In this Article I address the appropriate source of liability in cases of injury between parties with a pre-injury contractual relationship. This applies to product liability (for direct purchasers, not for injured third parties) and also to medical malpractice. Since the parties do have a pre-injury relationship, they could contract ex ante for damages and liability standards through warranties and disclaimers; if they did so, then they would probably choose standards so that many fewer cases would be filed. The current legal system, behaving consistently with arguments made by Atiyah and Gilmore, instead treats these injuries as torts and handles them through product liability, leading to many additional cases. This means that consumers and producers are forced to accept the terms imposed by the courts, and there is no room for variation. The literature arguing for contractual treatments of such injuries is voluminous as is the literature arguing for the now traditional treatment as a tort, a very small sample of which is discussed below.

I first address the importance of the issue: Why does it matter if product injuries are treated as torts or contractual violations? In order to understand the issue, I speculate about the form of tort recovery that consumers would choose in a world of free contract. I then show how this is related to decisions consumers make about contracts and to court decisions in the event of injury. Under sufficiently Coasian assumptions about rationality, the way in which we treat product injuries does not matter. Whether we treat product liability as a contract or a tort issue matters only if some standard assumptions regarding rationality and decision making are violated by either consumers in entering contracts or by juries in deciding cases. Thus, the issue of the importance of the legal regime turns on the nature of the situations in which rationality assumptions of various sorts are satisfied or violated.

The literature so far has looked at one side of this issue: the extent to which consumers as parties to contracts violate rationality assumptions and make agreements that are not in their true interests. This literature has applied some of the results of the analysis of cognitive decision making to consumers in the process of making contracts, and has purported to show that consumers will make erroneous decisions, or can be manipulated into making such decisions, and thus that they will enter into contracts that do not provide sufficient net benefits. I show that this set of arguments is flawed, and that the conclusions
reached (that intervention into contractual freedom are warranted) are indefensible, at least on this basis. Second, and more importantly, I show that this literature itself commits a version of the “Nirvana” fallacy. This is the fallacy of comparing the actual operation of one decision system with the ideal operation of another. Traditionally, the error is comparing actual markets with ideal regulation, as pointed out by Coase. Here, it is comparing actual contracts with hypothetical ideal tort liability. I show to the contrary that the same assumptions regarding cognitive errors and biases that lead some to advocate increases in intervention with contracts actually cut the other way: if we believe that consumers will make errors in accepting contracts, then courts in product liability cases will make even more severe errors than will consumers in contractual situations, so that if we believe in the importance of cognitive errors, then we should be even more in favor of contracts rather than torts.4

I. What Law Would Consumers Want?5

If we replaced tort with contract in those circumstances where parties are in bargaining or contractual relationships, then producers and consumers would be able to devise an efficient system, as is true in any other free market. Thus, any attempt here to define an efficient system is in one sense redundant and at a minimum speculative. However, it is possible to conjecture about the terms that might evolve in such a market, as long as we remember that we are speculating. If the system were allowed to develop freely, then the terms that would actually arise would be the desirable terms, and if these terms differ from those that I hypothesize to be efficient, this merely means that my speculation is incorrect. The problems with the current tort system stem from the willingness of outsiders to impose terms on transactors that the outsiders believe are optimal; I have no such goals.

Since parties are in a pre-accident contractual relationship with each other, the potential victim is paying money to the potential injurer. If tort law imposes costs on the injurer, then these costs will ultimately be borne by victims through higher prices. Once parties to contracts learn that the courts will impose payments in the form of accident compensation, then the expected cost of this compensation will be included in the price of the product. It is this payment that creates the incentive for consumers (who are also potential victims) to desire efficient tort standards.

Tort law is commonly viewed as performing two functions. Plaintiff tort lawyers in arguing before juries commonly stress the compensation function: Injurers should pay to compensate their victims. (This view is commonly rejected by economists.) The other function, generally accepted by economists, is deterrence. Requiring injurers to pay for the cost of injuries they cause will deter them from causing inefficient future harms.

But while tort law may perform these functions, so do other institutions in society. Tort law need not bear the entire burden of either compensation or of deterrence. Consider first insurance as a form of compensation. Most
consumers have direct medical insurance and loss of wages insurance to compensate for the cost of injuries, and life insurance to compensate heirs for lost contributions to the family. Thus, tort law does not provide any needed insurance. Moreover, tortious events, even in today’s litigious world, are rare. Most deaths and injuries occur in ways that do not generate tort liability. Therefore, consumers desiring life, health, disability, or accident insurance would not be well advised to forgo first party insurance and rely on the chance that they could collect in court for any injury suffered. Additionally, the cost of operating the tort system is about 50%; that is, of every dollar that passes through the system $.50 is taken by transactions costs, including legal fees (for both plaintiffs and defendants, as they are both ultimately paid by consumers) and court costs. This is an extraordinary level of costs – much higher than the operating cost of any other form of insurance. Indeed, it is so high that a consumer would have to be exceedingly risk averse to find insurance with this level of load worth purchasing. Thus, tort law is a highly inefficient method of compensating victims of accidents. For this reason, most students of law and economics (including Landes and Posner and Shavell, who are more favorable to the current tort system than many others) believe that the compensation function of tort law is relatively unimportant.

