few to large amounts of pollution, and “spreading,” a strategy of exposing many to small doses of pollution, can mitigate or even eliminate the harm from pollution without reducing the total amount of pollution).

This mechanism would be sabotaged if the parties to an efficient tortfest were subject to punitive damages.<sup>71</sup> Punitive damages, if set high enough, would serve as an effective anti-dilution mechanism but would be welfare decreasing. In the example above, setting the damages at \$1,600, only twice the actual damage, would halt the activity. The three factories that would operate and fully compensate the victim for her damages if subject to compensatory damages ( $800 < 900$ ) would be deterred from operating if subject to punitive damages ( $1,600 > 900$ ). Punitive damages are often justified to ensure that transactions in low-cost settings are channeled to the market.<sup>72</sup> But in the factory example, transaction costs may be high, and not just between the seller (the would-be victim) and the buyers (the would-be tortfeasors), as often discussed by the literature on nuisance, but between the tortfeasors themselves. Dilution of liability reduces these coordination costs by providing each actor with an individual incentive to engage in the tortfest.

## B. Successive Tortfests

### 1. The marginal analysis and the free-riding problem.

The previous Section focused on concurrent tortfests. Regardless of the number of factories that engaged in the tortfest, the assumption was that all actors joined the festivity at the same time. This Section extends the analysis to situations where one actor engages in a harmful activity and others join the initial tortfeasor sequentially in time. It shows that in some situations, a marginal analysis can play a similar role to the one played by dilution of liability in the concurrent tortfest, but that strategic behavior may jeopardize the occurrence of successive

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<sup>71</sup> The intent requirement is satisfied if the defendant acts or creates a condition with a specific purpose to harm the victim. But ill will or malice is unnecessary. Restatement (Second) of Torts § 825, comment c. A nuisance is intentional if the actor is “substantially certain” that his activities will cause an invasion to the victim’s land. *Id.* (explaining that “[i]t is the knowledge that the actor has at the time he acts or fails to act that determines whether the invasion resulting from his conduct is intentional or unintentional” and noting that the actor “must either act for the purpose of causing it or know that it is resulting or is substantially certain to result from his conduct”); *id.* at § 825, comment d, illustration 2 (providing an example of an intentional invasion even when the actor did not desire to harm the victim).

<sup>72</sup> See, for example, the arsonists example discussed in notes 113–23 and accompanying text. There, the threat of ex post punitive damages incentivizes the actors to negotiate with the victim and purchase her car using the market.

welfare-enhancing tortfests. In other situations, a marginal analysis can be welfare decreasing.

To analyze a successive tortfest, assume that a factory located next to the \$800 lake gains \$100 from its activity and that in doing so it causes \$400 in damages even if it exercises the utmost care. For simplicity, assume that the damage is caused immediately when the factory begins its operation. Under traditional tort theory, the first factory, F1, would be found liable because the costs from the activity outweigh its benefits ( $400 > 100$ ) and would therefore be deterred from acting in the first place. Assume for a moment that despite the net loss of \$300, F1 decides to engage in the activity and suppose that identical factories are opening their gates at the lakefront sequentially in time.<sup>73</sup> The second factory, F2, is liable for the same reason F1 is. F2's operation caused an incremental damage of \$400 (bringing the total damage to \$800) compared to a benefit of \$100 ( $400 > 100$ ). But the third factory, F3, will be exempted although each factory releases the same amount of pollutants into the lake. The reason is simple. Because the maximum harm that can be done to the lake is capped at \$800 (the value of the lake), as the number of actors increases, at some point the activity of the additional (or marginal) actor will come at no cost. In our example, once F1 and F2 brought destruction upon the lake, F3 contributed nothing to the damage. By the time F3 joined the tortfest, the lake was already destroyed (its value was  $800 - 400 - 400$ , or 0). F3's activity therefore yielded a \$100 gain at no additional cost.

The result is a tortfest.<sup>74</sup> The marginal analysis—holding each actor liable for the damage it caused—incentivizes actors (F3 and those that may follow it) to join the festivity because their polluting activity will not subject them to liability.

The tortfest is efficient *ex post*. Once the lake is ruined, requiring F3 to stop its activity would be socially undesirable

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<sup>73</sup> The assumption is relaxed below. See notes 80–90 and accompanying text. In the next Section, it is shown that a rule that could subject all tortfeasors to liability for the entire harm but would allow the liability of each actor to be diluted could in fact incentivize F1 to engage in the activity.

<sup>74</sup> Note that the marginal analysis employed in the successive tortfest treats identical actors differently. While in a simultaneous tortfest dilution of liability subjects *all* actors to liability, in the sequential tortfest the first actors are liable while those who join later in time are exempted. In the example, F1 and F2 are liable but F3, the subsequent (marginal) tortfeasor, enjoys the fact that the value of the asset harmed was completely diminished by the time it started operating because of its predecessors' wrongful acts.

because it would impose a cost (the loss of \$100 from the activity) with no redeeming benefits. Put differently, once F1 and F2 operate and destroy the lake, the costs they inflicted are “sunk” and the operation of any additional factory is justified. But *ex ante* the tortfest is welfare decreasing: with three factories, the marginal analysis exempts F3 from liability although a total cost-benefit analysis, the one used to determine the social value of the entire tortfest, reveals a net social loss of \$500: the difference between the \$300 ( $100 \times 3$ ) gain from the combined activity and the \$800 aggregate damage to the lake.

However, this welfare-decreasing tortfest will become socially desirable if more factories follow suit. For example, with seven additional factories (F3–F9), the total number of actors would reach nine and total welfare will increase by \$100 ( $100 \times 9 - 800$ ), with eight additional factories (F3–F10) by \$200, and so on. The results are described in Table 2 below.<sup>75</sup>

TABLE 2. THE COSTS AND BENEFITS FROM POLLUTION

Factory	Marginal Cost (polluting)	Total Cost	Marginal Benefit (activity)	Total Benefit	Net Social Gain/Loss
F1	400	400	100	100	-300
F2	400	800	100	200	-600
F3	0	800	100	300	-500
...	...	...	...	...	...
F7	0	800	100	700	-100
F8	0	800	100	800	0
F9	0	800	100	900	100
F10	0	800	100	1000	200

But the desirable tortfest (with a total of nine or more factories) may never occur. It was assumed earlier that F1 and F2 (and those who follow them) will engage in the activity, but this is unlikely. To see why, consider again the effect of the marginal

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<sup>75</sup> The factories' and society's interests in clustering around the same lake are aligned. If the factories are split between two lakes of the same value, the result would be a decrease in welfare of \$600 ( $1,000 - 800 \times 2$ ) because the same aggregate gain from the activity would come at twice the cost. The eight additional factories (F3–F10) thus have an interest in joining the festivity, thereby increasing the total number of factories to ten. In doing so, the newcomers not only would gain a private benefit, but the activity as a whole would become a desirable one ( $800 < 1,000$ ).

analysis. The eight factories that join the festivity (F3–F10) are not exempted because they are better or more efficient than F1 or F2. By definition all factories are identical. F3–F10 are exempted from liability simply because they were at the right place at the right time. They came to the lakefront *after* the second factory started its operation. Had any of these factories operated first or second in time, they would have been found liable. And here lies the problem. No factory would want to be the first or the second in time. None of the factories wants to be the one who takes a possible hit and paves the way for future actors that would escape liability simply because they came later in time. Each factory will therefore delay its activity until at least two factories start their operation, the result of which is suboptimal activity level and a net social loss.

This can be shown using a prisoner's dilemma-like model. To simplify, assume that two potential factories must independently decide in Period 1 whether to enter the market or not (assuming, again, that cooperation is impossible). Assume also that a factory that engages in the activity will gain \$500 but in doing so it will destroy the \$800 lake. If both parties decide to enter in Period 1, each will expect a net gain of \$100 ( $500 - 800/2$ )<sup>76</sup> and societal welfare will increase by \$200 ( $1,000 - 800$ ). If one factory enters in Period 1 but the other does not, the entrant will be held liable for the entire damage and lose \$300 ( $500 - 800$ ). The party who decided to wait would be able to enter in Period 2, after the lake was already destroyed, and enjoy a benefit of \$500. If both entrants decide to wait, no harm is done but no benefits are yielded. The expected payoffs of the parties are summarized in Table 3 below.

