2 Contributory and comparative negligence in the law and economics literature

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2.1 Introduction

This chapter reviews the literature on two different and important rules within the universe of negligence law, namely contributory and comparative negligence, and discusses their efficiency properties in inducing care and minimizing the costs of accidents.

The chapter is structured as follows. The first part of the chapter introduces the differences between contributory and comparative negligence, and the judicial evolution of the application of those rules in the United States and Europe.

The second part reviews the law and economics literature on contributory and comparative negligence. This literature has gone through four major phases. In the first phase, contributory negligence was considered the efficient rule because it was believed to create efficient incentives for parties to adopt efficient care, mainly in a setting in which a least cost avoider was assumed to exist. In the second phase, it was shown that under perfect information both rules were equivalent from an efficiency perspective. However, once some of the assumptions were relaxed, the equivalence between both rules did not hold. Hence, in this third phase, the discussion has focused on the assumptions and the performance of both rules that seem to favor comparative negligence.

Today, though, discussion on the relative efficiency properties is more parsimonious in terms of a global advantage, and skepticism prevails about deciding which rule is preferred.

This chapter navigates the different phases of this literature and presents the most important articles that have contributed to the discussion, and their major criticisms. Still, there is a lot to be said on comparative and contributory negligence from an economic viewpoint.

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2.2 The world of negligence

Negligence law assigns liability for harm caused by conduct that breaches a given standard of care. The standard of care is set by the law, and it serves to guide the legal consequences of accidents. In so doing, it also guides the conduct of anyone considering the precautions necessary to avoid future liability for their actions. If an actor unintentionally causes harm but has complied with the applicable standard of care, negligence law ensures that this actor will not be liable and that the injured party (or someone else) will instead bear the costs of the injury. If, on the other hand, the actor has breached the applicable standard of care, then the actor will bear the costs of the injury and the injured party will be compensated1 (Grady, 1983; Kahan, 1989).

In setting the standard of care, negligence law recognizes that not all injuries are worth preventing. In many instances, the standard of care is relatively low because a more demanding standard may be viewed as impossible to achieve or economically impractical. The first formal legal definition of how the standard of care should be optimally set came from Judge Learned Hand in United States v. Carroll Towing Co.2 In that case, Judge Hand set the standard of care based on the interaction of three parameters: the probability of an accident, the cost of the accident, and the cost of adopting the care necessary to avoid the accident. He concluded that a party should be required to take care up to the point where the cost of such care becomes equal to or greater than the expected cost of the accident.3

The level of care (so calculated) may vary depending on the circumstances. Judge Hand’s approach recognizes this variation, and requires an individual to take the level of care that a reasonable person would take under the circumstances, with the above parameters as a guide.4 While the meaning of ‘reasonable person’ may be open to debate, the combination of reasonableness considerations with Judge Hand’s parameters fosters the emergence of an efficient standard of care – that is, a standard that minimizes the sum of the costs of care for both potential injurers and the expected costs of the accidents for potential victims.

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1 Under conventional approaches to causation in negligence law, the injurer’s expected total cost function shows a discontinuous jump at the level of due care. An alternative approach, proposed by Grady, would make liability for negligence a continuous function based on the incremental difference between the harm that takes place with the injurer’s actual level of care and the harm that would have taken place had the level of care taken by the injurer been the due care set by the rule.
2 159 F.2d 169 (2d Cir. 1947).
3 Ibid. at 173.
4 Ibid. at 174.
Judge Hand’s formula has been enormously influential. It has been adopted by the Restatement (Second) of Torts, and by numerous courts in the United States. It has been applied to hold negligent countless defendants, and it has guided countless potential defendants to invest in the care necessary to prevent any harm that has an expected cost that is greater than the cost of eliminating it.

Our discussion, so far, has been framed in a unilateral context. When only one party can take measures influencing expected accident costs, this party knows that by adopting the standard of care set by the law, she can avoid liability. Conversely, by falling short of the standard of care, this party may bear the costs of any harm she causes to others. Optimal negligence rules should result in compliance with the standard of care and in an efficient minimization of the costs of both care and accidents.

Those who are injured by accidents, however, also play a role in this scheme. The conduct of potential victims can influence both the probability and the severity of an accident. To create efficient negligence rules, we must therefore consider the incentives necessary to ensure that victims exercise an appropriate level of care as well. In other words, we must consider bilateral care models.

The two most important concepts in the bilateral care setting are contributory and comparative negligence. The rules surrounding these concepts are far from uniform, in either theory or application, and they have evolved over time in important ways.

2.3 Contributory and comparative negligence: concepts and evolution

2.3.1 Contributory negligence: origin, development and later trend towards comparative negligence

In the legal systems that apply it, contributory negligence is generally a defense that may be asserted in a negligence action to bar an injured plaintiff from obtaining compensation for harm proximately caused by his own negligence, regardless of whether and to what extent this harm was also caused by the defendant’s negligence. In other words, if the plaintiff’s

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5 § 291 (1968).
6 Indeed, Judge Hand’s famous rule in Carroll v. Towing was actually laid out in the context of the injured party’s role in causing the harm for which it sought compensation. See 159 F.2d at 173–4.
7 The Restatement (Second) of Torts – s 463 (1965) – defines such negligence on the part of the plaintiff as a ‘conduct on the part of the plaintiff which falls below the standard to which he should conform for his own protection, and which is a legally
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Contributory negligence played any role in causing the harm for which he seeks compensation, no matter how slight this role was in comparison to the role of the defendant’s negligence, the contributory negligence defense entirely absolves the defendant from liability. Contributory negligence is thus an all-or-nothing approach.

The seminal case establishing a contributory negligence rule is *Butterfield v. Forrester*, decided by the English Court of King’s Bench in 1809. In this case, the plaintiff had ridden a horse very quickly down a public road and collided with a pole placed in the road by the defendant, who was making repairs on his house. When the plaintiff sought compensation for his resulting injuries, the court denied the claim on the ground that he had been riding too fast to see and avoid the obstruction. In other words, he was barred redress because his own negligence had contributed to his harm.

Almost five decades later, the US Supreme Court introduced the concept of contributory negligence to the American legal system in *Brown v. Kendall*. The concept quickly spread to other courts in the United States as a judge-made rule and became, for a time, the generally accepted approach to bilateral negligence law in that country. Some early economic literature even claimed that contributory negligence played a critical role in furthering efficiency, by encouraging potential victims to take precautions against harm to themselves (Landes and Posner, 1987).

Contributory negligence, however, came to be criticized on several grounds. It was deemed unfair for making one party bear an entire loss even when that loss was caused in part by others. Worse, the rule treated negligent defendants significantly better than negligent plaintiffs. While a negligent plaintiff would always be required to bear the full cost of an injury partially caused by him, a negligent defendant would never be required to bear any of the cost of any injury partially caused by him.

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contributing cause co-operating with the negligence of the defendant in bringing about the plaintiff’s harm’.

8 103 Eng. Rep. 926 (Court of King’s Bench 1809).
9 Lord Ellenborough, the presiding judge, explained: ‘One person being in fault will not dispense with another’s using ordinary care for himself. Two things must concur to support this action, an obstruction in the road by the fault of the defendant, and no want of ordinary care to avoid it on the part of the plaintiff’.

Likewise, Judge Bayley stated: ‘The plaintiff was proved to be riding as fast as his horse could go, and this was through the streets of Derby. If he had used ordinary care he must have seen the obstruction; so that the accident appeared to happen entirely from his own fault’.

10 60 Mass. (6 Cush.) 292, 296 (1850).
Another criticism was that, given its harshness, it could backfire and result in too few findings of defendants’ negligence, and thus become ineffective. The fear was that jurors would be uncomfortable with the rule, regardless of whether it was the law, and would try to avoid applying it: juries would end up finding plaintiffs at fault less often, resulting in defendants being held liable more often or would award the plaintiff damages even when there was evidence of his negligence (Best, 2007; there is evidence of compensation in the context of automobile accidents even where both parties were negligent. See Sloan, Reilly and Schenzler, 1995).

