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and Economic Analysis

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Abstract:

Courts express anger and indignation through speech and punishment. Expressions of emotion signal commitment and coordinate expectations in a game with multiple equilibria. Current law relies upon juries using social norms to determine the incidence and extent of punitive damages. Social norms provide a better guide to the need for punitive damages than to their extent. Juries require precise instructions to award consistent punitive damages. The court in a typical case should impose the minimum punishment required to deter wrongdoing. The goal of deterrence can calibrate punishments precisely for some kinds of wrongs but not others.

Robert Cooter*

Punitive Damages, Social Norms, and Economic Analysis

From its beginnings, the economic analysis of law has traced the incentive effects of liability on potential wrongdoers who pursue their material advantage.1 Recently the economic analysis of law has turned to the study of social norms.2 This paper relates these two literatures to punitive damages. People who internalize social norms feel righteous anger against those who violate them. The institution of punitive damages allows judges and juries to express righteous anger through speech and punishment. Expression of emotions by the court demonstrates the strength of its commitment to the law in question. Perception of this commitment shapes the expectations of citizens and changes their behavior. In technical terms, expression of emotions signals commitment, and commitment provides a focal point in a game with multiple equilibria (Cooter 1998 forthcoming-a).

Conventional morality provides a basis for ordering wrongdoing by its seriousness, but conventional morality does not attach precise punishments to wrongs. Social norms provide a better guide to the need for punitive damages than to their extent. Consequently, people order wrongdoing consistently by its seriousness, but people attach inconsistent money damages to wrongdoing (Kahneman and Sunstein 1997). Inconsistent punitive damages muddles the message conveyed by the courts concerning the seriousness of the wrong. Courts should not ask juries to determine the extent of punishment without providing instructions for its computation from the facts of the case.

Consistency requires mapping wrongs ordered by seriousness into punishments ordered by severity. The goal of deterrence provides a basis for consistent punishment. The court in a typical case should impose the minimum punishment required to deter wrongdoing. In jury trials, the court should instruct the jury on how to compute the minimum punishment required for deterrence. To compute the minimum punishment required for deterrence, I distinguish between intentional and unintentional wrongdoing by a theory of rational self-monitoring. Imperfect self-monitoring results in lapses that cause unintentional violations of legal obligations. I show that liability for compensatory damages provides efficient incentives for self-monitoring. Deterring intentional wrongdoing, however, requires additional liability. In circumstances explained later, optimal deterrence requires increasing compensatory damages by the reciprocal of the enforcement error.

Punitive Damages in Practice

"Punitive damages" usually refers to damages awarded to the plaintiff in a civil trial in order to punish the defendant. Private law in most countries prohibits or narrowly circumscribes punitive damages, perhaps because civil procedures afford less protection to the defendant than criminal procedures. US statutes occasionally prescribe punitive damages, most notably in antitrust cases where law allows treble damages.3 Statutory authorization for punitive damages is unusual, however, and courts seem reluctant to take the initiative in fashioning such remedies. The common law traditionally allowed punitive damages only in a narrow class of torts where the injurer typically harmed the victim's dignity,

such as slander. American state courts and legislatures, however, have

expanded this practice beyond dignitary torts to allow punitive damages in many

different kinds of civil cases, provided the defendant's behavior is bad enough

(Blatt, Hammesfahr, and Nugent 1991).

The standard for "bad enough" is set so high that few cases qualify. Most

states have a statute concerning the incident and extent of punitive damages.

According to the usual formulation, punitive damages can be awarded when the

defendant's behavior is malicious, oppressive, gross, willful and wanton, or

fraudulent. The statutes typically identify factors for the court to consider when

setting the amount of punitive damages, including the seriousness of the wrong

and the ability of the defendant to pay damages.4

These phrases provide guidelines for courts, but the guidelines have

never been formulated into rules. Punitive damages are supposed to bear a

"reasonable relationship" to compensatory damages, but the law does not

prescribe anything definite. For example, the law does not say whether punitive

damages should exceed compensatory damages by two times or 100 times. In

the typical case involving punitive damages, the jury is asked to decide whether

punitive damages should be awarded and, if so, how much to award. The jury,

however, does not receive definite instructions for answering either question.

Instructions are so thin that the jury's intuitions determine damages.

Since juries receive minimum guidance from judges, awards are

unpredictable. To illustrate, the ratio of punitive damages to compensatory

damages awarded recently by juries varied from as low as 1/10 to as high as

410,000/1, and a jury in one recent case awarded $5 billion in punitive damages.5 Many private insurance contracts do not cover liability for punitive damages and some states outlaw insurance against liability for punitive damages.6 Although rarely awarded, punitive damages represent a significant risk to some American defendants. Little wonder that defendants continue to argue (without success so far) that punitive damages fall under the prohibition of excessive fines by the Eighth Amendment to the United States Constitution.7 Jury intuition about the extent of punishment provides an uncertain and unstable foundation for law.

Why Punish?

In economic models of liability, "perfect compensation" leaves the victim indifferent between no harm and harm with compensation.8 In other words, perfect compensation restores the victim to the same indifference curve as if no injury had occurred. A liability system with perfect compensation would make victims indifferent about the behavior of injurers. If victims are indifferent, then injurers should be free to decide how to act. These facts pose the theoretical question, "Why not permit everything and hold injurers liable for the consequences?" To develop the foundation for a theory of punitive damages, I will sharpen this question and answer it.

Internalize or Deter?

Permission to do something, provided that one pays a price set by the court, has been called a liability right (Calabresi and Melamed 1972). To illustrate, companies may be permitted to engage in activities that create a

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nuisance provided that they compensate the victims.9 Alternatively, law may forbid people to harm others and punish those who intentionally violate the prohibition.   To illustrate, law and morality forbid people to commit fraud or drive recklessly.