TABLE 3. THE PAYOFF MATRIX OF TWO FACTORIES (F1, F2)

		F2			
		Enter in Period 1		Wait	
F1	Enter in Period 1	F1 100	F2 100	F1 -300	F2 500
	Wait	F1 500	F2 -300	F1 0	F2 0

<sup>76</sup> For simplicity, the analysis in this Section ignores additional benefits that a party may garner from entering first, such as interest or a competitive advantage. Such benefits are incorporated in Part II.B.2.

A comparison of the payoffs reveals a dominant strategy to avoid entry. If F2 enters in Period 1, F1 is better off waiting ( $500 > 100$ ) and if F2 waits, F1 is also better off waiting ( $0 > -300$ ). F1 is thus better off waiting regardless of F2's decision. The same holds for F2. Each factory will therefore wait for the other to destroy the lake first, hoping to enter second and thus profit from the activity.

In fact, the problem is worse. Even if the activity of each factory alone is profitable and socially desirable, it is not clear that any of the factories will engage in the welfare-enhancing activity. To see why, assume that if a factory enters the market, its activity will destroy the \$800 lake but will yield a total profit of \$900. Here, private and social welfare are increased by the activity ( $800 < 900$ ) and therefore F1 may decide to enter in order to realize the \$100 profit; in which case F2, the subsequent tortfeasor, will surely join it in the second period and realize a profit of \$900. But if the two factories need to decide in Period 1 whether to enter or not, things may be tricky and the welfare-enhancing tortfest may not occur at all. If the two factories enter the market at the same time, each can expect a net benefit of \$500, the difference between the \$900 benefit from the activity and the (diluted) expected loss of \$400 ( $800/2$ ). If one enters the market in Period 1 and the other does not, the entrant will destroy the lake, compensate the victim, and still enjoy an expected net profit of \$100 ( $900 - 800$ ). The second will enter the market in Period 2 and will enjoy an expected profit of \$900. The expected payoffs of the parties are summarized in Table 4 below.

TABLE 4. THE PAYOFF MATRIX OF TWO FACTORIES (F1, F2)

		F2			
		Enter in Period 1		Wait	
F1	Enter in Period 1	F1 500	F2 500	F1 100	F2 900
	Wait	F1 900	F2 100	F1 0	F2 0

There is a pronounced advantage to being the second to operate<sup>77</sup> but there is no clear strategy. It is thus unclear what will happen, but if both factories decide to wait the result will be an expected net social loss of \$1,000 ( $900 \times 2 - 800$ ).<sup>78</sup>

In sum, a sequential tortfest is less likely to occur even if it is welfare enhancing, and if it does occur, it may result in a net social loss. One solution discussed earlier is to allow or create mechanisms that will, in some situations, facilitate group wrongdoing or help the factories to coordinate their activities.<sup>79</sup> If the ten factories would build their facilities on the lakefront at the same time, no one would be in the losing position of F1 or F2, and all will operate. Zoning and other forms of regulations may achieve this result. Part II.B.2 below shows how a liability rule combined with a dilution mechanism can, in some situations, achieve the same result that an agreement would achieve but without requiring such agreement.

## 2. In search of additional solutions.

*a) Treating successive torts as concurring.* Allocating damages in situations where a number of tortfeasors caused a single harm can be impossible.<sup>80</sup> The harm is often indivisible, and the traditional causation “but for” test may fail.<sup>81</sup> Revert

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<sup>77</sup> The factory that waits will gain \$900 if the other factory enters in Period 1 compared to \$500 if both operated in Period 1 or \$100 in case it operates in Period 1 and the other in Period 2.

<sup>78</sup> Social welfare may be reduced even when both actors are committed to entering the market. Assume for example that the actors can enter in Period 1 or Period 2 and that if a party enters in Period 2, because of the delay, it will profit only \$800 (instead of \$900 had it entered in Period 1). In this case if both factories wait each factory can expect a payoff of \$400 (the difference between the \$800 profit from the activity minus the \$400 ( $800/2$ ) expected liability from destroying the lake). The payoffs in the lower right cell of the matrix (wait-wait) will thus be: [400, 400] (instead of [0, 0]). If one actor enters in Period 1 and the other in Period 2, the former will enjoy a gain of \$100 ( $900 - 800$ ) and the latter a gain of \$800. The result would be a dominant strategy to enter in Period 2 and thus a social loss of \$200.

<sup>79</sup> See notes 63–69 and accompanying text (illustrating how dilution of liability helps solve the coordination problems of tortfeasors). See also Part II.A.3.

<sup>80</sup> *Velsicol*, 543 SW2d at 342:

The requirement of “indivisibility” can mean either that the harm is not even theoretically divisible, as death or total destruction of a building, or that the harm, while theoretically divisible, is single in a practical sense in that the plaintiff is not able to apportion it among the wrongdoers with reasonable certainty, as where a stream is polluted as the result of refuse from several factories.

<sup>81</sup> The quintessential example is that of two tortfeasors each carelessly starting a fire that could alone destroy the victim’s house. Neither tortfeasor can be said to be the

again to the factory example. Can it really be determined what damage was caused by the first factory to act in a successive tortfest? Can the damage be distinguished from that caused by the other factories? What if some factories started operating at the same time (in which case each factory is the “marginal” factory) or joined the activity at different times? What if the factories produce different widgets and use different methods of manufacture—making the task of ascertaining the damage caused by each even more complicated? Or consider an accident involving four cars, each harming the victim sequentially in time and causing an indivisible harm. Here, it is clear that each driver caused a separate harm, but how can the fact finder determine the marginal contribution of the several drivers?<sup>82</sup>

Jurisdictions are split in their treatments of successive torts causing an indivisible harm.<sup>83</sup> Some courts treat successive torts as concurring, subjecting each of the parties to liability for the entire damage, regardless of the actual harm caused, based on a theory of joint and several liability.<sup>84</sup> Others apply a marginal

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“but for” cause of the accident. How can it be argued that but for the careless behavior of one, the damage would not have occurred, where it clearly would because of the other’s careless actions? Courts apply in such situations the “substantial factor” test. See, for example, *Anderson v Minneapolis, St. P. & S. S. M. Ry. Co.*, 179 NW 45, 46 (Minn 1920). See also Gerald W. Boston, *Toxic Apportionment: A Causation and Risk Contribution Model*, 25 *Envir L* 549, 561 (1995); Restatement (Second) of Torts § 433A, comment i.

<sup>82</sup> See *Waller v Skeleton*, 212 SW2d 690, 696 (Tenn Ct App 1948) (holding that where successive impacts with different negligently operated vehicles combined to cause the victim’s injury, each of the tortfeasors is jointly and severally liable for the entire damage). See also *Swan v Andrew Crowe & Sons, Inc.*, 434 A2d 1008, 1010 (Me 1981) (applying joint and several liability for an indivisible injury caused in the course of two successive employments).

<sup>83</sup> See Paul Homer, Comment, *Indivisible Injury Negligence and Nuisance Cases—Proving Causation among Multiple-Source Polluters: A State-by-State Survey of the Law for New England, and a Proposal for a New Causation Framework*, 3 *Pierce L Rev* 75, 81–94 (2004).

<sup>84</sup> See, for example, *Phillips Petroleum*, 189 F2d at 212:

[W]here the concurrent or successive acts or omissions of two or more persons, although acting independently of each other, are in combination, the direct or proximate cause of a single injury to a third person, and it is impossible to determine in what proportion each contributed to the injury, either is responsible for the whole injury, even though his act alone might not have caused the entire injury, or the same damage might have resulted from the act of the other tort-feasor.