In light of the perceived unfairness and harshness of contributory negligence, courts developed mechanisms that aimed to make the rule more equitable (one of the first steps in abandoning contributory negligence was in intentional tort cases. See Sudman, 1999). These mechanisms, however, were, complex, and often very difficult and confusing for juries to apply (Gardner, 1996). Over time, courts in the United States created three major exceptions to the contributory negligence rule (Abraham, 2002): the safety statute exception, the greater degree of blame exception, and the last clear chance doctrine.

The safety statute exception provided that a negligent plaintiff could recover, despite her negligence playing a role in the harm, if the defendant breached a statute designed to protect a class of persons unable to protect themselves against the type of negligence displayed by the defendant (Abraham, 2002). The greater degree of blame exception provided that a plaintiff’s contributory negligence would not bar recovery when the defendant’s conduct was intentional or reckless. Finally, the last clear chance doctrine provided that a plaintiff’s contributory negligence would not bar recovery when the negligent defendant was in the position of having the last chance to avoid harming the plaintiff and failed to do so (Abraham, 2002).

These loopholes in the application of contributory negligence, together with a widely shared view that it was an unfair rule, ultimately led to a shift in the law. Legal systems began abandoning the contributory negligence rule, and replacing it with the doctrine that came to be known as comparative negligence, which shares the loss between the injurer and the victim in cases where both have been negligent (Best, 2007). (Under both

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12 For example, Poole v. City of Rolling Meadows, 1995 WL 480511(III), where the Illinois Supreme Court held that, when the claim was based on a willful and wanton misconduct the jury could not reduce the plaintiff’s damages because of the plaintiff’s contributory negligence if the defendant’s willful and wanton misconduct had been intentional. Cited by Pham, 1995.

13 This doctrine was established by Davies v. Mann, 152 Eng. Rep. 588 (1842).
Contributory and comparative negligence, of course, the victim will not receive compensation when only she is to blame for the injury.)

In Europe, the shift from contributory to comparative negligence pre-dated that in the United States. Before, and in many places long before, the US shift, comparative negligence was the general rule in European tort law. It remains so today (Van Dam, 2006).

Just to give some illustrations, in France, comparative fault is based on the concept of the *faute de la victime* – the victim’s fault – a doctrine developed by the courts without an explicit statutory basis. Under French law, consideration of the victim’s fault can result in the victim receiving a lower amount of compensation, or can even leave her with no compensation at all, but only if the defendant can prove that the victim’s conduct was the only cause of the damages (Van Dam, 2006).

In England, the shift was brought about by the Law Reform (Contributory Negligence) Act of 1945. England applies the traditional negligence standard of general negligence liability: the standard of the ‘reasonable person’ to the injurer’s and to the victim’s conduct (Van Dam, 2006; Von Bar, 2000).

In Germany, under § 254 of the BGB (*Mitverschulden*), comparative negligence can be established whenever the claimant has acted negligently. The negligence test, which compares the victim’s conduct with the conduct of a careful person of average circumspection and ability, is decisive – the test is included in § 276 (*Fahrlässigkeit*).

This shift occurred in the United States relatively quickly at the end of the 1960s and beginning of the 1970s. In 1968, all but seven states recognized the contributory negligence defense. By around 1974, comparative negligence, rather than contributory negligence, had become the majority rule, and it remains so today (Robinette and Sherland, 2003). Some states shifted to comparative negligence by statute, while others did so through the decisions of their highest courts. Since October 1989, only six US jurisdictions have continued to apply the traditional contributory negligence rule. These are Alabama, the District of Columbia, Maryland, North Carolina, South Carolina and Virginia (Little, 1989). Thus, in the vast majority of US states, the contributory negligence rule has been abandoned. In its place, states have adopted some version of the comparative

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14 Section 4 of the Law Reform (Contributory Negligence) Act 1945 defines the claimant’s fault as ‘negligence, breach of statutory duty or other act or omission that gives rise to liability in tort or would, apart from this Act, give rise to the defence of contributory negligence’.

15 Contributory negligence is still the common-law doctrine in force in North Carolina. But some defend the adoption of comparative negligence instead. See Gardner (1996).
negligence rule, either pure or modified (as explained below) (Best, 2007), and none of these states has switched back. Under both rules, though, when only the victim is to blame, she will not be entitled to receive any compensation.

In the US, perhaps due to the speed of legal change in this matter, soon after the spread of the comparative negligence rule, the rule received a significant amount of criticism and questioning, both from a theoretical and from a more practical perspective.

2.3.2 Comparative negligence: pure and modified forms

Comparative negligence aims to apportion damages according to each party’s negligence. It allows a negligent plaintiff to recover from a negligent defendant whose negligence is a proximate cause of the plaintiff’s injuries, even if the plaintiff’s negligence is also a proximate cause of his own injuries.

Based on the principle that when parties are at fault they should be responsible for the cost of any injuries suffered that were caused by their own fault, comparative negligence compares the fault attributable to the plaintiff to the fault attributable to the defendant and provides for a division or sharing of damages. Hence, a defendant is liable for the share of the damages caused by her fault even when the plaintiff is also negligent. The complexity of apportioning liability when there is multiple causation makes the application of this rule quite difficult (Singh, 2007).

There are two different forms of the comparative negligence rule: pure comparative negligence and modified comparative negligence.

The pure comparative negligence rule does not bar a plaintiff’s recovery (so long as the defendant’s negligence is at least partly to blame for the harm), and only reduces the amount of the claim in proportion to the plaintiff’s own fault. Such allocation of damages between the injurer and the victim can be made by looking at each party’s deviation from the standard of care and the marginal value that the trier of fact (whether this be judge or jury) places on these deviations (Rubinfeld, 1987). Under this pure version of the rule, the plaintiff may recover from a negligent defendant even when her own negligence is greater than that of the defendant.\(^\text{17}\)

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\(^{17}\) Since 1989 13 US states have applied this rule, six of which passed statutes regulating their comparative negligence rule and seven of which operate under a judicially established pure comparative negligence rule. See Little (1989).
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The modified comparative negligence rule bars a negligent plaintiff’s recovery when the plaintiff’s fault exceeds a certain level in comparison to the defendant’s fault; otherwise the rule functions as the pure form does in allocating damages between plaintiff and defendant based on the relative negligence exhibited by each. In other words, the plaintiff’s compensation is reduced in proportion to her negligence as in the pure form, but she receives no recovery at all once her negligence reaches a certain proportion of the defendant’s. Depending on the jurisdiction, the cut-off at which the plaintiff receives no compensation is generally based on either the ‘50 percent rule’, the ‘49 percent rule’, or the ‘slight gross rule’.

The ‘50 percent rule’ allows a negligent plaintiff to recover only if her fault is less than or equal to the defendant’s. The ‘49 percent rule’ allows a negligent plaintiff to recover only if her fault is less than the defendant’s fault. Finally, the ‘slight gross rule’ allows a negligent plaintiff to recover only if her fault is considered ‘slight’ in comparison to the defendant’s. In all of these cases, if the plaintiff’s fault is below the cut-off, then she will be able to recover damages that are reduced in proportion to the fault attributable to her.

As can be seen, the modified comparative negligence rule is, to some extent, a combination of pure comparative negligence and contributory negligence. Below a given threshold, modified comparative negligence functions like pure comparative negligence; above this threshold, it functions like contributory negligence. Consequently, once the threshold is exceeded, modified comparative negligence shares the properties of contributory negligence, including the placement of a higher burden on plaintiffs than on defendants (Best, 2007).

2.4 Incentives to take care

2.4.1 Initial literature: contributory negligence and the least-cost avoider

As noted above, the early law and economics literature on liability for accidents tended to paint contributory negligence as a more efficient rule than comparative negligence. The premise of this literature was that comparative negligence would result in excessive and wasted investments in care by both potential victims and potential injurers (Posner, 1997). That may be so in certain circumstances.

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18 Twenty-one states follow the ‘not greater than’ system. See Gardner (1996). See also Cooter and Ulen (1986).
19 Eleven states follow the ‘less than’ system. See Gardner (1996).
20 This system was adopted by Nebraska, South Dakota and Tennessee, see Little (1989), but as of 2003 only South Dakota still applied it. See Robinette and Sherland (2003) stating the same.
This premise, however, is flawed if the costs or availability of care are different for each party. Under a unilateral care model, the injury can be avoided only by one party to begin with. Where that is the case, and where the legal system can determine who this party is, it should not matter whether a contributory or comparative negligence rule is employed.