Liability rights and prohibitions locate decisions differently. For a liability right, the injurer is free to decide whether or not to act, provided he pays damages. In contrast, punishment subordinates the individual's freedom to the group's judgment about right and wrong. With a liability right, perfect compensation internalizes the harm caused by the injurer. With a prohibition, however, punishment ideally deters wrongdoing.

To understand deterrence, consider the parallel between victim's compensation and injurer's disgorgement. Disgorgement makes the injurer give up his gains from the injury. "Perfect disgorgement" is a sum of money that leaves the injurer indifferent between the injury with liability for damages or no injury.10 In other words, perfect disgorgement restores the injurer to the same indifference curve as if no injury had occurred. Damages that exceed the amount required for perfect disgorgement are extra-disgorging. Extra-disgorging damages make the injurer worse off than if he had not committed the injury.

By definition, an injurer is indifferent between no injury and an injury with liability for perfectly disgorging damages. Consequently, an injurer who faces liability for extra-disgorging damages prefers not to cause the injury. When the liability system works perfectly, liability for extra-disgorging damages deters intentional wrongdoing.

Figure 1: Liability Right Versus Prohibition			
Name	injurer's act	law's goal	damages to achieve goal
Liability right	permitted	Internalize	perfect compensation
Prohibition	forbidden	Deter	extra-disgorging

Figure 1 summarizes the contrast between a liability right and a prohibition.   A liability right gives freedom to injurers and perfect compensation fully protects victims. Furthermore, when the liability system works perfectly, liability for perfectly compensatory damages causes a potential injurer to balance his costs of precaution and the victim's costs of harm, as required for economic efficiency. Liability for perfectly compensatory damages provides incentives for efficient precaution by injurers in many economic models.[11]

Notice that Figure 1 implicitly suggests two different baselines for deciding when damages become punitive. Damages may be described as punitive when they exceed the amount required to compensate the plaintiff for the injury. According to this definition, punitive damages are extra-compensatory. Alternatively, damages may be described as punitive when they exceed the amount required for the injurer to disgorge the gain from wrongdoing. According to this definition, punitive damages are extra-disgorging. The two definitions of punishment reverse the role of victim and injurer in the baseline.

Although similar in form, damages computed under one definition do not generally equal damages computed under the other definition. The two concepts of punishment are not materially equivalent. When the goal of law is to deter injurer's from committing forbidden acts, efficient incentives require extra-disgorging damages. The injurer's gain, not the victim's loss, provides the

correct baseline for computing damages. Under ideal conditions, liability for extra-disgorging damages deters intentional wrongdoing. The ideal conditions, which are unrealistic but useful for analysis, include no court errors and actors who are rational, informed, and solvent.

Channeling Transactions

Now I return to the question, "Why not permit everything and hold injurers liable for the consequences?" A variety of answers can be given inside and outside the framework of economic analysis. Some scholars who work within the economic framework concentrate upon the desirability of channeling transactions through markets rather than courts. To illustrate, the law prohibits you from stealing my golf clubs. If you want them, you have to buy them from me. Alternatively, the law might permit you to steal my golf clubs and compensate me. For most transactions, the market determines values at less cost than a court. For example, the market determines how much I value my golf clubs at less cost than a court can determine liability. So protecting my entitlement by a property right rather than a liability right saves transaction costs by channeling transactions into markets and away from courts. When markets can price goods at lower transaction costs than courts, prohibitions provide a more efficient structure for transactions than liability (Klevorick 1985; Posner 1985; Shavell 1985).

Uncompensable Losses

Instead of the transaction structure, I focus on a different reason why efficiency sometimes requires prohibitions rather than liability. Implementing

perfect compensation is easy when the harmed object has a perfect substitute in the market. To illustrate, if one motorist destroys another's automobile, the market price enables the court to estimate perfectly compensatory damages. Implementing perfectly compensating damages is difficult when the injury harms a unique object with an imperfect substitute, such as an oil painting (Harris, Ogus, and Phillips 1979). Implementing perfect compensation may be impossible when the injury seriously harms a subject rather than an object. To illustrate, a parent may feel that no amount of money could make him indifferent over the death of his child. If a grieved parent feels that way, then perfectly compensatory damages are impossible in principle. Impossibility comes from the fact that the parent cannot make any sense out of the idea of being indifferent between his child and money. (Some scholars conclude that money and children's lives are "incommensurable."12)

Liability for Uncompensable Losses

In spite of this fact, courts routinely award "compensatory damages" to the victims of uncompensable harms. In cases where compensation is impossible, the phrase "compensatory damages" badly misleads people concerning the purpose of damages. Legal language obscures another purpose for damages in such cases. The purpose is to deter exposing people to unreasonable risks. I will explain how to implement this goal through damages.

Social norms often restrict and regulate behavior that causes uncompensable losses. To illustrate, conventional morality forbids assault. Similarly, current social norms in California apparently require the driver to make

sure that all children in cars use seat belts. Social norms, however, often do not stipulate the damages owed to victims of wrongdoing. To illustrate, social norms do not specify how much to compensate someone who was punched in the nose or lost a child in an accident. Given these facts, juries find obligations more reliably than damages. For example, juries feel more confident about an obligation to reduce a particular risk to a child's life than about the damages that would compensate the parent if the risk materializes.

When compensation is impossible, an appropriate goal of liability law is to deter wrongdoers from violating community standards. To illustrate, successful deterrence prevents adults from exposing children to more risk than allowed by social norms. Setting damages at the appropriate level makes rationally self-interested people conform to social norms. I can describe the method of computing damages for deterrence by using Judge Hand's notation from US v. Carol Towing.13

Let B denote the burden of care, let p denote the reduction in the probability of an accident caused by taking B, and let L denote liability. Judge Hand had in mind a situation where no community standard exists. If there is no community standard, Judge Hand required the actor to take precaution until the burden is at least as great as the reduction in expected liability: $B > pL$.