*Prairie Oil & Gas*, 46 P2d at 485–86 (allowing joinder of defendants whose independent and successive acts polluted the plaintiff’s creek, causing it an indivisible damage and holding that “each is responsible for the entire damage”).



analysis under which each tortfeasor is severally liable for the additional damage it caused.<sup>85</sup>

Understanding tortfests can shed new light on and enrich the apportionment debate. While the prior literature focused on whether the harm is divisible or not<sup>86</sup> and whether each tortfeasor should be liable for the entire harm or only for a portion thereof,<sup>87</sup> this Article highlights a different consideration. In deviation from the prior literature, it shows that even if the harm is divisible and easily ascertained, treating successive torts as concurring ones can be beneficial. This Section builds on the insight discussed previously: that a marginal analysis can serve as an effective anti-dilution mechanism that can block beneficial tortfests. Conversely, a uniform treatment under which each tortfeasor is liable for the entire harm can lead to the formation of a large pool of defendants and, with the help of an appropriate dilution mechanism, can mitigate the free-riding problem that plagues successive tortfests and enable beneficial tortfests.

To see how treating a successive tortfest as a concurring one can solve the free-riding problem, consider the following example. Suppose that each of two factories can gain \$500 from an activity, but doing so would cause damage of \$600 to a neighboring lake, the value of which is \$800. To simplify, assume further that the factories must operate next to the lake (perhaps, because of its proximity to a specific input) and that operating early in time confers an additional benefit of \$1 (for example, the accrued interest on the profits or a first-mover advantage). Here, if both factories start their operations at the same time, each would expect a profit of \$101 ( $500 - 800/2 + 1$ ). If one starts in the first period and the other joins in the second period, the first would expect a loss of \$99 ( $500 - 600 + 1$ ) and the second would

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<sup>85</sup> See William L. Prosser, *Joint Torts and Several Liability*, 25 Cal L Rev 413, 432–34 (1937) (“If two defendants, independently operating the same plant, pollute a stream over successive periods, it is clear that each has caused separate damage, limited in time, and that neither has any responsibility for the acts of the other.”).

<sup>86</sup> See note 80.

<sup>87</sup> See note 82; Wright, 23 Memphis St U L Rev at 59 (cited in note 39) (noting that in “situations, when there are theoretically separable injuries attributable to distinct causes, but it is difficult or impossible to actually distinguish . . . the injuries or their causes, the modern trend has been to hold each defendant . . . jointly and severally liable for all the injuries”); Restatement (Second) of Torts § 881; id at § 433A. But see Boston, 25 Envir L at 561, 568–69 (cited in note 81) (noting that the comments in the Restatement § 433A “fail to provide consistent application” and that the example regarding successive injuries is unclear); Megan P. Duffy, Note, *Multiple Tortfeasors Defined by the Injury: Successive Tortfeasor Liability After Payne v. Hall*, 37 NM L Rev 603, 611 (2007).

expect a profit of \$300, the difference between the \$500 profit and its liability for the remaining marginal damage of \$200. The expected payoffs of the parties are summarized in Table 5 below.

TABLE 5. THE PAYOFF MATRIX OF TWO FACTORIES (F1, F2)

		F2			
		Enter		Wait	
F1	Enter	F1 101	F2 101	F1 -99	F2 300
	Wait	F1 300	F2 -99	F1 0	F2 0

As demonstrated in Part II.B.1, under these circumstances, no factory would engage in the activity. Each would rather wait, hoping the other factory would engage in the activity in the first period, destroy most of the lake, and allow the joining factory to enter in the second period and profit \$300. This is the result of the marginal analysis. But while in the prisoner's dilemma, confessing—an action that contradicts each actor's interest but benefits society's—was the result, here the result is a net social loss of \$200 (1000 – 800). Society's and the actors' interests are aligned. All would be in favor of conducting the activity.

Now consider a rule under which every tortfeasor is liable for the entire harm caused by him and others but liability is diluted, for example, based on a prorated basis (that is, the damage is shared among the tortfeasors equally). I refer to this rule as the Entire Harm Rule (EHR).<sup>88</sup> In the case of the two factories, each would be liable for one half of the damage. In this situation one factory clearly pays *more* than the damage it caused and the other pays *less*. The first to produce would be liable for \$400 although it caused a damage of \$600, and the second would be liable for \$400, although it caused a damage of \$200. The

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<sup>88</sup> For a similar yet different suggestion that ignores the traditional causation test, see Robert Cooter and Ariel Porat, *Total Liability for Excessive Harm*, 36 J Legal Stud 63, 64 (2007) (proposing a rule to control social costs in situations where the individual harm caused by each participant is unobservable, under which each participant in the activity is responsible for all of the excessive harm that everyone causes and defining excessive harm as “the difference between the total harm caused by all injurers and the optimal total harm”). The EHR is different in that it subjects all actors to the aggregate harm. Moreover, the EHR is meant to apply in situations when the individual harm is observable and can be determined easily and at low cost.

expected payoffs of the parties under the EHR are described in Table 6 below.

TABLE 6. THE PAYOFF MATRIX OF TWO FACTORIES UNDER THE EHR (F1, F2)

		F2			
		Enter		Wait	
F1	Enter	F1 101	F2 101	F1 101	F2 100
	Wait	F1 100	F2 101	F1 0	F2 0

Under the EHR, both parties will engage in the activity in the first period. Waiting entails no benefits. In fact, under the assumptions it will entail a loss (at the very least the loss of interest or of being the first mover). Put differently, changing the rule turned a free-riding problem, where each is waiting for the other to enter into a race to be the first to produce.<sup>89</sup> Moreover, although under the EHR one tortfeasor may pay more than the harm it caused and the other may pay less, both parties would be better off.

The conclusion is that, even when the damage caused by each tortfeasor is divisible and easily ascertainable, avoiding a marginal analysis (where it can be employed) may be beneficial. Moreover, turning a successive tortfest into a concurrent one may also confer the benefits discussed earlier. Here, it creates a low-cost individual incentive scheme that mimics a concerted effort that, combined with a dilution mechanism, mitigates the concern that the tortfest would be welfare decreasing.

It is important to acknowledge that the EHR is not a perfect solution. Consider, for example, a variant of the factory example in which F1 and F2 gain \$500 and \$350 respectively from the activity, but a factory that operates will cause \$600 of damage to the \$800 lake. As before, if carried by both factories the activity will be welfare enhancing ( $800 < 500 + 350$ ), but it will not take place because of the free-riding problem. Here, the EHR will not

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<sup>89</sup> Note that, with some simplifying assumptions, the result is not dependent on whether the apportionment regime is one of joint and several liability or one that imposes several liability. See Dillbary, 62 Hastings L J at 1757–60 (cited in note 1). In the above example, the expected liability of each is the same: 50 percent of the damage whether the parties are severally or jointly and severally liable for the entire damage.

remedy the problem. Under the EHR, if both operate each will be liable for half of the damage: \$400 ( $800/2$ ). This would allow F1 to operate profitably ( $400 < 500$ ) but not F2 ( $400 > 350$ ). The result is that none of the parties would operate (knowing that F2 will not operate F1 will not operate either) although efficiency requires that they do. This problem would be mitigated and even remedied if more tortfeasors join the activity. The cost savings from using the EHR, which is easy and cheap to administer, may also justify the imperfections in its application. Other mechanisms may also mitigate the problem. For example, Professor Ariel Porat's Expanded Duty of Restitution (EDR) proposal (discussed in the next Section), albeit limited in scope, would allow the tortfeasors that paid the victim earlier in time to recover from future members of the tortfest. It is important to note that in some situations, as in the case of a mechanism that allows parties to join the activity sequentially, there may be additional concerns. For example, if the injured victim brings a suit before enough tortfeasors join the activity to render it welfare enhancing, an injunction or an early verdict may serve as an anti-dilution mechanism, as would punitive damages. Here, courts may need to consider if a tortfest is in the making and be aware of possible strategic behavior.<sup>90</sup>

*b) Imposing liability on non-harming actors.* While the previous Section shows that imposing liability unrelated to the harm caused can be beneficial, this Section takes the analysis one step further. It shows that even a rule that imposes liability on actors that did not cause *any* harm to the victim can be welfare enhancing.