Under bilateral care models, however, the difference between these two negligence rules becomes relevant (Faure, 2004). In one model, known as alternative care, either party can take the care necessary to avoid the injury regardless of the other party’s care. Where one of these parties is the least-cost avoider — meaning that the costs of the care necessary to avoid the harm are lowest for this party — it is socially optimal to require only this party to adopt the care in question, and to set the other party’s standard of care at zero (Haddock and Curran, 1985; Chung, 1993; Bar-Gill and Ben-Shahar, 2003). By structuring the standards of care in this way, double expenditure is avoided and the total cost of care is minimized (Shavell, 1987 discussing the simplifications of the least-cost avoider model of unilateral care). In a joint care model, both parties’ actions simultaneously contribute to the accident and parties may avoid the accident by simultaneously adopting various levels of care. Here, an optimal liability regime would create incentives for each party to adopt a level of care that minimizes their total combined care expenditure.

The first scholar who formally discussed the differences in the economic performance of contributory and comparative negligence rules was John P. Brown in 1973. Brown concluded that, in the general joint care setting, all liability rules except comparative negligence lead to economically efficient incentives that result in efficient outcomes (Brown, 1973).

Brown presented a simple model in which injurers, victims and courts are all assumed to know the legal standard of care and everyone’s precautions. The efficient level of care cannot be achieved by common law tort rules unless courts have enough information to set the legal standard at an efficient level.

The due care standard in Brown’s model is a variable dependent on two parameters: the level of care taken by plaintiffs and by defendants. Therefore, the finding of one party’s negligence depends on the level of care adopted by the other party. The social optimal outcome aims to minimize the aggregate cost of care of plaintiffs and defendants. Mathematically,

\[
\text{Min } C_s(X, Y) = W_x X + W_y Y + A[1 - P(X, Y)]
\]

\(X, Y\)

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21 See, below, on the circumstances under which this assumption is relaxed, text and accompanying note.
where \( X \) and \( Y \) are the levels of care taken by the injurer and the victim, \( W_x \) and \( W_y \) are the unit cost of care, \( C_s(X, Y) \) is the total social cost of care, \( A \) is the accident cost and \( P(X, Y) \)\(^{22} \) is the probability of an accident given the parties’ level of care (Brown, 1973).

In the model, the parties decide to take the level of care that makes the marginal cost of caretaking (\( W_x \) and \( W_y \)) equal to its marginal benefit.\(^{23} \) Given that courts know the level of care adopted by the parties to the accident, they would set the standard of care at the optimal level. Courts in the model consider a party negligent when the expected reduction in accident costs is higher than the cost of the increase in care necessary to achieve that reduction. Consequently, parties have incentives to take the optimal level of care given the other parties’ level of care and given that the due care standard is set at the optimal level as well.

\[
W_x = AP_x(X^*, Y) \\
W_y = AP_y(X^*, Y)
\]

Applying this incremental standard, the negligence standard that minimizes the social cost is the same for the injurer and for the victim.

Hence, \( X^* = X_\Omega \) and \( Y^* = Y_\Omega \).

Given these assumptions, Brown showed that negligence rules are efficient and lead to a unique equilibrium since the injurer initially faces the full costs of his actions, and will therefore choose to comply with the standard of care.\(^{24} \) Under those assumptions, Brown claimed, contributory negligence is efficient but comparative negligence is not (Brown, 1973). Under the latter rule, the costs of accidents are shared between injurer and victim, and thus

\(^{22} \) Regarding the characterization of the correlation of the level of care and the probability of an accident \( P_x, P_y > 0 \), Brown defined it as

\[
P_{xx}, P_{yy} < 0 \\
P_{xx}P_{yy} - P_{xy}^2 > 0
\]

\(^{23} \) The equality between the marginal cost of care and expected benefit from it can be represented by

\[
W_x = AP_x(X, Y) \\
W_y = AP_y(X, Y)
\]

\(^{24} \) \((X_\Omega, Y_\Omega)\) would be a unique solution.
neither of them bears the full costs of failing to take optimal care. Hence, since the accident cost falling on either party is reduced by the effect of the sharing rule, both parties may be induced to be less careful than is optimal.

Brown concluded that contributory negligence induces socially optimal levels of care by the population, so long as courts set the legal standard of care at the socially optimal level, because the negligent party faces full accident costs.

Shortly after Brown’s analysis, Peter A. Diamond (1974) used a similar model to argue that comparative negligence is not inefficient per se, but that its efficiency depends on how the rule is structured. Diamond argued that a comparative negligence rule in the 50 percent version of the modified form cannot lead to economically efficient results in an error-free context (Diamond, 1974; Rubinfeld, 1987). He then introduced court errors and uncertainty in court behavior into a model where parties expect to bear some fraction of the costs of others to match the fraction of their costs borne by others and believe that by increasing the amount of care they adopt, the fraction of total costs borne will decrease. Diamond concluded that when care affects the probability of an accident but not its costs, the equilibrium will not tend to comparative negligence, but will instead tend to no-liability, as care differences decrease the importance of cost allocation (Diamond, 1974). Hence, he illustrated the inefficiency of comparative negligence while at the same time showing that contributory negligence induces parties to take levels of care that minimize total accident costs.

Richard Posner also argued in favor of contributory negligence, though based on somewhat different theoretical perspectives and reasons. In an alternative care setting with perfect information by parties and courts, Posner argued that the least-cost avoider should be the one adopting care. Otherwise, the result would not be optimal.

Posner’s analysis concludes that contributory negligence is the optimal negligence rule because it encourages only the least-cost avoider to adopt care instead of creating incentives for both parties to take care (Posner, 1977). This line of argument has two flaws, however. First, it only holds when the victim is the least-cost avoider; where the injurer is the least-cost avoider, the contributory negligence rule inefficiently encourages the victim to adopt care anyway in order to avoid being barred from recovery. Second, and more importantly, where courts have perfect information and can determine that one party is the least-cost avoider, courts can preserve incentives for optimal efficiency by simply setting the standard of care for the other party to zero, regardless of whether they are operating under a contributory or comparative negligence rule.

In fact, it has since been shown that when courts – or other relevant decision-makers – do not have perfect information on the costs of care for
each party, comparative negligence may be the most efficient rule under both bilateral and unilateral care models. Giuseppe Dari-Mattiacci and Gerrit De Geest, for instance, show how in a scenario of unilateral care, in which courts cannot verify who is the most efficient caretaker, sharing rules such as comparative negligence filter the most undesirable instances of harm. Avoidable accidents will happen under comparative negligence as well as contributory negligence rules, but those that happen under comparative negligence rules will be less costly in net social terms. In an alternative care scenario with imperfect court verifiability, the advantage of sharing rules like comparative negligence, though less general, may still hold when avoidance costs significantly exceed the harmful consequences of the accident (Dari-Mattiacci and De Geest, 2005).

Posner argued in favor of contributory negligence on other grounds as well, namely administrative and litigation costs. Comparative negligence involves a transfer payment that entails administrative costs, and also involves additional litigation, given that this is necessary to determine the relative negligence of each party involved in the accident. Therefore, additional resources are spent in determining and predicting the extent of liability of each party (Posner, 1997). At the same time, however, he acknowledged comparative negligence may be justified, despite being more expensive, if the social objective of the tort system is to provide insurance to accident victims: careless victims of careless injurers receive some compensation under comparative negligence, while under contributory negligence those same victims receive nothing (Posner, 1997).

Not too long after Brown, Professor Gary Schwartz discussed the contributory and comparative negligence rules, and challenged the safety incentive argument provided up to that moment in support of the contributory negligence rule (Schwartz, 1978). Schwartz raised four different arguments in support of his claim: the difficulty of designing an optimal contributory negligence rule;25 the relatively limited effects of such a rule;26 the psychological characteristics of the conduct that the law considered

25 Schwartz argued that the contributory negligence rule should only bar the plaintiff’s recovery when the plaintiff’s prevention costs were lower than the defendant’s and suggested that when the cheapest means of prevention were independent instead of complementary, comparative negligence could sometimes perform better than a contributory negligence rule. But such performance of comparative negligence was only fortuitous. See Schwartz (1978).