I have in mind a different situation where a community standard exists but the harm is uncompensable. The community standard establishes the burden B whose omission constitutes negligence. Objective facts establish the reduction in the probability p of an accident caused by B.   Given B and p, the court should

compute L by solving L=B/p. I call this approach the "risk equivalent" method, because it aims for equivalence between money and risk, not equivalence between money and life.14

To illustrate, consider the computation of damages for the accidental death of a child. Courts find standards of negligence in social norms. If social norms as found by courts require an actor to spend $100 on precautions to reduce the probability of a child's accidental death by .0001, then the equivalent value of the risk equals $100/.0001, or $1 million. In this example, the burden B equals $100, the probability p equals .0001. These facts imply that the liability L should equals $1 million.

Rationally self-interested actors decide whether or not to conform to the legal standard of care by balancing the costs of precaution and the expected costs of liability. The risk-equivalent method sets liability at the level that causes such actors to conform to the legal standard. When L=B/p, a rational actor will pay up to B to avoid facing liability with probability p. For example, when faced with liability of $1 million, the rationally self-interested actor will spend up to $100 to reduce the probability of being liable by .0001.   To illustrate concretely, a profit-maximizing bottler of Coca-Cola will spend up to $100 on quality control to reduce by .0001 the probability of being liable in tort for $1 million.15

Current regulations create incentives for irrational and inconsistent levels of precaution. To illustrate, Viscusi found that the cost per life saved by various regulations varies from $100,000 for unvented space heaters to $72 billion for the 1987 formaldehyde standard.16 The risk-equivalent method for computing

liability can help to rationalize precautions by providing uniform incentives. To illustrate, $1 million in liability for the wrongful death of a child creates incentives for firms to spend $100 on precaution to reduce the probability of death by .0001, regardless of whether the firm manufacturers space heaters or formaldehyde.

Bad Names

Sometimes the legal methodology for computing compensatory damages omits categories of harm. To illustrate, the law may fail to compensate fully for consequential damages, remote damages, economic losses, exposure to risk, emotional distress, or pain and suffering. To achieve the goal of internalization, the law needs to fill the gap between allowed compensation and perfect compensation. One way to fill the gap is by allowing additional damages and calling them "punitive."

Gap filling was apparently one of the original inspirations for awarding punitive damages in common law cases involving dignitary torts. To illustrate, consider the difficulty of estimating the damages required to compensate perfectly for the indignity of getting insulted and punched in the nose while peacefully enjoying a beer in a public house. Courts lack a methodology for computing compensatory damages in such cases. Punishment might fill the methodological gap and provide damages approximating the amount required for compensation.

Applying "punitive" to gap-filling damages spreads confusion. If the law's goal is perfect compensation of the victim, then the court should not use

language suggesting that its goal is punishing the injurer. Instead, the law should adopt the best available methodology for implementing perfectly compensatory damages and say so. The best method to pursue a goal will advance it farther than pursuing a different goal by a better method.

When to Punish

Channeling activities into voluntary transactions and deterring uncompensable harms sometimes requires backing prohibitions with penalties. Now I turn to the problem of when to impose punitive damages on wrongdoers. The judge and jury award punitive damages, according to one writer, when, upon hearing the facts, they grip the arms of their chairs and think "Oh my God!" (Burrell l949). This claim explains little and suggests much. I will develop a theory of punitive damages by trying to explain such behavior.

Commitment and Indignation

Moral commitment increases trust, which makes cooperation easier and more productive. In a cooperative venture, people often get paid according to their contribution. Consequently a person who can signal moral commitment often gains an advantage in cooperative activities.17 Signaling commitment is difficult, however, because moral commitment can be fake or genuine. Gaining an advantage by commitment requires signaling that it is genuine.

Feelings can help to distinguish between fake and genuine commitment. Genuine moral commitment has an emotional aspect. People feel committed to internalized values. This connection between commitment and emotion has a

useful function. Telling a cool lie is easier for many people than faking emotion. For example, a child who can tell a cool lie is often incompetent at faking emotion. Aspiring actors devote much time and effort to perfecting the art of faking emotion. Since faking emotion is hard, the emotion attached to the expression of moral commitment helps to authenticate it. According to one theory, emotions evolved among people partly to provide the means to signal commitment (Frank 1988).

Whereas economic rationality seems relatively cool, discussions of law can become relatively hot. The heat comes from the connection between emotion and commitment.   People feel committed to values at issue in contested law, such as abortion (Luker 19),], discrimination (Adelman 1995), or even closing the range to cattle (Ellickson 1991). The presence of emotion suggests a prominent role in law for expressing internalized values. People who internalize social norms feel righteous anger against those who violate them. The institution of punitive damages allows judges and juries to express righteous anger through speech and punishment.

Systems of Social Norms

Punitive damages express indignation through the language of the law and the magnitude of the punishment. Expression of emotions by the court demonstrates its commitment to the law in question. Perception of commitment can shape the expectations of citizens and change their behavior. Usually perception of the court's commitment changes behavior marginally by deterring

wrongdoing. Sometimes, however, perception of the court's commitment changes behavior dramatically.

The characteristics of the system of social norms determines whether the effects is marginal deterrence or dramatic change. With a uniquely stable equilibrium in the system of social norms, the law's expression cannot change expectations dramatically and permanently . Instead, with a uniquely stable equilibrium, the law's sanction changes behavior marginally. In contrast, with multiple equilibria, some of which are unstable, the law's expression can sometimes change expectations dramatically and permanently. Jumps occur because the court's commitment focuses expectations on a new equilibrium (Cooter 1998 forthcoming-a). If coordination problems prevent people from reaching a higher standard of behavior to which they aspire, law can sometimes solve the coordination problem by urging people to achieve the higher standard.

Using punitive damages for marginal deterrence risks little, whereas using law expressively risks a lot. The high risk of expression is that, instead of changing behavior dramatically, law can discredit itself. Law discredits itself by urging people to achieve a higher standard of behavior than the social system can sustain.