To see how imposing liability on non-harming actors can be helpful and even invited by those subject to liability, recall the example summarized in Table 3. There, each factory could gain \$500 if it engaged in the activity, but in doing so it would completely destroy the \$800 neighboring lake. Under these conditions, neither of the actors would elect to operate although efficiency mandates that they do ( $800 < 1,000$ ). They would not operate because the marginal analysis serves as an effective anti-dilution mechanism that deters the actors. But consider now a rule under which liability is imposed on all actors on a prorated basis (that is, the damage is shared equally by all actors) even if

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<sup>90</sup> Note that simply delaying the suit to allow more tortfeasors to join the festivity may create another free-riding problem. A sequential actor may prefer to wait for others to join the activity first and be subject to liability before it would agree to operate.

they did not cause *any* harm. Assume also that operating earlier confers an additional benefit of \$1. Under this version of the EHR, if one decides to enter first and the other to wait, the first entrant would be liable for only \$400 although it caused \$800 of damage. The second to operate would be liable for \$400 although it did not cause *any* damage (the lake was already destroyed by the first). The expected payoffs of the parties under these conditions are described in Table 7 below. Under this rule, each actor has a dominant strategy to enter. Entering ensures the actor an expected gain of \$101. Waiting may result at most in an expected gain of \$100 or with no profits and is therefore an inferior strategy.

TABLE 7. THE PAYOFF MATRIX OF TWO FACTORIES (F1, F2)

		F2			
		Enter		Wait	
F1	Enter	F1 101	F2 101	F1 101	F2 100
	Wait	F1 100	F2 101	F1 0	F2 0

Here, a rule that imposes liability on the actor that clearly did not cause any damage and allows its dilution was beneficial to all. The creation of a pool combined with a dilution mechanism enabled a desirable tortfest, thereby increasing total welfare by \$202 (1,002 – 800). It incentivized both parties to operate early in time and benefited society by providing a valuable product. The tortfest allows both actors to realize private benefits they could not gain under traditional tort theory.

Even if a facilitating mechanism would allow the tortfest to take place in a sequential manner, the result can be justified. The liability imposed on the non-injuring party can be viewed as the “price” the subsequent tortfeasor is willing to pay to engage in a tortfest. After all, it would not join that tortfest if it were not willing to pay that price. The imposition of liability is also justified on fairness grounds because although the second to operate did not cause any harm, it engaged in an activity that would be damaging had it acted earlier in time. That the first to operate pays less than the damage it caused can also be justified by the fact that the first to operate undertook to identify a suitable location for the tortfest (and took the risk that others would

not follow suit). Proponents of corrective justice should also be appeased at least in that the victim is compensated and may even benefit from the activity as would society at large.

### C. Objections

This Section addresses a few of the objections that may be raised against a rule facilitating beneficial tortfests. It is important, however, to start with a clarification. This Article does not argue that all tortfests are beneficial. In fact, it fully acknowledges that some tortfests are harmful. Rather, this Article only seeks to highlight a situation that has not received attention by the literature and encourage the consideration of rules that will allow welfare-enhancing tortfests. With this caveat in mind, this Section turns to discuss some of the objections to allowing tortfests.

#### 1. The moral argument.

Allowing, even actively facilitating, wrongdoing provokes strong moral indignation. Moreover, some of the solutions discussed impose disproportional liability on the actors. Some actors are liable for more than their “share,” others for less, and yet a third group of actors may be subject to liability for harms they did not cause at all. Yet, the moralist should be aware that all actors have engaged in the activity. In the example above, all actors polluted, although it may be that with regard to some their pollution did not cause any damage to an already destroyed lake. It is thus only the timing in these examples that led to a certain distribution of the harm among the actors. In fact, a tortfest that pools the actors and treats them equally for the harm caused by a similar activity seems like a “fair” result.

Yet, others would be concerned by the fact that a tortfest, by definition, allows too large a number of tortfeasors to do what a few would be dissuaded from doing. The group festivity, however, comes with a liability rule. It would be one thing to allow the tortfest and exempt its participants from liability, but this is not the case. Liability plays an important role here. Not only does it compensate the victim (a “side effect” that may be appealing to those who are concerned with corrective justice), but it also creates a sorting mechanism and enriches the pool of liable actors by situating all tortfeasors on the same footing and then allowing each actor’s liability to be diluted. The result is an increase in total welfare that would benefit society at large.

Moreover, the moralist should recall that it was society that commissioned and commended the harm. Power plants, cement operations, sewage reservoirs, and landfills are necessary parts of modern life. Unfortunately, they also come at a cost that we, as a society, believe is worth paying because the value from these operations outweighs the harm caused. Tortfests can be viewed as an extension of the trade-off society made. Labeling actors who engage in this activity “wrongdoers” is also unjustified. They are wrongdoers as a practical matter because they cause a harm for which the law prescribes a remedy in the form of damages (but not an injunction). But they are also the agents that serve their principal: society.

## 2. The economist’s concern.

The economist, even if persuaded that group “wrongdoing” can be beneficial, may raise a different concern. That tortfests can be efficient does not eliminate the possibility that there are other means by which the same results can be achieved and at a lower cost. The Article has no quarrel with this argument. Its purpose, as noted earlier, is twofold: (1) to highlight that dilution of liability can be beneficial and serve as a sorting mechanism and (2) to encourage the consideration of rules that would increase welfare-enhancing tortfests. If the same result can be achieved by better, more efficient means (for example, regulation), such means should be adopted.

Moreover, regulation and other mechanisms can aid beneficial tortfests, and if so, and if cost justified, they should be adopted. One such mechanism was recently proposed by Professor Porat. Professor Porat proposes a change in the law that would recognize an EDR. Under the proposed regime, when certain conditions are met, “recipients would be obliged to compensate benefactors for unrequested benefits . . . [based on] the lower of two measures—either the indisputable benefit gained by the recipients or their relative share of the reasonable costs of producing the benefit.”<sup>91</sup> To illustrate the operation of the EDR, assume with Professor Porat that constructing a park on A’s land at a cost of \$15 would confer a benefit of \$10 upon A, the owner, and a benefit of \$10 upon B, a neighbor.<sup>92</sup> Although building the park is socially desirable ( $15 < 10 + 10$ ), A will not invest

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<sup>91</sup> See Porat, 108 Mich L Rev at 194 (cited in note 42).

<sup>92</sup> Id at 191.

in its construction because her private benefits are outweighed by the cost of construction ( $15 > 10$ ). Under Professor Porat's EDR proposal, however, A will build the park because she will be able to recover 50 percent (\$7.50) of the cost of construction from B, thereby increasing her total benefits to \$17.50. The result is a net social and individual gain for both A and B.<sup>93</sup>

Professor Jacob argues that the EDR "provides a solution to the *problem* of dilution of liability."<sup>94</sup> He illustrates his point using a similar example where A and B pollute a river thereby causing an expected harm of \$100, which can be avoided if either installs a filter at a cost of \$60. He concludes that "installing the filter is the socially optimal decision," but neither will do so because for each expected liability is diluted to \$50 ( $100/2$ ), which is less than the cost of the filter.<sup>95</sup> The EDR would allow A to purchase and install the filter because it would be able to share the cost of the filter ( $30 < 50$ ).