26 Ibid. Schwartz considered that given the personal costs of litigation, the limits of tort law’s damage rules on individuals’ behavior and the inability of individuals to predict a liable defendant, any potential victim would have incentives to behave carefully and behave non-negligently. Schwartz (1978).
unreasonably risky,\textsuperscript{27} and finally, the opportunities that such a rule created for defendants who had to prevent the contributory negligent conduct of potential plaintiffs.\textsuperscript{28}

In addition to these arguments, Schwartz emphasized another issue that has since been raised as an argument against contributory negligence and in favor of comparative negligence: barring the plaintiff’s recovery despite both parties’ negligence means that the negligence of both defendant and plaintiff are treated as if they were equivalent. So, if the injurer is negligent and the victim is also negligent, both deviations from the due care standard are being treated in a symmetric way despite the victim’s being the one injured. It is especially this last argument that makes Schwartz consider comparative negligence as the proper rule (Schwartz, 1978).

In general, the early literature failed to notice that, under perfect information, negligence, contributory negligence, and comparative negligence create efficient incentives for care and an efficient equilibrium outcome as long as the legal standard of care set by the negligence rule is set at the socially efficient level, and parties rationally respond to it (Kim, 2004).

2.4.2 Haddock and Curran and Shavell: the equivalence between contributory and comparative negligence

The initial preference in the literature for contributory negligence was challenged in the mid-1980s by David Haddock and Christopher Curran (1985) and by Steven Shavell (1987). These scholars demonstrated that under conditions of perfect information both rules give injurers and victims incentives to take efficient care.

Under both negligence rules, the injurer can avoid liability by adopting the due level of care, and he therefore has an incentive to do so. Given that the injurer will expect to bear the residual loss—either all the harm suffered by the victim or a share of it, depending on the negligence rule—he will internalize all the benefit of adopting the standard of care set by the negligence rule because he will save the liability costs arising from the accident (Shavell, 1987).

The result is that contributory and comparative negligence rules produce the same incentives for both parties to adopt the due care level and therefore, as long as this care level is set at the optimal level, injurers and victims are expected to behave efficiently under either rule.

\textsuperscript{27} Schwartz in this paper claimed that prevention sometimes might be less a matter of tort law and economics theory and more one of applied psychology and knowledge of individuals’ conducts. Schwartz (1978).

\textsuperscript{28} In some circumstances, the plaintiff’s unreasonable conduct could effectively be prevented by the defendant who may even be better able than the plaintiff to prevent such negligent conduct. Schwartz (1978).
Haddock and Curran, using the same model as Brown, showed the same result as Brown. They pointed out that under both rules, if the two parties are exercising due care, neither has an incentive to deviate from that level of care, and if neither party is exercising due care, both are induced to converge on the due care level. Thus, in terms of the pure incentives for care, there is no reason to choose one rule over the other.

Shavell introduced a new element into the analysis: activity levels. But this new element did not modify the main conclusion of his model, that is, that neither of the negligence rules seemed to be generally preferable to the other. This equivalence, even when considering activity levels, can be explained by the parties’ behavior under each negligence rule. The injurer will not have the incentive to adopt the optimal level of activity because he will avoid being held liable by adopting the due care level regardless of his level of activity but the victim, as the residual bearer, will have an incentive to adopt the optimal activity level. Thus, a consideration of activity levels does not establish a preference for either of the negligence rules.

Shavell did distinguish between the two rules, but not based on deterrence. Instead, Shavell looked at other considerations such as the administrative cost and risk-spreading properties of the rules. Administrative cost considerations favor contributory negligence, because it is cheaper to implement. Risk-spreading properties, on the other hand, favor comparative negligence.

2.4.3 Relaxing some of the initial assumptions and moving away from first-best analysis

2.4.3.1 Evidentiary uncertainty and court error The equivalence of contributory and comparative negligence above is based on the assumption of a perfectly functioning liability system. During the 1980s, in parallel with the increased modeling of imperfections in the operation of tort liability in general, more realistic models began to be used to assess the relative desirability of contributory and comparative negligence. The results favoring comparative negligence as an efficient rule quickly spread.

Haddock and Curran (1985) and Cooter and Ulen (1986) challenged the first wave of law and economics literature on the issue, arguing that when uncertainty is introduced, comparative negligence may be the more efficient rule. They showed that comparative negligence leads to economically efficient incentives for both parties to take care.29

29 However, White showed that if the due care level is assumed to be stochastic, any level of care that would be high enough so that it would allow injurers to be
In the new literature, court errors were initially modeled as the inability of a court to assess the level of care actually taken by a party. The introduction of such a complicating feature is of crucial importance for the analysis: if parties know that courts may not be able to adequately verify their levels of care, they may have incentives to behave suboptimally.

Haddock and Curran started with the equivalence result in the perfect information setting, and its corollary, that rationally self-interested parties would not choose to be negligent, and would exactly comply with the legal standard of care, assumed to be set optimally (Haddock and Curran, 1985). They then explained how things become different once error is introduced into this analysis. They considered the possibility that either one of the parties involved in the accident or the factfinder (jury or judge) makes a mistake – either because the injurer or the victim miscalculate the amount of precaution required or because the victim or the injurer does not know the true relationship between their precaution and the probability of an accident.  

Formally, however, Haddock and Curran only fully analyzed evidentiary uncertainty – the possibility of the factfinder making ex post errors in assessing the true level of care adopted by a party. With the introduction of this type of error, the efficiency of an all-or-nothing rule like contributory negligence is seriously weakened (Haddock and Curran, 1985). Admittedly, none of the other negligence rules induces efficient caretaking under these conditions either, which makes the choice among them unclear (Haddock and Curran, 1985). Haddock and Curran argued that to play with the level of due care to counteract the effects of evidentiary error would not be feasible, given that the errors would be different across courts and juries. For that reason, different standards of care would have to be applied to injurers by different juries or courts, and the deviations would have to be correlated with the underlying propensity of a jury or court to err, which seems highly unrealistic for legal standards of care (Haddock and Curran, 1985).

Haddock and Curran, however, assumed that contributory or comparative negligence rules take as given what the optimal standards of care should be, and that these standards are the same under both rules (Haddock and Curran, 1985). This is not the way to design optimal legal standards. Given reasonably certain that they would avoid liability would be unattractive for them. Under this condition, victims will not be able to guarantee that injurers will bear the full amount of their damages. Consequently, the domination of the economically efficient level of care over other care levels is not straightforward. See White (1989).

30 Parties would not know the relationship between X (care taken by the injurer), Y (care taken by the victim) and P(X, Y) (the probability of an accident). See Haddock and Curran (1985).
that the differences between contributory and comparative negligence arise only when the defendant has been negligent (otherwise, both rules establish that the plaintiff bears the entire loss), the legal standards for the plaintiff should be optimally set assuming the defendant’s negligence. When this is considered, it becomes clear that the standards should be set at different levels depending on whether contributory or comparative negligence rules are being employed. The comparative negligence rule, with its cost-sharing property, provides only a partial incentive because of the sharing property of the rule and so requires a higher level of care for the plaintiff. This result holds under evidentiary uncertainty – which is one of the main reasons why we can expect the defendant to be negligent (Edlin, 1994).

Cooter and Ulen argued for comparative negligence along similar lines. In a well-known paper (Cooter and Ulen, 1986), they compared the efficiency of contributory and comparative negligence rules when courts cannot observe or assess each party’s care level. They concluded that comparative negligence is superior to other negligence rules because parties internalize ex ante the possibility of court error and deviate from the legal standard by adopting a level of care higher than the level set by the legal rule (Cooter and Ulen, 1986). They demonstrate this with a graph (see Figure 2.1) where \( x^* \) is the optimal level of care, \( L \) is the cost of precaution and \( H \) is the expected total cost of accidents.