Given the complexity of coordination problems and the fragility of symbols, I doubt that expressive theories of law can provide the basis for calibrating punitive damages. If punitive damages are based upon expressive law alone, the current problems of inconsistency have no remedy. Inconsistent

punitive damages muddles the message conveyed by the severity of punishment.   For purposes of expression, the courts need a more consistent calibration of punitive damages than an expressive theory can provide. The goal of deterrence can provide a more consistent calibration of punishments. I will analyze the use of punitive damages for marginal deterrence, which leads to more precise conclusions about punishment.

Graphs18

Before turning to deterrence, however, I will elucidate the preceding discussion of legal expression with the help of some graphs. The reader who dislikes graphs can skip the next section. I begin by representing a system of social norms, and then I show how law can alter the system.

Many productive activities require cooperation among people. Norms provide a guide to organization and a basis for trust that facilitates cooperation. Organized activity typically increases production above the level obtainable without organization. Some organizations, however, are superior to others. Social norms do not automatically prescribe the most productive organization. In addition, organizations distribute power and status. Social norms do not automatically distribute power and status fairly. I will briefly describe some formal characteristics of norms relevant to their efficiency and fairness.

A social norm imposes an obligation that partitions the set of possible actions into permitted and forbidden zones. People conform to a norm by staying in the permitted zone, and people violate a norm by entering the

forbidden zone. When an actor adopts the pure strategy of doing right or the pure strategy of doing wrong, the resulting payoff depends upon the strategy pursued by others. I assume that doing right contributes to production by increasing trust and cooperation, whereas doing wrong reduces production by undermining trust and cooperation. For example, truth-telling and promise-keeping contribute to production by solving the principal-agent problem.

Given a socially productive norm, an increase in the proportion of wrongdoers decreases the productivity of cooperative relationships. A decrease in productivity reduces the payoffs to wrongdoers and rightdoers. Although everyone's payoffs fall, the reduction may be different for rightdoers and wrongdoers. These differences have important consequences for equilibria in the system of norms. In evolutionary equilibrium, all behavior that persists yields the same objective payoff (Bannerjee and Weibull 1996). In one common pattern, as the proportion of wrongdoers increases, the payoffs to wrongdoers fall faster than the payoffs to rightdoers. This possibility results in a stable interior equilibrium.

Figure 2 depicts this possibility. The vertical axis represents the payoff, the horizontal axis represents the proportion or wrongdoers, one curve represents payoffs for conforming to the norm, and the other curve represents payoffs for violating the norm. The intersection in the curves depicts an interior equilibrium where rightdoers and wrongdoers receive the same expected payoff.

Figure 2: Stable Equilibrium

Expected
Payoff

stable equilibrium

rightdoers

wrongdoers

0%   25%   50%   75%   100%

Proportion of Wrongdoers
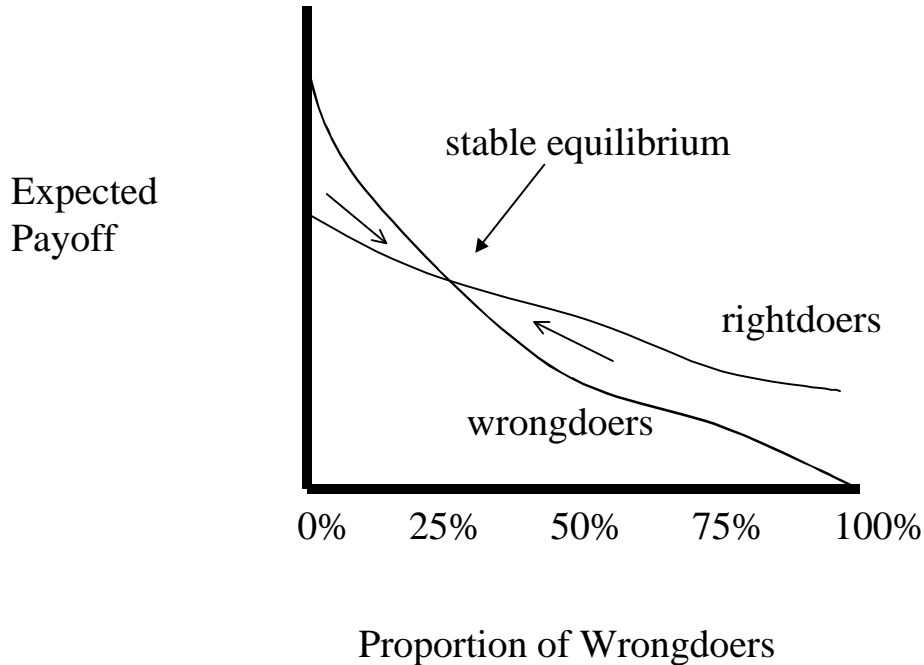
Now consider why the equilibrium is stable. If the proportion of
wrongdoers increases beyond the equilibrium level, the payoff to rightdoers rises
above the payoff to wrongdoers. With rightdoers receiving higher payoffs, some
wrongdoers change their behavior. The number of wrongdoers declines until
equilibrium is restored. Conversely, if the proportion of wrongdoers decreases
below the equilibrium level, the payoff to wrongdoers rises above the payoff to
rightdoers, so wrongdoers increase in number until equilibrium is restored.

As explained, stability results from assuming that an increase in the
proportion of wrongdoers harms wrongdoers more than rightdoers. Now change

the assumptions and assume that an increase in the proportion of wrongdoers

harms wrongdoers less than rightdoers. Figure 3 depicts this situation. The

intersection of the curves represents an interior equilibrium that is unstable.

Beginning from the interior equilibrium, an increase in wrongdoers causes the

payoffs of wrongdoers to rise above the payoffs to rightdoers, so the number of

wrongdoers continues to increase. The process ends at the stable equilibrium at

the lower right corner where everyone does wrong.