The conclusion can be justified, but only if there are benefits from acting. If there are no benefits from pollution, the "optimal decision" is to avoid the damaging activity altogether. Pollution in Professor Jacob's example yields no benefit, only a cost, whether of \$100 if no filter is installed or of \$60 if it is. But a solution of "no activity" means no cost at all and is therefore preferable. What is missing is a benefit analysis. The EDR can solve the problem in the case of the bystanders where each has nothing to gain but the victim (and society) loses if no one takes action. But the factories are different than the bystanders. As discussed earlier, factories are for-profit entities, and once the benefits from their operation are introduced, the analysis changes. Assume for example that each factory makes a profit of \$40. Here, one factory will not engage in the activity at all because the damage or the cost of the filter, if one is not installed, outweighs the benefits ( $100, 60 > 40$ ). If transaction costs are high, two factories would not operate either, but three would.<sup>96</sup> With three participants, the expected liability of each would be diluted enough to make the activity worthwhile ( $100/3 < 40$ ). Dilution of liability is therefore not always a "problem." It can be a solution. But as explained in Part II.A.1, in these circumstances it is only a second-best solution. Ideally, the tortfest participants

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<sup>93</sup> A would profit \$2.50 ( $17.50 - 15$ ), and so would B ( $10 - 7.50$ ).

<sup>94</sup> Jacob, 108 Mich L Rev First Impressions at 14 (cited in note 3) (emphasis added).

<sup>95</sup> Id at 13.

<sup>96</sup> See the example in Table 1 in Part II.A.1.



would collaborate to purchase the filter, and the EDR can indeed help bring the precaution level to an optimum.

Professor Porat's EDR can *complement* the dilution mechanism already provided by the law, but it is of limited scope. It seems that its major application is in situations where the parties need to take care, but it does not apply in situations where the parties took care yet are liable under a theory of strict liability.<sup>97</sup> Moreover, as the campers example<sup>98</sup> shows, even when it comes to precaution levels, in some situations, dilution of liability can result in optimal levels where other mechanisms, EDR included, cannot. This can occur where efficiency requires that the parties do not take care at all.<sup>99</sup> Dilution of liability may enjoy a few additional benefits: instead of forcing the beneficiaries to share the costs, dilution of liability allows the beneficiaries to decide whether they want *ex ante* to engage in the activity and thus be subject to the sharing mechanism provided by the diluted liability; or whether they want to opt out and avoid acting. Dilution of liability also avoids some of the measuring problems as it rolls the decision to each actor to decide if it is beneficial enough for it to join the activity.

Finally, it seems that the EDR is limited to situations where the beneficiary is salient. For instance, in the owner-neighbor example it is clear that one party is the benefactor and the neighbor is the "recipient."<sup>100</sup> In simultaneous situations, however, when the parties are aware of each other but cannot observe who, if any, takes care, the EDR—a solution that was designed to solve a free-riding problem<sup>101</sup>—may in fact create one. To see why, consider the following variation of an example provided by Professor Porat to illustrate the operation of the EDR.<sup>102</sup> Assume

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<sup>97</sup> A broad interpretation of the EDR—under which one factory will try to recover from another the benefits of being second—is possible, but it is not clear that such a broad interpretation, even if adopted by state legislators, would be more cost effective.

<sup>98</sup> See Introduction, notes 125–30 and accompanying text.

<sup>99</sup> In the campers example, a camper values his or her activity at \$50 but must invest \$40 in precaution or the fire that would result would (either alone or combined with other fires) destroy the victim's \$90 cabin. See Introduction, Part III.B. For the reasons explained below, with three or more campers efficiency requires that *none* takes care. A mechanism that would require or force the parties to take care would thus be welfare decreasing.

<sup>100</sup> Porat, 108 Mich L Rev at 190–91, 206 (cited in note 42).

<sup>101</sup> Id at 205–06 (noting that in free-riding situations "an EDR is most essential for fostering private production of public goods currently not being produced").

<sup>102</sup> Id at 206–07. The example, referred to as Example 2, discusses a situation in which X creates pollution that affects residents and A, one of the residents, can stop by (a) paying X, (b) taking costly precaution (the subject of the example above), or (c) suing

a factory inflicts a damage of \$50 on each of residents A and B (a total of \$100) that can be avoided by any of the residents at a cost of \$60. In this example neither resident will take care ( $60 > 50$ ) although society would be better off if A or B (but not both) took precaution ( $60 < 100$ ). Professor Porat correctly notes that A “will not make the necessary effort at stopping the pollution . . . unless she is able to collect from the other residents at least part of her costs.”<sup>103</sup> The result would be under-investment in precaution.<sup>104</sup> But the EDR may result in under- or over-investment.<sup>105</sup> For example, an EDR that allows each resident to take care and then recover from the other may result in *both* residents taking care and lead to a social waste of \$20 ( $60 \times 2 - 100$ ).<sup>106</sup> Professor Porat’s EDR solution cannot solve an alternative care situation where multiple actors must decide whether to take care without observing each other’s actions. For this reason, the EDR is not an adequate solution for simultaneous tortfests.<sup>107</sup>

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for injunction. Professor Porat explains that the example “represents [a] typical case in which free riding subverts the efficient creation of benefits.” *Id.*

<sup>103</sup> *Id.* at 207.

<sup>104</sup> Game theory would lead to the same result. If both residents take care, each would spend \$60 on precautions, and if neither takes care, each would suffer a loss of \$50. If one takes care and the other does not, the resident that takes care will lose \$60, and the resident that does not will not suffer any loss. The result is a dominant strategy not to take care (if B takes care, A is better off not taking care, and if B does not take care, A is also better off not taking care ( $-50 > -60$ ) and vice versa). Under an EDR regime, if one takes precaution and the other does not, each would bear half of the cost of precaution: \$30 ( $60/2$ ). The result is multiple equilibria in which one party takes care and the other does not, but it is impossible to predict how the parties will behave. Indeed, it is possible that neither or both take precaution.

<sup>105</sup> See Porat, 108 Mich L Rev at 207 (cited in note 42) (showing that under the EDR neither or both residents may take care).

<sup>106</sup> The problem does not arise if A asks for an injunction or pays the factory to cease operation—in both cases, it is clear that A is the benefactor and B the recipient.

<sup>107</sup> For example, assume with Professor Jacob that either factory A or factory B can avoid the \$100 damage at a cost of \$60. Jacob, 108 Mich L Rev First Impressions at 13–14 (cited in note 3). But now also assume that each factory can benefit \$80 from the activity. Here the activity is welfare enhancing ( $80 > 60, 50$ ), but neither will take care because the expected liability of each is diluted below the cost of precaution ( $60 > 50$ ). The result is thus under-investment in precaution. Professor Jacob is correct that an EDR would incentivize the actors to take care by providing a right of reimbursement, but the EDR may lead to over-investment if both take care. Moreover, if strategic behavior is considered, the result is ambiguous. If both parties take care, each will expect a profit of \$20 ( $80 - 60$ ), and if none takes care, the expected profit will be \$30 ( $80 - 100/2$ ); but if one takes care and the other does not, under the EDR each will expect a gain of \$50 ( $80 - 60/2$ ). The result is multiple equilibria in which one takes care and the other does not, but it is impossible to predict the factories’ actions.

### 3. The examples.

The stylized examples used in the Article may also raise objections. In the simultaneous tortfest it is assumed that each actor knows or believes that a large enough number of tortfeasors, even if not visible, engage in the activity such that her liability would be diluted enough to provide her with an independent incentive to act. This may be true in some settings but not in others. In addition, the Article does not analyze situations where, for example, the care function is continuous or situations where the probability of the accident or the magnitude of the harm changes with the number of actors. As noted earlier, the goal of this Article is modest. The goal is not to show that dilution of liability is always welfare enhancing (it is not). Rather, the purpose of this Article is to highlight a gap in the literature, namely, that dilution of liability can be welfare enhancing. The Article does so by following the methodology and building on some of the examples provided by the prior literature to show that dilution of liability can be beneficial. In doing so it hopes to reinvigorate and spark further investigation of the phenomenon as courts do impose liability which is diluted.