![Figure 2.1  Accident costs under evidentiary uncertainty](image-url)
When there is evidentiary uncertainty, instead of a radical drop at $x^*$ (the optimal level of care) between $H$ and $L$, as occurs under full information, Cooter and Ulen argue that one would expect a continuous change of the function between $H$ and $L$ at $x^*$ represented by the weighted average costs. Given this expected cost function, individuals will not choose the legal standard of due care $x^*$ but a higher level of care (Cooter and Ulen, 1986).

The potential injurer’s incentive to take a higher level of care will depend on the negligence rule in place, and his forecast of the victim’s level of care, which in turn will depend on the level of care the victim anticipates the injurer will take. The injurer, thus, will have less incentive to take care under contributory negligence than under comparative negligence. The incentives of care of the different parties are summarized by Cooter and Ulen as follows (Cooter and Ulen, 1986).

As can be seen, the victim’s incentives of care mirror the injurer’s, but in reverse: the victim’s incentives are strong when the injurer’s incentives are weak and vice-versa. Comparative negligence then gives moderate incentives to deviate from the standard of care to both injurers and victims while contributory negligence gives the strongest incentives to one party and the weakest incentives to the other.

Thus, Cooter and Ulen argue that the distortion would be minimized when parties share liability because they know they would eventually be burdened with a share of the liability the court would determine (Cooter and Ulen, 1986). The implicit assumption by Cooter and Ulen is that small symmetric intermediate deviations by both the injurer and the victim are more socially desirable than the sum of potentially large deviations by
one party and small deviations by the other that could take place under contributory negligence.\textsuperscript{31} This makes comparative negligence the most efficient rule under conditions of evidentiary uncertainty because it minimizes the total amount of deviation from the standard of care when parties are symmetrically situated.

The symmetry assumption, however, does not necessarily hold, and it may depend on the type of accident. Symmetry may be a reasonable assumption in a collision between automobile drivers, where it is relatively simple to determine the relative negligence of the parties. But this is not so in other tort contexts, such as products liability. As the ability to determine relative negligence breaks down, so too does the reasonableness of the symmetry assumption (Wittman, Friedman, Crevier and Braskin, 1997).

In 1991, Daniel Orr followed this logic in searching for second-best outcomes in this area (Orr, 1991). With a game-theoretic model, he showed that the shift from contributory to comparative negligence has two positive effects. On one side, it improves the incentives for precaution and, on the other, it diminishes excess expenditure (Orr, 1991).

In Orr’s model, $A$ is the expected accident cost in the absence of effective precaution by either party, $p$ is the precaution, which reduces the cost of accidents from $A$ to $pA$ and $c$ is the cost of precautions. Orr developed a model where care was both unilateral (alternative) and binary. Unilateral care is a form of care equally effective whether provided by the injurer, the victim or both simultaneously. So if both parties take due care, there is excessive expenditure on care.\textsuperscript{32} He also assumed that care was binary. This means that it either exists or not. That is, it is a discrete variable with only two possible values: caution or negligence.\textsuperscript{33}

When care is assumed to be just unilateral, it is of course efficient to put the burden to take care on the least-cost avoider; whenever the least-cost avoider is identified in advance, the other party should never take care. This result is well known in the literature as an efficient outcome. In his model, Orr assumed that care is both unilateral and binary whereby neither party can predict the level of care taken by the other and therefore cannot predict whether the court would decide this party was negligent.

\textsuperscript{31} This conclusion was endorsed by other authors who reached the same conclusion in different negligence contexts and with parties deciding their level of care sequentially or simultaneously. See Rea (1987).

\textsuperscript{32} This definition of unilateral care is equivalent to the traditional definition of alternative care. However, in the second part of Orr’s paper, care is assumed to be interactive, meaning that parties are taking joint care.

\textsuperscript{33} This is the terminology that Orr uses to define the adoption of care or no care by the parties. See Orr (1991).
By introducing this uncertainty, Orr predicted that parties will take a positive amount of care because they will not know whether they will be considered the least-cost avoider by the court and therefore whether they will be held to have had the duty to take care. Even though parties do not have pure strategies and therefore the game has no Nash equilibrium, there is excessive expenditure on care.

Consequently, when care is unilateral (alternative) and binary, contributory negligence does not result in the equilibrium that minimizes costs because the injurer and the victim cannot contract and share the precaution costs in advance. This results in both parties adopting care, with an inefficiently high level of expenditure on precaution.

When the accident costs are shared among parties and $\gamma$ is the share of the accident costs borne by the victim and $(1 - \gamma)$ is the remainder borne by the injurer, the result is quite different. $\gamma$ is $0 < \gamma < 1$ and determined by the legal decision-maker.

In this case, the injurer has a pure strategy which is to take care no matter what the victim does, when $(1 - \gamma)A > c$ and also $pA > c$. But taking care will not be the optimal strategy for the victim because she will gain from being negligent given that $pA + c > pA$. Consequently, the Nash equilibrium that is efficient is the bottom left cell in Figure 2.2, where the injurer takes care and the victim is negligent.

Comparative negligence, with its ex ante known split of damages, may induce precaution by the potential injurer only, eliminating wasteful double or excess precaution, as results from contributory negligence (Orr, 1991).

Further, Orr argued that when the split of damages is stipulated appropriately in advance, it induces efficient precaution in any instance.
Hence, comparative negligence is more efficient than the other negligence rules.\(^{34}\)

Orr’s analysis was later criticized by Tai-Yeong Chung on a number of grounds (Chung, 1993). First, Chung holds that Orr’s terminology of ‘caution’ versus ‘negligence’ is misleading because it is the courts that decide whether a party is negligent. Instead, Chung suggested that the binary choices should be defined more simply as taking a precaution versus taking no precaution. Orr had defined negligence as the failure to take care when there is a duty to do so, but Chung pointed out that when no such duty is required, taking no care does not result in being negligent and understood that Orr implicitly assumed that the legal standard of care was set at an inefficient level contrary to Orr’s statement of having assumed exactly the opposite (Chung, 1993).

Chung argued that Orr’s results were dependent on assuming that the standard of care is set at an inefficient level because if the standard is efficient, under unilateral care, both contributory and comparative negligence would result in the same efficient outcome.

Finally, Chung challenged Orr’s argument in favor of comparative negligence in the case of interactive precaution by showing that the stronger incentives of comparative negligence over contributory negligence are not relevant given that both negligence rules reach the same efficient outcome. The only difference between them is which party has the dominant strategy to take care. While contributory negligence makes care the dominant strategy for the victim, comparative negligence makes it the dominant strategy for the injurer (Chung, 1993).

Recently, the advantage of comparative negligence in settings with evidentiary uncertainty has been seriously challenged by Oren Bar-Gill and Omri Ben-Shahar in a joint paper (Bar-Gill and Ben-Shahar, 2003). Their challenge focuses, first, on the assumption that parties are ‘symmetrically situated’ when adopting care. In fact, Bar-Gill and Ben-Shahar argue, this need not be so, given that one party could be better situated to adopt care.\(^{35}\)

\(^{34}\) However, Orr also argued that when the technology of care was interactive – in the case of joint care – the argument in favor of comparative negligence was weakened because the Nash equilibrium was the choice of precaution by both players. Orr (1991).

\(^{35}\) The constant sum hypothesis assumed by Cooter and Ulen asserted that the sum of the biases – in the injurer’s care level and the victim’s care level – was constant across the three liability rules: negligence, negligence with a contributory negligence defense and comparative negligence.

\[|x^{SN} - x^*| + |y^{SN} - y^*| = |x^{CN} - x^*| + |y^{CN} - y^*| = |x^{CmN} - x^*| + |y^{CmN} - y^*|\]
When that happens, the sum of the biases induced by the rules under judicial error in determining levels of care need not be constant. In other words, the constant sum hypothesis underlying the Cooter and Ulen ordering of rules does not hold. Bar-Gill and Ben-Shahar also challenge the assumption that both the injurer and the victim, in a setting of evidentiary uncertainty, exercise excessive care under the negligence rules considered. \(^{36}\)

Bar-Gill, in a previous paper (2001), had identified two types of judicial error: (1) the so-called evidentiary uncertainty that represents court errors in assessing a party’s true level of care, and (2) courts’ inaccuracy when applying negligence liability rules. These errors, Bar-Gill had argued, modified the conclusion regarding the preference for comparative negligence.