**Figure 3: Unstable Equilibrium**
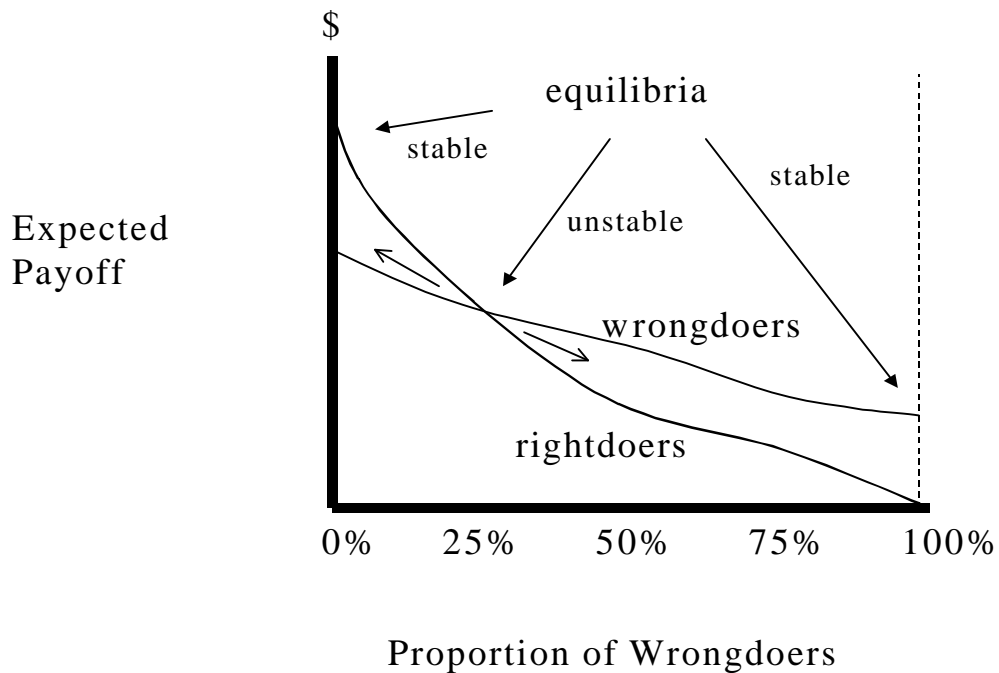
Conversely, beginning from the unstable interior equilibrium, a decrease

in wrongdoers causes the payoffs of wrongdoers to fall below the payoffs to

rightdoers, so the number of rightdoers increases. The process ends at the stable equilibrium at the upper left corner where everyone does right.

For norms of cooperation, the curves expressing payoffs to rightdoers and wrongdoers slope down to express the loss in productivity as the proportion of wrongdoers increases. Theory, however, does not prescribe the gradient of the curves. The curves might intersect more than once. Figure 4 depicts this possibility. Figure 4 has a stable interior equilibrium with few wrongdoers, an unstable interior equilibrium with many wrongdoers, and a stable corner equilibrium with all wrongdoers.   In Figure 4 the system stabilizes when few people (25%) do wrong or when everyone (100%) does wrong.

Figure 4: Multiple Equilibria
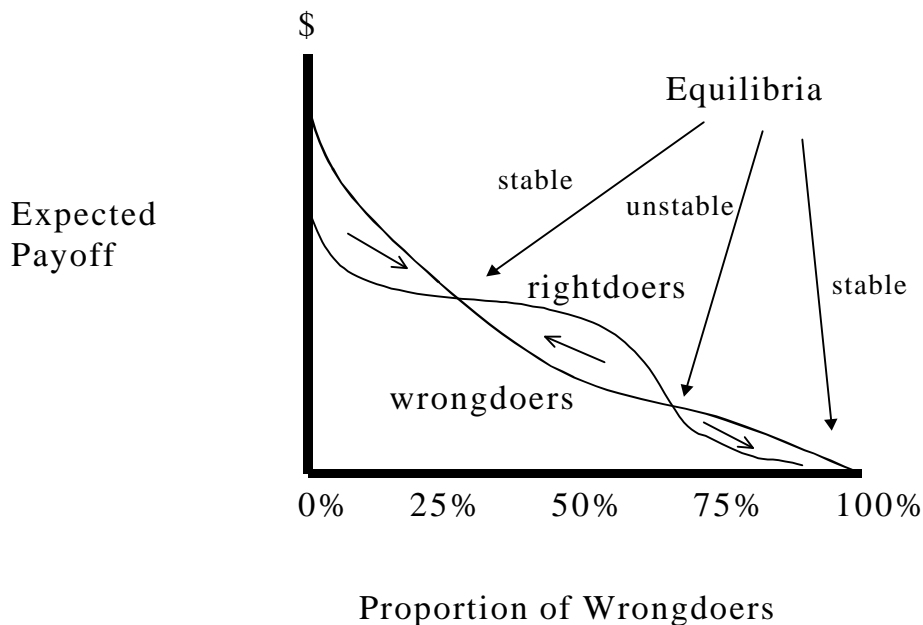
Now I discuss how law can influence the systems of social norms depicted in Figure 2, Figure 3, and Figure 4. Assume that lawmakers raise the social obligation to the level of a legal obligation and attach a sanction to its violation. The legal sanction causes the wrongdoer's payoff curve to shift down in the figures. If the wrongdoer's curve shifts down in Figure 2, then the equilibrium moves to the left. Because wrongdoing decreases, the new equilibrium has more cooperation and higher production. Given a stable interior equilibrium in the system of social norms, imposing legal sanctions deters wrongdoers marginally.

Deterrence, however, has different consequences in Figure 3. Recall that the interior equilibrium is unstable. Since the system does not settle at the interior equilibrium, small changes in the interior equilibrium have little or no consequences for the social system.19 Attaching a legal sanction to the social obligation causes the wrongdoer's payoff curve to shift down in Figure 3. A downward shift in the wrongdoer's payoff curve shifts the interior equilibrium and does not change the corner equilibria. Either everyone continues doing wrong, or else everyone continues doing right. In either case, the imposition of a legal sanction has no deterrence effect. Given an unstable interior equilibrium in the system of social norms, imposing legal sanctions has no deterrence effects.