It should be noted, however, that although the prior literature, and accordingly this Article, focused on alternative care situations where the damage is constant, dilution of liability is a broader phenomenon. For example, it is easy to show that dilution of liability can occur even if the damage increases with the number of tortfeasors as in the case where the first tortfeasor causes \$100 in damages, the second increases the total damage to \$150, the third to \$170, and the fourth to \$180. In this situation the expected liability of each tortfeasor is diluted with every additional actor (from 100 to 75 to 56.67 to 45). Similarly, as shown in Part III below, dilution of liability can occur in settings other than alternative care.

### 4. Measuring concerns.

In the above examples, the value of the destroyed asset—the cabin in the campers example, the car in the bystanders example, and the lake in the factory example—was measurable. But in real life, things may be more complicated. The court may underestimate the value of the victim's asset. And even if the victim's asset is correctly valued, the damage may not cover the full cost of the accident. In the factory example, the real harm may include the value of the lake as well as the depreciation in air

quality and other environmental concerns that may not be easily verifiable. Albeit a real concern, the measuring problem does not change the analysis. Assume for example that the harm from the factories is the destruction of the \$800 lake as well as an environmental damage that is ten times higher: \$8,000. Still, if acting is beneficial, there will be a point that with enough factories the benefits would outweigh the gain. If each factory gains \$300 from the activity, then with 30 factories the activity will become welfare enhancing ( $30 \times 300 > 8,800$ ). As long as the full damage is internalized by the actors, the result does not change.

##### 5. Antitrust law.

One of the solutions offered to solve the coordination and free-riding problems that plague tortfests was to facilitate and create mechanisms to allow actors to combine, cooperate, and coordinate a group wrongdoing. One can envision a form of regulation that would reduce the transaction costs of potential actors and result in an agreement to cooperate. This, one may argue, runs the risk of violating federal antitrust laws and, in particular, Section 1 of the Sherman Act,<sup>108</sup> which prohibits collusion and agreements in restraint of trade. However, a tortfest, even one which is the result of an agreement, should not raise any antitrust concerns if it is done by actors who do not compete in the same product market. In the examples above, F1 could have been a cement factory, F2 a power plant, and so on.<sup>109</sup> Moreover, even if the actors are members in the same industry,<sup>110</sup> antitrust law allows competitors, under certain situations, to collaborate.<sup>111</sup> Such situations include research and development efforts, standard setting, as well as cost-reducing joint ventures. These agreements, even when done between horizontally situated actors, do not restrain trade. They enhance it, and for this reason, they are subject to a rule-of-reason analysis. A tortfest that allows a number of actors to collaborate and orchestrate a

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<sup>108</sup> Ch 647, 26 Stat 209 (1890), codified as amended at 15 USC § 1 et seq.

<sup>109</sup> See, for example, *Oakwood Homeowners Association*, 258 NW2d at 476, 484–85 (imposing joint and several liability in a nuisance suit for pollution against a car manufacturer, a petroleum refinery, a lime processing plant, and a salt company).

<sup>110</sup> See, for example, *Farley v Crystal Coal & Coke Co*, 102 SE 265, 266 (W Va 1920) (describing how six different coal-mining companies located on the same river polluted the plaintiff's property).

<sup>111</sup> Department of Justice and Federal Trade Commission, *Antitrust Guidelines for Collaborations among Competitors* (Apr 2000), online at <http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf> (visited Sept 10, 2013).

welfare-enhancing yet harmful activity should be allowed for the same reason. It simply does not make any sense to use the anti-trust machinery to condemn what tort law, in the name of society, commends.

### III. BEYOND ALTERNATIVE CARE

#### A. Dilution of Liability as a Concern

The salience literature narrowly limits its discussion to alternative care situations where the damage is constant. For example, to show that dilution of liability is a concern only in these situations, Professors Jacob and Harel contrast the bystanders example<sup>112</sup> with a situation involving arsonists. In the arsonists example, a number of defendants, each holding a torch, set the victim's car on fire.<sup>113</sup> Professors Jacob and Harel explain that the difference between the two cases is not between omission (failing to take care) and commission (using a torch).<sup>114</sup> The difference, they argue, is that “[u]nlike the [bystanders] example, the torch hypothetical is not an alternative care situation.”<sup>115</sup>

While the authors are correct that the arsonists example is different because it is not an alternative care situation, they are mistaken in concluding that dilution of liability is a concern only in alternative care situations. It is true that unlike the bystanders example one arsonist alone cannot avert the damage. As the authors note, “The car could have been damaged by any one of the individuals holding a torch.”<sup>116</sup> The arsonists example is thus not an alternative care scenario. Rather, it belongs to a class of cases in which each tortfeasor's conduct is an independent and sufficient cause of the injury. However, even in the arsonists example, dilution of liability is a concern. The expected liability of each arsonist decreases as the number of tortfeasors increases. With two arsonists and assuming the value of the car is \$100,

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<sup>112</sup> See notes 1–3, 26–32 and accompanying text.

<sup>113</sup> Harel and Jacob, 3 *Theoretical Inq L* at 430 (cited in note 3).

<sup>114</sup> *Id.* (noting that

what can explain the difference between this case [the arsonists example] and the case of the failure to extinguish the fire [in the bystanders example] is the fact that the latter involves an omission (failure to use a fire extinguisher) while the former involves an act (use of a torch)

but immediately dismissing this explanation because it “is too hasty an answer and ignores a fundamental difference between the two cases”).

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

the expected liability of each arsonist would be \$50. With four arsonists, the expected liability of each would decline to \$25.

Interestingly, a similar example was discussed by Professor Richard W. Wright in an attempt to prove that joint and several liability is a superior apportionment regime to that of several liability.<sup>117</sup> Instead of arsonists, Professor Wright gave an example of four tortfeasors, each of whom deliberately put a drop of poison in the victim's cup.<sup>118</sup> It would be "silly," he argued, to say that each of the defendants is only "25% negligent" as several liability requires.<sup>119</sup> In Professor Wright's view, the result is "perverse"<sup>120</sup> because "the more tortfeasors there [are], the less liable each would be, although the tortious behavior of each [tortfeasor] remain[s] constant and [is] an actual and proximate cause of the plaintiff's entire injury."<sup>121</sup>

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<sup>117</sup> Wright, 23 *Memphis St U L Rev* at 56–57, 60–61 (cited in note 39). To the extent that Professor Wright concludes that an apportionment regime of several liability can result in dilution of liability and therefore is inferior to a regime of joint and several liability, the conclusion is faulty. Dilution of liability can occur under a regime of joint and several liability as well as a regime of several liability. In fact, dilution of liability can occur under *any* apportionment regime. See Dillbary, 62 *Hastings L J* at 1743–44 (cited in note 1); Mark M. Hager, *What's (Not!) in a Restatement? ALI Issue-Dodging on Liability Apportionment*, 33 *Conn L Rev* 77, 103 (2000).

<sup>118</sup> In Professor Wright's example, three drops were necessary to kill the victim but this does not change the analysis: each of the tortfeasors will be subject to liability. Wright, 23 *Memphis St U L Rev* at 57 (cited in note 39). See also Part II.A.1.

<sup>119</sup> Wright, 23 *Memphis St U L Rev* at 56 (cited in note 39).

<sup>120</sup> *Id.* at 57. Professor Richard A. Epstein explains how apportionment of damages can lead to a different "perverse" result—that of dilution of benefits (as opposed to liability). Epstein, 73 *Georgetown L J* at 1385 (cited in note 46). Consider the following variant of Professor Epstein's example. Suppose that a dumpsite that receives toxic waste from one factory causes a \$2,000 damage to a neighboring victim and that 50 percent of the damage can be avoided at a cost of \$400. Here, the factory will take precaution. Investing \$400 will reduce the factory's liability from \$2,000 to \$1,000, a savings of \$600. Assume now that ten factories dump their toxic waste to the same site, bringing the total damage to \$20,000. Investing \$400 to reduce the damage from \$20,000 to \$19,000 is still efficient ( $1,000 > 400$ ). Yet, now the original factory will not take care. The reason is a collective action problem: The original factory would be the only one that bears the \$400 cost of precaution while the benefits therefrom would be shared with all the tortfeasors. In a group of ten tortfeasors, taking care would reduce the total cost to \$19,000 ( $20,000 - 1,000$ ) and each factory's expected share to \$1,900 ( $19,000/10$ ) making the investment of \$400 unprofitable ( $400 > 100$ ). Here, the problem is not dilution of liability. It is true that liability of each tortfeasor is diluted, but the problem is the dilution of the benefits from taking precaution.