The introduction of evidentiary uncertainty, Bar-Gill and Ben-Shahar showed, does not make comparative negligence inefficient in all cases. For a standard deviation of the court’s error of 30 percent of the optimal care level, the contributory negligence rule becomes optimal, but for a court error between 30 percent and 65 percent from the optimal care level, comparative negligence is inefficient and is efficient again for high levels of error exceeding 65 percent of the optimal level. \(^{37}\)

Moreover, these authors also insisted on a different avenue along which to question the preference for comparative negligence, one that had already been explored in earlier literature: contributory negligence might be cheaper to administer than comparative negligence (Bar-Gill, 2001).

In their joint paper, Bar-Gill and Ben-Shahar show, through computer simulations and numerical examples, that it is not necessarily true that small intermediate deviations should necessarily be preferred to large deviations potentially resulting from other liability rules. The superiority of intermediate biases strongly depends on the constant sum hypothesis, on the assumption that all deviations from the optimum are towards adopting excessive care. When one questions these assumptions, the superiority of comparative negligence ceases to be generally true. Consequently, Bar-Gill and Ben-Shahar conclude that comparative negligence is not generally a superior negligence rule.

### 2.4.3.2 Stochastic due care and the losses of injurers and victims

Most analyses of liability rules and of the efficiency properties of contributory

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\(^{36}\) Cooter and Ulen compared the negligence rule, negligence with a contributory negligence defense and comparative negligence. See Cooter and Ulen (1986).

\(^{37}\) Bar-Gill (2001). This result was later reaffirmed in Bar-Gill and Ben-Shahar (2003).
Contributory and comparative negligence typically assume that the roles of injurer and victim are well-defined and separate, and that parties know in advance, before engaging in an activity and taking decisions concerning care, which role they would assume. There are, however, some analyses of the setting in which this assumption does not hold, and in which both injurers and victims may suffer losses.38

This setting seems particularly appropriate for modeling certain accident environments in which both parties to the interaction can take care to reduce expected harm, but they do not know in advance who will suffer losses and who eventually will be deemed injurer and victim. Collisions between automobiles provide a paramount example of such an environment. White has examined both theoretically and empirically the performance of contributory and comparative negligence in a setting characterized by the role of uncertainty (White, 1989). In her theoretical model, White assumes that the level of due care is perceived by the parties as stochastic within a given range of care levels, since judges and juries may vary widely in their reasons for picking a given care level, as the legal standard and parties cannot easily anticipate these reasons.

Not surprisingly, in such a setting comparative negligence generally does not allow one to obtain first-best behavior by parties, who may be led to take too little care or too much care, depending on the parameters. Efficient care incentives only appear in a narrow set of circumstances. And even if due care is not perceived as stochastic by parties, and parties can predict the legal standard with certainty, the comparative negligence rule remains generally inefficient so long as due care is not set at the socially optimal level.

Contributory negligence, however, does not perform much differently, as this rule can generally lead also to suboptimal or excessive care, depending on the specific values of the parameters. The efficiency question, then, for White, becomes essentially an empirical one.

2.4.3.3 Heterogeneous agents Implementation and other errors by decision-makers have not been the only complications in defining the setting in which to assess the relative efficiency of contributory and comparative negligence. Rea used a game-theoretic model to study the possibility of unresponsive individuals who do not behave according to the incentives created by negligence rules (Rea, 1987). For example, it could be the case that some individuals do not respond to economic incentives because the cost of

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38 This approach started with Leong (1989). The equivalence result of negligence rules was shown by Arlen (1990). See also Arlen (1992).
learning the incentive mechanism in the rules is too high, or because they misperceive accident risks. Similarly, individuals might not respond because they are judgment proof, or because they make mistakes in executing their intended optimal care, or because they have an unusually high cost of care.

As mentioned above, the optimal levels of care are determined by minimizing the expected social costs as long as individuals respond to those incentives. Rea considered the changes in the level of care adopted when parties move both sequentially or simultaneously. In his model, $X$ is the cost of care taken by the injurer, $Y$ is the cost of care taken by the victim, $\beta(X, Y)$ is the share of accident losses borne by the injurer, $[1 - \beta(X, Y)]$ is the share of losses borne by the victim, and $A(X, Y)$ is the total expected accident costs for both parties.

Rea defined the comparative negligence rule as a function $\beta(X, Y)$:

$$0 \leq \beta(X, Y) \leq 1, \ (X < X^* \ and \ Y < Y^*)$$

$$\beta(X, Y) = 0, \ X^* \leq X, \ Y < Y^*$$

$$\beta(X, Y) = 1, \ X < X^*, \ Y^* \leq Y$$

Under these assumptions, Rea concludes that the method of apportionment of losses has no bearing on the decision to take care. This is because there is no solution where both parties are negligent so long as each party can escape liability by taking the optimal amount of care when the other is negligent. Given that the apportionment rule is indifferent in terms of efficiency, it follows that all kinds of negligence rules will be equally efficient. See Rea (1987).

Of course, this cannot explain the rise in comparative negligence and its adoption as the prevalent rule. For this, he introduces unresponsive parties into his model. With the previous assumptions and assuming that $\alpha_x$ is the fraction of potential injurers and $\alpha_y$ is the fraction of potential victims that would choose negligent levels of care, $X^-$ and $Y^-$, the optimal levels of care for those who respond to the incentives are represented by the following minimization function:

$$(1 - \alpha_x)(1 - \alpha_y)[X + Y + A(X, Y)] + \alpha_x\alpha_y[X^- + Y^- + (AX^-, Y^-)] + (1 - \alpha_x)\alpha_y[X + + A(X, Y^-)] + \alpha_x(1 - \alpha_y)[X^- + Y + A(X^-, Y)]$$

$$39 \text{ Being } AX < 0, \ Ay < 0, \ Axx > 0, \ Ayy > 0. \text{ See Rea (1987).}$$

$$40 \text{ Given that the apportionment rule is indifferent in terms of efficiency, it follows that all kinds of negligence rules will be equally efficient. See Rea (1987).}$$
The optimal $X$ and $Y$ when unresponsive parties are introduced is such that:

$$(1 - \alpha_x) A_x(X^{**}, Y^{**}) + \alpha_x A_x(X^{**}, Y^-) = -1$$

$$(1 - \alpha_y) A_y(X^{**}, Y^{**}) + \alpha_y A_y(X^-, Y^{**}) = -1$$

Assuming that the party who decides first is the unresponsive party, the standard of care for the other party must be such that:

$$A_x(X^{**}, Y^-) = -1$$

or

$$A_y(X^-, Y^{**}) = -1$$

The optimal level of care of the second party increases when parties move sequentially.

If parties move simultaneously and the responsive or unresponsive type of the other side is not observable, comparative negligence is preferred to contributory negligence with respect to the creation of incentives to take care.

Contributory negligence leads to deficient care (Rea, 1987) because injurers will take into account the proportion of unresponsive injurers. So contributory negligence may induce injurers to reduce the amount of care they take if they expect the proportion of unresponsive victims ($\alpha_y$) to be high:

$$X^* + (1 - \alpha_x) \beta(X^*, Y^*) A(X^*, Y^*) > X^n + (1 - \alpha_y) A(X^n, Y^*)$$

Equally, a potential victim will not take care if the expected proportion of unresponsive injurers ($\alpha_x$) is sufficiently high:

$$Y^* + (1 - \alpha_y) [1 - \beta(X^*, Y^*)] A(X^*, Y^*) > Y^n + (1 - \alpha_x) A(X^*, Y^n)$$

Comparative negligence may result in non-negligent behavior on the part of the responsive actors. Since both parties are faced with some share of damages,
Injurers will take care if:

\[ X^* + (1 - \alpha_x)\beta(X^*, Y^*) A(X^*, Y^*) < X'' + (1 - \alpha_y) A(X'', Y^*) \]

\[ + \alpha_y\beta(X'', Y^-) A(X'', Y^-) \]

Victims will take care if:

\[ Y^* + (1 - \alpha_y) [1 - \beta(X^*, Y^*) A(X^*, Y^*)] < Y'' + (1 - \alpha_x) A(X^*, Y'') \]

\[ + \alpha_x [1 - \beta(X^-, Y'')] A(X^-, Y'') \]

Therefore, when parties move simultaneously, comparative negligence performs better because both parties face some damage and therefore it becomes inefficient for them to take into consideration whether the other party will respond or not to the standard of care set by the rule.\(^{41}\)

When parties move sequentially, under contributory negligence, the party who moves second should be required to take more care than would be optimal if the first party had responded according to the incentives for care created by the rule. Thus, if a defendant follows an unresponsive negligent plaintiff, he will not have incentives to take care under contributory negligence and will have diminished incentives under comparative negligence.