Besides deterring wrongdoing, law coordinates expectations. Given a system of social norms with multiple equilibria, the coordination effects of law can be dramatic. In Figure 3, everyone does right or everyone does wrong.

Assume that everyone does wrong. Now the state raises the social obligation to the level of law. If people respect law, enacting the obligation into law may cause people to change their expectations. If people think that everyone else will switch from doing wrong to doing right, then the prophecy will fulfill itself. Enacting the law will cause the equilibrium to jump from the right corner, where everyone does wrong, to the left corner, where everyone does right.

The expressive theory of law represents an alternative to the deterrence theory of law. According to the expressive theory of law, the expression of social values is an important function of the courts,[20] or possibly the most important function of the courts.[21] The classical formulations, however, did not analyze the behavioral consequences of expressive law. Given multiple equilibria in a system of social norms, expression of legal commitments can cause dramatic jumps in behavior.

I have explained that legal sanctions change behavior marginally in a stable system of social norms, and legal expression can change behavioral non-marginally in an unstable system of social norms. In reality, normative systems are likely to be mixed, as depicted in Figure 4. In mixed systems of social norms, law can have deterrence effects and expression effects. To illustrate using, assume that the system of social norms is stuck at the right corner in Figure 4 where 100% of the actors do wrong. A stable interior equilibrium exists where only 25% of the actors do wrong. Everyone's payoff would increase if the system could move from the corner equilibrium to the stable interior equilibrium.

Notice that the unstable, interior equilibrium in Figure 4 occurs with 70% wrongdoers and 30% rightdoers. In order to move to the stable interior equilibrium, at least 31% of the actors must change strategies and do right. Once 31% of the actors do right, rightdoers will continue to increase until 75% of the actors do right. Assume that enacting a law induces at least 31% of the citizens to change, so the system in Figure 4 moves to the stable interior equilibrium. Although improvement is dramatic, 25% of the actors continue doing wrong. Further reductions in wrongdoing would require deterrence. Supplementing social sanctions with legal sanctions shifts down the curve representing expected payoffs to wrongdoers in Figure 4, thus reducing the equilibrium number of wrongdoers. The combination of expression and deterrence brings wrongdoing down to a low level.

I have explained how law can change behavior dramatically in a social system with multiple equilibria. In such a social system, law can also fail dramatically. To illustrate concretely by Figure 4, recall that dramatic improvement occurs when, beginning from a situation in which everyone does wrong, enacting the law causes at least 31% of the actors to change and do right. Dramatic failures occurs if less than 31% of the actors change and do right. Assume that enacting the law causes 25% of the actors to change and do right. The actors change from wrong to right because they expect other people to make the change. But not enough people make the change to sustain it. Instead, the system reverts to the original equilibrium where everyone does wrong.

In a system of social norms with a uniquely stable equilibrium, the law's sanction changes behavior marginally, but the law's expression cannot permanently change expectations or behavior. In a system of social norms with multiple equilibria, the law's sanction changes behavior marginally, and the law's expression dramatically succeeds or fails to change expectations and behavior. Using punitive damages for marginal deterrence risks little, whereas using law expressively risks a lot. The high risk of expression is that law can change social behavior dramatically or discredit itself.

How Much To Punish?

Now I turn to the calibration of punishments for deterrence. I explained earlier that punitive damages arise only when the defendant behaved very badly. In the usual case, only intentional wrongs, or nearly intentional wrongs, are bad enough for punitive damages. The extent of damages thus depends upon distinguishing between intentional and unintentional wrongs. I will develop a distinction appropriate to an economic theory of damages.

Lapses

Figure 1 describes incentive effects that influence rational actors. Tort liability, however, often arises from diminished rationality (Ellickson 1989; Schwartz 1995). Rationality diminishes when people mistakenly assess facts. In cases of unintended wrongs, the actor does not know that he is doing something wrong. To illustrate, I may drive too fast because I do not notice that I am near a school. When a wrong is unintended, the actor does not foresee

possible punishment, so it cannot deter him. Similarly, in cases of under-appreciated risks, the actor under-estimates the risk that he imposes on others. To illustrate, I mistakenly think that asbestos dust poses only a small risk of lung cancer to my employees. When a risk is under-appreciated, liability will not cause the actor to internalize the full benefit of precaution.

Lapses in attention often cause unintended wrongs and under-appreciated risks (Cooter 1991c; Grady 1988). More vigilance by the actor reduces the frequency of lapses in attention.   By "vigilance" I mean self-monitoring activities by which an actor controls his behavior. An account of rational self-monitoring provides the foundation for a theory of deterrence applied to unintended wrongs and under-appreciated risks.

A rationally self-interested actor balances the cost of self-monitoring and the reduction in expected liability from lapses. A negligence rule makes the injurer liable for the harm caused by unintended wrongs. A rule of strict liability makes the injurer liable for the harm caused by under-appreciated risks. Perfectly compensatory damages make the injurer internalize the expected cost of harm. So, assuming certain ideal conditions including perfectly compensatory damages, a negligence rule or a rule of strict liability causes efficient self-monitoring by a rational actor. 22

In the case of uncompensable harms, I propose to compute damages by the risk-equivalence method. Risk-equivalent damages create incentives to rationalize precaution. Specifically, risk-equivalent damages provide incentives to equalize the increase in safety obtained by investing more resources in all

types of precaution, including self-monitoring. So, assuming certain ideal conditions including risk-equivalent damages, a negligence rule or a rule of strict liability causes efficient self-monitoring by a rational actor.

The law often does not apply a legal standard to self-monitoring. To illustrate, consider failing to stop for a stop sign. Failing to stop at a stop sign is negligent, and the driver is liable for the consequences. Everyone, however, occasionally lapses and fails to stop at stop signs. The law, however, does not allow the driver to defend himself by proving that he inadvertently runs stops signs less often than most other people do. A high level of self-monitoring provides no defense for a lapse.