<sup>121</sup> Wright, 23 *Memphis St U L Rev* at 57 (cited in note 39). Wright refers to this "perverse" situation as a "tortfest." *Id.* This Article, however, uses the term "tortfest" to describe a situation that is more than just dilution of liability. It defines "tortfest" as a situation where dilution of liability incentivizes the parties to engage in the "wrongful" activity.

Both the arsonists and the poisoned-drinker examples, however, are flawed. When tortfeasors engage in an intentional act, they garner some benefit from inflicting the harm.<sup>122</sup> To see how dilution of liability can occur in such situations, assume that the value of the car that was set on fire is \$100 and that each of the four arsonists was willing and able to pay \$60 in the form of a fine, compensation, or a fee to inflict the harm. Each of the arsonists would be deterred if acting alone ( $60 < 100$ ), but if part of a group of four, they would set the car on fire because their individual (expected) liability would be diluted ( $60 > 100/4$ ). Dilution of liability in this case operates in the same manner as it does in the bystanders hypothetical in the sense that, in both cases, it reduced the parties' incentives to take care. The only difference is the remedy. While in the bystanders case the remedy is an anti-dilution mechanism in the form of singling out one tortfeasor, in the arsonists example the car is spared by imposing punitive damages on the intentional tortfeasors.<sup>123</sup>

#### B. Dilution of Liability as a Remedy

The categorical condemnation of dilution of liability in alternative care situations is also too broad. Even in the narrowly identified cases in which the prior literature concluded that dilution of liability is a "problem," a "risk," and a phenomenon that is "disharmonious with the very essence of the concept of liability" and should thus be "condemned,"<sup>124</sup> dilution of liability can be desirable. Sometimes, dilution of liability may actually be a remedy.

Recall the campers example discussed earlier, which is in essence a variant of the arsonists example. In the campers example, if a number of campers in a heavily forested area fail to extinguish their campfires, the several fires will join and destroy the victim's cabin, which lies in the valley below the forest.<sup>125</sup> Assume that the campers cannot cooperate and that any single

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<sup>122</sup> For a model of intentional torts, see Landes and Posner, 9 *J Legal Stud* at 531 (cited in note 2).

<sup>123</sup> For those who are concerned with efficiency, this case is, at least on its face, puzzling, as the four arsonists together clearly value the car more than its owner ( $60 \times 4 > 100$ ). Still, the "taking" of the car (by setting it on fire) is inefficient because it is merely an attempt to bypass the market in a setting where transaction costs are low. It is therefore condemned for the same reason that a theft cannot be justified even when the thief values the stolen artifact more than its owner.

<sup>124</sup> Harel and Jacob, 3 *Theoretical Inq L* at 414, 421, 427, 436, 451 (cited in note 3).

<sup>125</sup> See note 9 and accompanying text.

fire can destroy the cabin, the value of which is \$90. Each camper can avoid setting a fire if she spends \$40 on care and each is willing and able to pay \$50 for the right to camp. In the case of two campers, economic efficiency and the law<sup>126</sup> require that each of the campers engage in the activity ( $40 \times 2, 90 < 50 \times 2$ )<sup>127</sup> and that each take care ( $40 \times 2 < 90$ ). Game theory predicts that this is exactly what the campers will do. If both take care, each spends \$40 and can expect a net gain of \$10 ( $50 - 40$ ), but if neither takes care, the expected gain for each will only be \$5 ( $50 - 90/2$ ). If one party takes care and the other does not, the party who takes care can expect a gain of \$10 ( $50 - 40$ ) and the one who does not can expect a net loss of \$40 ( $50 - 90$ ). By taking care a camper ensures that she gains \$10. If, on the other hand, the camper does not take care she may gain \$5 (if the other camper does not take care) or lose \$40 (if the other camper does). Each camper is therefore better off taking care regardless of what the other does. Taking care is thus a dominant strategy as is also shown by the expected payoffs matrix in Table 8 below.

TABLE 8. THE CAMPERS' PAYOFFS FROM TAKING CARE  
(CAMPER 1, CAMPER 2)

		C2			
		Take Care		No Care	
C1	Take Care	C1	C2	C1	C2
	No Care	10	10	10	-40
		C1	C2	C1	C2
		-40	10	5	5

With three campers, however, the analysis changes. As in the arsonists example, if no one takes care, all will be jointly and severally liable for the entire harm because each camper's conduct is an independent and sufficient cause of the injury.<sup>128</sup> Yet,

<sup>126</sup> See Dobbs, *The Law of Torts* § 171 at 415 (cited in note 39) (discussing a similar example and noting that "the two tortfeasors who set the two different fires are both causes of the plaintiff's harm, provided only that each fire was sufficient standing alone to cause the same harm").

<sup>127</sup> The activity yields a total benefit of \$100 ( $50 \times 2$ ), which is higher than the \$90 total cost to the victim if the campers do not take care or the \$80 ( $40 \times 2$ ) total cost of precaution if they do.

<sup>128</sup> The example is based on the Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 27, comment a, illustration 1, and Restatement (Second) of Torts § 433A, comment i, illustrations 14–15.



although each party is still liable ( $40 < 90$ ), none will take precaution. Taking care would yield an expected gain of \$10 ( $50 - 40$ ). But without care each camper's expected liability would be diluted to \$30 ( $90/3$ ) and her expected gain would double: \$20 ( $50 - 30$ ). Unlike the arsonists example, however, here the result is efficient. Because the total cost of precaution outweighs the damage ( $120 > 90$ ), we do not want the parties to take care. Put differently, the accident is cost justified. Taking care yields an expected benefit of \$30 ( $150 - 40 \times 3$ ) but failing to take care would double the expected benefits ( $150 - 90$ ).

The puzzle here is why are the three campers liable at all?<sup>129</sup> The reason is the inability to distinguish between accidents that are not cost justified (those caused by one or two tortfeasors in the example above), and those that are value maximizing. Requiring courts to engage in an individual, as well as total, cost-benefit analysis is not an easy task. It is one thing to ask courts to compare the cost of a specific individual's possible precaution to the harm that will result if the specific precaution is not taken, a formidable task in and of itself. It is quite another thing to ask the courts to also check whether the total costs of a number of possible precautions taken by different individuals outweigh the damage they caused and compare those to the individual and aggregate benefits from the actors' actions (all of which may vary across actors). The latter analysis may be harder to conduct and is more likely to be rife with mistakes.<sup>130</sup> Sorting a cost-justified accident from an inefficient one also requires the courts to be able to identify the exact moment where an additional investment in precaution by the marginal actor would be inefficient. At that moment, all actors should be exempted from liability. Identifying that moment may be costly, if not impossible; and an error would only add to these costs.

Dilution of liability, on the other hand, can serve as a simple mechanism to avoid the measuring and sorting problems. Liability is imposed as a first step on all actors based on an *individual* cost-benefit analysis to ensure that parties take the optimal level of precaution when the accident is inefficient. In the second

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<sup>129</sup> One can argue that in the above example the campers' failure to take care was reasonable and they should thus not be subject to liability. But see *Kingston v Chicago & N.W. Ry. Co.*, 211 NW 913, 914–15 (Wis 1927) (imposing liability in a similar situation).