In order to avoid this inefficient behavior, Rea suggests that the care required of this second person should be much larger than the optimum and a larger share of the damages should also be assigned to that person in order to induce efficient care (Rea, 1987).

2.4.3.4 Asymmetric information and liability rules as mechanisms to reveal information The absence of evidentiary uncertainty or court errors hides another implicit assumption in earlier analyses of liability rules, namely, the impossibility that information is transferred from informed parties to uninformed courts. Rubinfeld relaxed this assumption and introduced into the analysis heterogeneous parties\(^{42}\) and the possibility that liability rules could be used as mechanisms to reveal information (Rubinfeld, 1987).

In this context, optimal negligence rules should set due care standards

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\(^{41}\) This is true as long as the standard does not increase and become too high in order to compensate for the unresponsive group. If responsive parties found the standard too high, they would also become unresponsive. See Rea (1987).

\(^{42}\) Note, however, that if we consider unresponsiveness of parties as an inherent feature, the model by Rea is also about heterogeneity. See Ganuza and Gómez (2005). See also Edlin (1998).
in different ways so that they reflect the parties’ different skills and characteristics. But such an approach is typically not feasible, because the best a law-maker can do is setting a uniform standard of care that is efficient for the majority (or plurality) of individuals. This uniform standard, however, will be too high for some parties and too low for others.

Rubinfeld argued that when victims and injurers are identical, both simple negligence and comparative negligence rules lead to efficient outcomes (Rubinfeld, 1987). However, victims need not be identical even though courts cannot establish specific standards of care for individual cases (Rubinfeld, 1987).

Rubinfeld developed a model of heterogeneous types in which parties vary according to their individual skills to prevent accidents, but where courts cannot verify such characteristics. In the model of uncertainty used by Cooter and Ulen, individuals were considered to be homogeneous. When individuals are heterogeneous, in contrast, comparative negligence can be more efficient than contributory negligence.

Liability rules could be designed to provide parties with differentiated incentives depending on the private information parties possess regarding, for example, the level of harm they suffer, or their costs of care. Rubinfeld considers several scenarios in which heterogeneous parties would have different care possibilities available, and would adjust their final choice to their costs of care. The decision of care by the parties could not be verified by the court without obtaining private information from the parties.

Rubinfeld’s analysis suggests that negligence rules may induce parties to reveal their private information to the court through their choice of care. Under this scheme, liability rules would allow agents to self-select and take precautions according to characteristics that only they knew, even when courts cannot subsequently verify these characteristics. As a result, an efficiently designed comparative negligence rule could optimally induce parties with different private characteristics to reveal information through the level of care they adopt. When such information is available to the court, the court can then infer respective costs of care.

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43 This is the argument that Rubinfeld used to explain the shift from negligence to comparative negligence in some US states. See Rubinfeld (1987).

44 The self-selection role of liability rules has been recently suggested by Bar-Gill and Ben-Shahar (2003). They conclude that all negligence rules can lead victims to efficiently self-select.

45 Rubinfeld (1987) stated: ‘[I]n a model with nonidentical injurers and victims, the ability of the comparative negligence rule to more closely approximate the entire range of the expected marginal damage function can make it more efficient than a negligence rule with the sharp cutoff at . . . ’ a single, objective standard of care.
If courts are unable to ascertain the actual level of care adopted by parties, Rubinfeld suggested they should set an excessively high standard of care, one that is too costly for most parties to satisfy. Most parties would then be negligent (because of their inability to meet the standards), and under comparative negligence, for example, this would lead to sharing liability among parties in proportion to their negligence (Rubinfeld, 1987).

Rubinfeld further argued that parties with sufficiently low costs of care would meet the courts’ excessively high standard because the cost of doing so would not be unreasonably high for them. In contrast, parties with high costs of care would prefer to be negligent because it would not be attractive for them to meet the standard. This system would lead parties to take differentiated levels of care according to their relative costs of precaution. This would thus lead to an efficient outcome because the legal regime would provide differentiated incentives to take care (Rubinfeld, 1987).

Bar-Gill and Ben-Shahar argue, however, that this self-selection property of comparative negligence is not an exclusive feature of sharing rules such as comparative negligence. It may take place also under other negligence rules and in other liability contexts because the optimal rule will set an ‘average’ standard of care for potential injurers that will not be subject to unobservable case-specific parameters, allowing the injurer to anticipate and comply with this standard. The victim, who will bear the total amount of the harm, will take the care that is optimal and therefore self-selection will occur.

Thus, when heterogeneous parties and self-selection mechanisms are introduced, there is not a clear superiority of comparative negligence because other negligence rules could also lead parties to reveal the information regarding the level of care they adopt (Bar-Gill and Ben-Shahar, 2003).

2.4.3.5 Convergence to equilibrium Assuming perfect information and symmetric damages among parties (Wittman et al., 1997), some experiments have showed that comparative negligence is superior to contributory negligence because it converges to an efficient equilibrium in a faster

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46 As Rubinfeld (1987) states: ‘The continuous marginal expected damage function under the comparative negligence rule leads to a continuous distribution of care levels, while the discontinuous marginal expected damage function under the negligence rule leads to a discontinuous distribution of care. This discontinuous distribution marks the inability of the negligence rule to allow individuals to make small adjustments to differences in their own circumstances.’

47 They then argue that Rubinfeld’s self-selection argument in support of the efficiency of comparative negligence becomes a general argument for efficiency of self-selection in general and not for the choice between different negligence rules. See Bar-Gill and Ben-Shahar (2003).
Contributory and comparative negligence and more reliable way (Wittman et al., 1997). Even though contributory and comparative negligence lead to the same efficient equilibrium, they differ from a practical perspective because they do not equally promote learning by parties and courts, and they do not equally facilitate convergence upon the efficient equilibrium by the parties potentially involved in an accident. In other words, how easy it is for parties to reach the equilibrium under each of the liability rules is of crucial importance (Wittman et al., 1997).

When this parameter is introduced into the analysis, empirical tests have shown that comparative negligence allows for faster convergence to equilibrium compared with contributory negligence. This is especially important given that the social costs of reaching equilibrium may be significant (Wittman et al., 1997).

2.5 Other grounds for criticism of comparative negligence
One of the most popular criticisms raised against comparative negligence by efficiency-minded scholars is that it puts too much emphasis on fairness in compensation, and overlooks the incentive or deterrent function of the rule, by assuming that courts and juries will be able to correctly apply it (Robinette and Sherland, 2003). The literature has presented several factors that explain the difficulties in implementing the comparative negligence rule:

**Ability to apportion negligence** The first difficulty is comparative negligence rule’s assumption that negligence can be measured, assessed and apportioned in percentages. It is often argued that negligence is a subjective measurement and therefore cannot be correctly apportioned as the theoretical formulation of the rule would suggest (Little, 1989).

**Risk coverage** In addition, the allocation of damages and, therefore, of risk between injurer and victim, which is one of the alleged virtues of comparative negligence, is of questionable value in providing risk coverage for accident damage. With the widespread use of third-party insurance, we have better and more tailored alternatives readily available to spread risk of accidental harm (White, 1989).