In this respect, self-monitoring by individuals resembles quality control by manufacturers. To illustrate, a Coca-Cola manufacturer has to monitor the bottles to make sure that they contain no defects that could cause them to explode. More intensive and costly quality control results in fewer defective bottles. Defective bottles sometimes slip through even the best system of quality control. When a defective bottle injures a consumer, the law holds the manufacturer liable, without allowing a defense that quality control was best.23 The manufacturer's quality control resembles the driver's self-monitoring, and the defective bottle resembles the driver's negligence. The court does not have the information to create and apply a standard of self-monitoring to individuals or a standard of quality control in manufacturing.

Now I return to the connection between intention and damages. Liability for unintended harms causes injurers to internalize the benefits of self-

monitoring. Thus liability for unintended harms causes actors to balance the cost of self-monitoring against the benefit of fewer lapses, as required for efficient incentives. Conversely, imposing extra-compensatory damages measured relative to the baseline of perfect compensation or risk-equivalent damages, provides incentives for excessive self-monitoring. In other words, extra-compensatory damages create incentives for unreasonably costly vigilance. Thus the liability of injurers should typically equal, but not exceed, compensatory damages.

I used the concept of rational self-monitoring to build a theory of lapses. In this paper I will not attempt to achieve greater realism by adjusting the model of rational self-monitoring in light of psychology.24

Punishment

Instead of lapsing, however, some actors impose excessive risk on others by intentionally violating legal standards. Their wrongdoing needs punishment for the sake of deterrence. I will distinguish three motives for intentional wrongdoing, each with its own logic of deterrence.

First consider intentional wrongdoing motivated by errors in enforcing compensatory damages. To illustrate, assume that perfect compensation of the victim requires damages of $10,000, and assume that problems of detection and proof cause the injurer to be held liable with probability ½. An injurer's expected liability for compensatory damages thus equals $5,000. Assume the cost of compliance with the legal standard of care costs $6,000. Under these

assumptions, the rationally self-interested injurer intentionally does wrong in order to save $1,000 in expected costs.

Punitive damages can offset enforcement errors and restore efficient deterrence to the liability system. In this example, a punitive multiple of 2/1 restores the injurer's expected liability to $10,000, as required for deterrence. Since the punitive multiple of 2/1 equals the reciprocal of the enforcement error ½, I call this method for computing punitive damages the rule of the reciprocal.25 The rule of the reciprocal applies to most cases of fraud by individuals and self-seeking by firms.

When applying the rule of the reciprocal, courts should not award punitive damages in cases like the Exxon Valdez, where an oil tanker ran aground. Since the whole world was sure to know about the accident, a rational actor like this large corporation would not expect to escape liability.

Some kinds of enforcement errors do not distort incentives and do not require correction by reciprocal damages. Expected costs usually jump at the boundary between permitted and forbidden acts. Because of the jump in costs, most rational actors will conform to the legal standard in spite of enforcement errors. If costs jump by a large amount at the legal standard, then a damage multiple is unnecessary to offset enforcement errors and to deter wrongdoing by rational actors. Conversely, if costs jump by a small amount at the legal standard, then reciprocal damages are necessary to offset enforcement errors and to deter wrongdoing by rational actors. In general, the necessity of reciprocal damages to deter wrongdoing depends upon the relative size of the

enforcement error and the jump in liability costs at the legal standard (Cooter 1989).

Malice is a second motive for intentional wrongdoing. The assailant who insults me and breaks my nose presumably derives something valuable from his act, such as satisfaction. Subjective satisfaction is difficult to observe and impossible to measure. Consequently, no rule exists for computing the punishment required to deter malicious acts. Although tailoring punishment to individuals is difficult, statistical evidence can show the average relationship between punishment and deterrence. As with criminal fines, the calibration of punitive damages for malice must rely upon such aggregate statistics.

A third motive for wrongdoing occurs in cases involving reckless disregard for the safety of others. Actors who disregard risks are often in special emotional states, such as the young man suffering from Saturday night fever. Heightened emotions can cause excessive discounting of risk and futurity. A special model of lapses, whose details I omit, applies to such behavior.26 Efficient self-monitoring requires punitive damages in such cases, not merely compensatory damages. The actor needs the additional reason provided by punishment to acquire better discipline and control over his emotions. Social scientists have not developed or tested precise theories about how punishing reckless behavior causes people to gain self-control. Consequently, I know of no rule for computing optimal punishment in such cases.

Conclusion

Courts express anger and indignation through speech and punishment. Expressions of emotion signal commitment and coordinate expectations in a system of social norms with multiple equilibria. In addition, sanctions deter marginally at a stable equilibrium in a system of social norms. Current law relies upon juries using social norms to determine the incidence and extent of punitive damages. Civil courts correctly draw upon the righteous anger of jurors over intentional wrongs to chastise the actor and harm his reputation. Courts, however, make a serious error in asking jurors to assign punitive damages without instructing jurors on how to compute them. Social norms provide a better guide to the need for punitive damages than to their extent. Juries require precise instructions to award consistent punitive damages. The court in a typical case should impose the minimum punishment required to deter wrongdoing. The goal of deterrence can calibrate punishments precisely for some kinds of wrongs but not others.