<sup>130</sup> See Cooter and Porat, 36 J Legal Stud at 64 (cited in note 88) (discussing situations where the individual harm is unobservable but the total harm is and offering to subject each tortfeasor to liability for the total harm).

step, liability is diluted exactly at the point where the *total* cost of precautions outweighs the benefits. In the campers example it is easy to show that the cost of precaution each can take is lower than the damage that would occur if such precaution is not taken ( $40 < 90$ ). The analysis would lead to the conclusion that all campers are liable, which is the efficient result in the case of one or two tortfeasors. Dilution of liability ensures that if more than two campers caused the harm, *because all are liable*, the individual expected responsibility would be for only a fraction of the damage and therefore none would take precaution. Here, the dilution mechanism ensures that those who face liability will take care when it is efficient to do so and avoid taking care when it is inefficient.

To be clear, the economist, sorting issues aside, would be willing to exempt the three campers from liability. Efficiency only requires that they do not take care, and this can be achieved by either allowing the campers to go scot-free (under a no liability rule) or by finding them all liable and in doing so diluting the expected cost each faces. The latter method is preferable when administrative costs are higher (for example, when the court cannot engage in the cost-benefit analysis or when doing so would not be cost justified). It is also the preferred option to proponents of distributive justice as it provides compensation to the innocent victim.

Dilution of liability can therefore be detrimental or beneficial. It may occur in cases of alternative care as well as in cases where each tortfeasor's conduct is an *independent and sufficient* cause of the injury, as in the arsonists and campers examples where each tortfeasor wrongfully and independently caused a fire that could alone bring the damage.<sup>131</sup> For similar reasons, it may also occur in cases (1) where the conduct was *necessary even if insufficient* (that is, it was the straw that broke the camel's back). For example, when water escaped from the defendant's land and combined with water from other sources to break the nearly full dam;<sup>132</sup> and (2) even when the conduct was *neither*

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<sup>131</sup> Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 27, comment a; Professors Brief at \*13–16 n 4 (cited in note 39) (contrasting the Restatement (Second) of Torts § 433A illustration 5 with illustrations 14–15 and calling them “inconsistent[ ]”).

<sup>132</sup> Based on the Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 36, comment b, illustration 2 (“[T]he actor who negligently provides the straw that breaks the camel's back is subject to liability for the broken back.”). See also *id.* at § 27, comment f, illustrations 3–4; Professors Brief at \*13 (cited in note 39); *Town of*

*necessary nor sufficient*.<sup>133</sup> For example, in a situation where the owners of four parcels of land negligently allowed a chemical that is naturally deposited on their lands to leak into a nearby river. Even if the contamination of the river would occur only if three of the four allowed the chemical to leak, all would be considered jointly and severally liable for the entire damage.<sup>134</sup>

In all of these situations the same dynamic occurs: since the damage is constant (that is, the value of the victim's cabin, dam, or river), liability will be diluted as the number of tortfeasors increases.<sup>135</sup> If enough tortfeasors join the activity, no one will take precaution.

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*Sharon v Anahma Realty Corp*, 123 A 192, 192 (Vt 1924) ("Whenever the separate and independent acts or negligence of several persons, by concurrence, produce a single and indivisible injury which would not have occurred without such concurrence, each is responsible for the entire result, and they may be sued jointly or severally."); *Wm. Tackaberry Co v Sioux City Service Co*, 132 NW 945, 952 (Iowa 1911), citing "Pollock on Torts (2d Ed.) p. 406" for the proposition that "a cause of action for nuisance may be created by independent acts of different persons, though the acts of one only of those persons would not amount to a nuisance" and relying on the following example:

Suppose one person leaves a wheelbarrow standing on a way; that may cause no appreciable inconvenience; but, if 100 do so, that may cause a serious inconvenience, which a person entitled to the use of the way has a right to prevent; and it is no defense to any one person among the 100 to say that what he does causes of itself no damage to the complainant.

Wright, 23 Memphis St U L Rev at 55 (cited in note 39) (noting that in situations where each of the defendants' negligence was necessary or independently sufficient, courts consistently found liability). Different jurisdictions take different approaches on the issue of apportionment. Some courts apply joint and several liability. *Id.* Others, such as the *Wm. Tackaberry* court, subject the tortfeasors to several liability. *Wm. Tackaberry*, 132 NW at 948–50. In early cases, the reason was often due to the confusion between substantial and procedural joinder. See Dillbary, 62 Hastings L J at 1737–43 (cited in note 1). In other jurisdictions, apportionment is the result of balancing between different policy considerations. See notes 83–87 and accompanying text.

<sup>133</sup> See Restatement (Third) of Torts: Liability for Physical and Emotional Harm § 27, comments a, f, illustration 4; Wright, 54 Vand L Rev at 1100–01, 1106–08 (cited in note 39); Professors Brief at \*14 (cited in note 39); Dobbs, *The Law of Torts* § 171 at 415 n 6 (cited in note 39) (noting that "[w]hen no one polluter independently releases enough hazardous material into the environment to cause harm, but the entire group of polluters, each acting independently, collectively release an amount sufficient to cause harm, courts may treat each as causal" based on theories such as "the single indivisible injury rule" or by analogy to the two fire scenario).

<sup>134</sup> See Richard W. Wright, *Allocating Liability among Multiple Responsible Causes: A Principled Defense of Joint and Several Liability for Actual Harm and Risk Exposure*, 21 UC Davis L Rev 1141, 1187 & nn 157–58 (1988) (noting that in such situations some courts apply joint and several liability on the parties while others apply several liability and artificially divide the indivisible harm between the tortfeasors); Wright, 23 Memphis St U L Rev at 55, 57 (cited in note 39).

<sup>135</sup> As shown in Part II.C.3, it is not necessary that the damage is constant.

## CONCLUSION

Dilution of liability has been long recognized as a problem that must be remedied. The core concern is that as the number of tortfeasors increases, the liability that each faces decreases, and so does their incentive to take care. The result is that accidents that would have been avoided if only one or a few were subject to liability would occur if liability were imposed on many. The focus of the salience literature, however, was limited in nature. This literature centered on (1) alternative care situations (that is, situations where any of the tortfeasors can avoid the accident); (2) where the damage to the victim does not vary with the number of tortfeasors (and therefore liability is diluted); and (3) the tortfeasors do not gain from the accident.

While acknowledging that dilution of liability may have detrimental effects, this Article shows that the focus of the literature has been both too narrow and too broad. It has been too narrow because dilution of liability can occur in many settings, not just in alternative care cases where the damage is constant. At the same time, the focus of the literature has been too broad because its categorical condemnation of dilution of liability is unwarranted.

In fact, even in the quintessential harmful case—alternative care cases with constant damage—dilution of liability can be welfare enhancing. The Article shows that dilution of liability can incentivize parties to take the optimal care and operate at efficient activity levels. Dilution of liability does so without subjecting the courts to a daunting aggregate as well as individual cost-benefit analysis, and it shifts the risk of error from the courts and victims to the actors. Certain dilution mechanisms (for example, the EHR) and anti-dilution mechanisms (for example, the EDR) can even succeed where a marginal cost-benefit analysis fails. While the latter can exempt an injurer from liability even when the combined effect of the successive tortfest is welfare decreasing, or can block beneficial tortfests from taking place altogether, alternative mechanisms can help ensure that the accident occurs if it is socially desirable.

Moreover, the Article shows that dilution of liability may even incentivize parties to engage in beneficial tortfests. Using a number of numerical examples, it demonstrates how certain activities that would not and should not take place if conducted by one or a few parties would and should take place as tortfeasors amass and join a tortfest. Here, dilution of liability plays

a critical role in overcoming cooperation costs between the tortfest's participants.

After investigating the impact of tortfests on actors' precaution and activity levels, the Article concludes that, under certain situations, incentivizing actors to join a group wrongdoing or combine with others to initiate one can be desirable. It concludes that members of a welfare-enhancing tortfest should be immune to punitive damages, even when they acted willfully and with the knowledge that an injury is likely. The Article also has surprising implications to the apportionment debate. It shows, for example, that treating successive torts as concurrent where the damage is clearly and easily divisible can be beneficial. Even a rule that imposes liability on non-harming actors can be beneficial. The result, it is argued, would be to increase societal welfare.