48 Why then did comparative negligence not spread much earlier, replacing contributory negligence? Wittman et al. suggested that despite the better convergence upon the equilibrium of comparative negligence, the apportionment of losses it entails makes it a difficult rule to apply in some negligence cases such as products liability where the parties’ negligence is not symmetric and difficult to measure. Wittman et al. (1997).
The role of jurors

The fact that in the United States the task of determining fault and damages falls on the civil jury also weighs negatively against comparative negligence. The effort to apportion fault under any comparative negligence doctrine will involve more jury time than a simple negligence rule or contributory negligence. Worse, substantial errors may be expected from the jury decision-making process in light of the increased complexity that the application of comparative negligence entails (Rubinfeld, 1987). The nature of fault among parties may be very different and the possibility of making a correct assessment may be very different as well. What and how are jurors apportioning when having to assign percentages of negligence in a negligence case? Juries are given little guidance as to what to do when determining negligence percentages among parties.

The costly mechanism of adjusting the defendant’s liability share both with respect to the plaintiff and with respect to the other defendants

A common criticism of comparative negligence is the litigation costs it entails. Comparative negligence may encourage excessive litigation by increasing the proportion of cases which the plaintiff is likely to win. It may also increase court costs by raising the complexity of the level of an average case (White, 1989).

2.6 Empirical studies on the performance of contributory and comparative negligence rules, and on pure comparative versus modified comparative negligence

There is very little empirical analysis of the performance of these rules with respect to real-world behavior. White tried to cover this gap in 1989, using data collected by Donald Wittman on 582 rear-end automobile accident cases decided by juries in California during the period 1974–76. This data set included information regarding the level of care of injurers and victims.

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49 There is evidence that shows that juries tend to share damages even under the contributory negligence rule. See White (1989).

50 Edelman (2007) argues that jury instructions should reflect the specific nature of care at issue – whether care is commensurable or incommensurable – and whether it is similar, or so different that the comparison is not feasible.

51 Little (1989).

52 Rubinfeld (1987). However, when litigation costs are not considered in the analysis, comparative negligence presents clear advantages compared to other negligence rules because by sharing damages among parties, it induces precautions but at the same time it eliminates the waste of double or excess of precaution that both parties incur under contributory negligence. See Orr (1991).

53 California shifted from a contributory negligence rule to a comparative negligence rule in 1975. See White (1989).
The drivers in this study typically would not know *ex ante* with whom they would be involved in an accident, and whether they would be the injurer or the victim when the accident occurred (White, 1989).

The care levels of the injurers and victims in White’s sample fell into three broad categories: (i) very bad driving; (ii) mediocre driving; and (iii) good driving (White, 1989). In the sample, there were very few observations of injurers who had displayed ‘good driving’, and no observations of victims who had displayed the level of care of category (i), very bad driving. To avoid collinearity in these circumstances, White modeled care as a dummy variable for both injurers and victims. For injurers, the variable would equal one if the injurer’s driving was ‘mediocre’ and zero if the injurer’s driving was ‘very bad’, and for victims the dummy would take the value of one if the victim’s driving was ‘good’, and zero if the victim’s driving was ‘mediocre’.

Given the different observed probabilities of being held liable under comparative versus contributory negligence, and the different amount of damages imposed under each rule, the data showed that for bad drivers expected liability was considerably higher under contributory negligence than under comparative negligence, whereas for mediocre drivers the advantage in terms of higher incentives was associated with comparative negligence, albeit with much lower levels and also a much lower relative difference.

Furthermore, White used the observed percentages of each category under both rules to estimate the *ex ante* probabilities of being an injurer and a victim, and of being found liable, in her theoretical model. Given these estimates, the data showed that under both liability rules the incentive to avoid accidents increased as drivers’ care level dropped from good to mediocre or to bad driving. But for mediocre or bad drivers, the incentive to drive carefully was much stronger under the contributory negligence rule than under the comparative negligence rule. This was because, given their low level of care, these drivers face higher expected liability under contributory than under comparative negligence. In this sense, the shift from contributory to comparative negligence in automobile accident law can be seen to have reduced drivers’ incentives to increase care. Also, the incentives to avoid accidents, even when the level of care is insufficient, are stronger under contributory than under comparative negligence.

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54 See above, section 2.4.3.2. In the automobile accident context, other authors claimed that driving under the influence of alcohol is a setting in which the driver is more likely to be the injurer than the victim. See Sloan, Reilly and Schenzler (1995).

55 Even though White acknowledged that it was not clear whether these incentives were efficient. See White (1989).
Other empirical studies (Sloan, Reilly and Schenzler, 1995) of the effects of tort liability on the use of alcohol among individuals from 1989–90 showed that the US states that switched from contributory to pure or modified comparative negligence experienced an increase in binge drinking (Sloan, Reilly and Schenzler, 1995). The number of accidents per month was 0.28 higher in states with a pure or modified comparative negligence rule than in those with a contributory negligence rule. Even though the shift in negligence rules had an effect on accident rates, it did not have a significant effect on the payments injurers made to victims because even under contributory negligence, some injurers were making payments even in cases where victims had also been negligent (Sloan, Reilly and Schenzler, 1995).

The study also showed that for significant deviations from due care, such as driving under the influence of alcohol, drivers will more likely be injurers than victims under comparative negligence given their low incentive to take care. This conclusion was confirmed by Flanigan et al. (Flanigan, Johnson, Winkler and Ferguson, 1989) who showed that states with a comparative negligence rule had higher automobile insurance costs and therefore higher accident costs than states with a contributory negligence rule (Flanigan, Johnson, Winkler and Ferguson, 1989).

Regarding the differences between pure and modified comparative negligence, it has often been claimed that both forms are equally efficient for care. There is some literature, however, discussing whether pure or modified comparative negligence rules are equally desirable in other respects. Differences between the two forms in terms of deterrence effects, for instance, were recently examined empirically by Robinette and Sherland (Robinette and Sherland, 2003). They did this by examining data on injury claims in automobile accidents collected by the Insurance Research Council (IRC) between 1980 and 1998. Based on his analysis of these data, Robinette and Sherland concluded that there was no evidence of the rules having different deterrent effects (Robinette and Sherland, 2003).

From a corrective justice perspective, pure comparative negligence

56 This article also mentioned that the effect of the change of negligence rule on the amount of accidents was even more important when the negligence rule considered was the pure comparative negligence rule rather than the modified comparative negligence rule. However, this result was not justified in the paper. Sloan, Reilly and Schenzler (1995).

57 This test showed that drivers, as potential accident victims, have fewer incentives to take care. See Sloan, Reilly and Schenzler (1995).

58 Rea claimed that all variations of comparative negligence were equally efficient in terms of care. See Rea (1987).
seems to be a superior rule because by always finding liable negligent parties, these parties are forced, to some degree, to bear the cost of the wrongs they negligently committed (Robinette and Sherland, 2003; Flanigan et al., 1989). Since this helps to further the general goals of tort law, pure comparative negligence may well be the preferable choice rather than the modified form (Robinette and Sherland, 2003).

2.7 Conclusions

The literature on contributory and comparative negligence has evolved in the last three decades along two lines. It has made models more realistic by relaxing some of the standard assumptions initially employed in looking at accidents and liability. It has also reassessed, through different approaches, the conclusions reached concerning the relative efficiency and advantages of each negligence rule with respect to the other.

The early literature showed an unabashed and mistaken clear preference for contributory negligence. This vision was soon corrected by the equivalence result in the standard model of liability with perfect information and error-free decision-makers. Given that comparative negligence spread in many states and jurisdictions, especially in the United States, the literature then focused on finding theoretical explanations for this legal change. In doing so, the literature’s overall expressed preferences shifted from contributory to comparative negligence.

This third stage of the literature concluded that comparative negligence seemed to be preferred under evidentiary uncertainty – when judges do not have perfect information regarding the parties’ level of care (Cooter and Ulen, 1986; Haddock and Curran, 1985), when parties have private information about their differentiated costs of care (Rubinfeld, 1987), and when some individuals are unresponsive to the incentives to take care created by the negligence rules (Rea, 1987).

The most recent literature (Bar-Gill and Ben-Shahar, 2003), though, is overtly skeptical concerning any general superior performance of comparative negligence over contributory negligence. In this sense, it resembles the neutral attitude of the equivalence literature, though emphasizing the indeterminacy of general assessments, and the significance of specific assumptions on the size of care functions and accident technologies for more precise conclusions on relative efficiency. This suggests that new and more sophisticated models may provide an opportunity to further economic research on accidents and liability.

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