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Endnotes

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[1] An overview of the vast economic literature on liability is in (Cooter 1991a). As for punitive damages, a symposium on the economic analysis of punitive damages was published in 1982 in 40 University of Southern California Law Review . The keynote paper is (Ellis 1982). My paper in this symposium, (Cooter 1982), begins a discussion of the possibly central role of discontinuities in the law of negligence. Another symposium on punitive damages appeared in in "Symposium: Punitive Damages," 40 Alabama Law Review 687-1261 (1989), with economically oriented articles by Bruce Chapman and Michael Trebilcock, Robert Cooter, Dan Dobbs, E. Donald Elliott, Dorsey Ellis, David Friedman, Mark Grady, Peter Huber, Gorge Priest, and Gary Schwartz. In addition, see (Calfee, Grady, and Rubin 1997; Craswell 1996; Daughtey and Reinganum 1997; Eisenberg 19; Ellis 1982; Haddock, McChesney, and Spiegel 1990; Johnston 1987; Landes and Posner 1981; Polinsky and Shavell 1997; Schwartz 1991; Shavell 1987).

[2] Contributions to the burgeoning legal literature on social norms include (Ellickson 1991), (Cooter 1991b), (Bernstein 1993), (Cooter 1994), (Bernstein 1995), (McAdams 1995), (Cooter 1996), (Posner 1996), (Lessig 1996), (Sunstein 1996), (Kuran 1997), (Posner 1997), (Kahan 1997), (Bernstein 1997), (Picker 1997), (Cooter 1997), (Craswell 199_). For two recent symposiums on the field, see (Norms 1996) and (Social Norms forthcoming).

[3] Act, Clayton. Section 4.

[4] To illustrate, here is the section on "Exemplary Damages" from the California Civil Code, sec. 3294:

> "For Oppression, Fraud or Malice.
> (a) In an action for the breach of an obligation not arising from contract, where the defendant has been guilty of oppression, fraud, or malice, the plaintiff, in addition to the actual damages, may recover damages for the sake of the example and by way of punishing the defendant."

That is not much detail to decide disputes involving millions of dollars.

[5] I computed these ratios from data in the appendix to (Landes and Posner 1987). The $5 billion dollar award is from *Pennzoil v. Texaco*, which is analyzed in (Mnookin and Wilson 1989).

[6] George Priest, explained the connection between insurance and punitive damages at the conference on punitive damages held at the University of Alabama in 1989.

[7] *Browning-Ferris Industries of Vermont, Inc. et al v. Kelco Disposal Inc. et al*, 492 US 257 (1989).

[8] The concept of perfect compensation in explained and developed in several passages, identifiable from the index in (Cooter and Ulen 1996).

[9] *Boomer v. Atlantic Cement Co., Inc.* 26 N.Y.2d 219, 309 N.Y.S.2d 312, 257 N.e.2d 870 (Court of Appeals of New York, 1970).

[10] Perfect disgorgement is defined and analyzed in (Cooter and Freedman 1991).

[11] The first formalization of this idea for torts is in (Brown 1973). Perfect compensation also destroys the victim's incentives for precaution. Any modern discussion of bilateral precaution explains the problem. For example, see chapter 8 of (Cooter and Ulen 1996).

[12] (Radin 1993), (Sunstein 1994), (Chapman 1998 forthcoming).

[13] U.S. v. Carroll Towing Co. 159 F.2d 169 (2d Cir. 1947).

[14] I explain the "risk-equivalence" method for computing damages in (Cooter and Ulen 1996) at page 306-308. The unfortunate phrase more generally used in the law and economics literature is "hedonic indexes." For an account of their use, see (Viscusi 1993). For an imaginative example of their use, see (Calfee and Winston 1993).

[15] The same proposition can be stated in terms of "perfect disgorgement", which I defined as the damages that leave the injurer indifferent between doing right and doing wrong. A rationally self-interested actor must face damages of $1 million in order to be indifferent between committing a wrong that results in liability with probability .0001 or doing right at a cost of $100. A distinction can be drawn between ex ante and ex post disgorgement. From the ex ante viewpoint, perfect disgorgement of the *expected* gain from wrongdoing requires damages equal to $1 million. From the ex post viewpoint, perfect disgorgement of the *actual* gain from wrongdoing requires damages equal to $100.

[16] (Viscusi 1996). See Table 1, pages 1432-1435.

[17] A comprehensive examination of signaling commitment to social norms is in (Posner February 1998).

[18] This section is based upon (Cooter 1998 forthcoming-a).

[19] Changes in the interior equilibrium effect the size of the shock needed to cause the system to jump from one corner equilibrium to another corner equilibrium.

[20] (Hart l968)argues that expressing social judgments is one of the uses of criminal law.

[21] This was apparently Durkheim's view, as analyzed in (Garland 1990). Note that I draw no connection between the emotive theory of law, which belongs to jurisprudence, and the emotive theory of the meaning of value, which belongs to epistemology.

[22] The assumptions include costless, error-free application of liability rules by courts. Furthermore, the assumptions include certain assumptions about the connection between lapses and liability. Note that actors can have deficient incentives for self-monitoring under a negligence rule when some lapses result in non-negligent injuries. For example, a lapse in my attention causes me to apply the breaks slower than otherwise, thus resulting in an accident. The law, however, may decide that I applied the breaks soon enough to satisfy the legal standard of care. Consequently, the law concludes that I was not negligent and not liable. In this example, I externalize part of the benefit of more intensive self-monitoring. Specifically, I externalize the reduction in non-negligent harms caused by more intensive self-monitoring. In this case, liability law does not create incentives for efficient self-monitoring.

This problem cannot arise when all injuries caused by lapses result in liability. To illustrate, consider self-monitoring of stop signs by drivers. Every time I unintentionally run a stop sign, I am negligent and liable for the resulting harm. Consequently, I internalize the reduction in harm caused by more intensive self-monitoring of stop signs. I assume that self-monitoring to stop at stop signs does not spill over to the reduction of liability from accidents with causes other than failing to stop at stop signs.

[23] Escola v. Coca-Cola bottling Co. 24 Cal. 2d 453, 150 P.2d 436.

[24] See (Schwartz 1995) for a good discussion of the need for psychology to correct economics in the study of tort.

[25] (Cooter 1989). For further discussion and mathematical notation, see (Cooter and Ulen 1996), Chapter 9.

[26] See the model of imprudence in (Cooter 1998 forthcoming-b).