Tort law provides a deterrent, but so do other forces. The most important such force is reputation. Firms invest large sums in establishing and protecting reputations, and there are numerous institutions in the marketplace policing and providing information about reputations. There is a down side to reputation as well: When a firm does something causing injury to consumers, it suffers a large loss in the value of its reputation. When a product of a firm causes an injury or is judged unsafe, the company suffers substantial losses in stock value, indicating that the stock market anticipates that consumers will be reluctant to purchase the products of that firm. Firms, being aware of these costs, obviously have very strong incentives, independently of tort law, to provide safe products.

An additional source for safety in the contemporary U.S. economy is regulation. Virtually all products that might be involved in injuries are regulated by the Federal Government, through such agencies as the FDA, the CPSC, NHTSA, and others. I am not claiming that such regulation is desirable or efficient, but it does exist. Moreover, when regulation errs, it is often on the side of excessive safety (as shown in the large literature on new drug approvals by the FDA). If there were less regulation, then we would expect new institutions to evolve to provide additional information about product safety to consumers. Indeed, an important function of safety regulation may be the provision of information, as when the market reacts to a recall or other regulatory event indicating insufficient attention to safety by a firm.

Thus, in evaluating tort law, we must remember that it operates in concert with other forces to provide safety and to compensate injured parties. Economic analyses such as those of Shavell and Landes and Posner that assume
that the tort system is the only factor leading to safety therefore overstate the importance of this system, and the conditions they derive for efficient levels of safety are stronger than needed. Indeed, an alternative model to theirs would assume that consumers are fully informed about product safety, so that the tort system would have no role in increasing safety. The truth is somewhere in between.

One caveat is in order. It is not possible or useful to go back to 1960 and observe the standards of liability in place then, before the great expansion in liability, to infer what would occur now. From 1959 to 1996, per capita real disposal personal income more than doubled (from $8638 to $19,242 in 1992 dollars\(^1\)) and, as Aaron Wildavsky\(^{12}\) has told us “Richer is Safer.” Thus, consumers today might demand greater safety than in the past, and this would imply different liability rules. Ramseyer describes a voluntary, contractual and apparently successful products liability system that existed until recently in Japan\(^{13}\).

In considering the likely outcome of a regime of free contract, it is important to keep in mind the role of competition. For any product, there will be numerous sellers, and sellers will be able to compete in offering different contractual terms. In analyzing contractual “failures,” opponents of free contract often appear to believe that there is only one seller offering one contract, and that consumers are at a disadvantage because they cannot bargain with sellers over the forms of contracts, but are faced with a “take-it-or-leave-it” choice. But if they were allowed to, different sellers would offer different contracts, and consumers would then have a choice. Just as sellers compete on price and other terms of sale, so they can be expected to compete in offering different contractual terms and warranties as well. Just as the seller who offers the combination of product quality and price that the consumer most values will succeed, so the seller who offers the most valuable contractual terms will also succeed. The power of consumers comes not from face to face bargaining, but from competition in the market. Since lawyers are professionally involved in the former but not the latter, they tend to underestimate its power. As we will see below, this competition is lacking when courts write identical contracts for everyone.

With these issues in mind, it will be useful to speculate about the efficient form of law. It is helpful to separate the standard of liability from the level of damages. I discuss each.

A. Liability Standards

One issue in analyzing liability much stressed by economists is the distinction between strict liability and negligence\(^{14}\). Under strict liability, the injurer is liable for any harms, no matter what efforts he has made to prevent the harms. Under negligence, the injurer is liable only if he did not take the proper amount of care to prevent the accident. Standards may also differ with respect to the obligation of the victim. In a regime of contributory negligence, any
contribution made by the victim to causing the accident (for example, by product misuse) will release the injurer from liability. In a regime of comparative negligence (which is common in the United States today) the victim is compensated in proportion to the fraction of the accident caused by the injurer. Tort analysts find it useful to distinguish between manufacturing defects and design defects. A manufacturing defect occurs when a particular product does not meet its own advertised specifications. If, for example, the steering wheel in a new car should break during normal driving, this is a manufacturing defect. Many analysts agree that strict liability for manufacturing defects may be appropriate. Under a strict liability standard, the manufacturer is liable for harm associated with the defect. Such defects are relatively rare and therefore do not lead to great costs. They are also independent--finding one defect does not generally mean that an entire product line is flawed. (If a manufacturing defect is common, a product recall can often provide a fix.) There is nothing a consumer can do to avoid these defects since they occur in the manufacturing process and manufacturers decide how much to spend on inspection and quality control. Costs of determining that a fault has occurred are relatively small. Thus, a strict liability standard for this class of error might evolve in a free market. Indeed, there is evidence that the original proponents of strict liability for injuries caused by products had exactly this class of defects in mind.

Design defects are quite different. These are said to occur when the courts rule that it would have been possible for the manufacturer to design the product differently and so make it safer. For example, a court may decide that an automobile manufacturer should have put the gas tank in a different location. If there is a design defect, then all units of some product are defective, since all share the same design. Viscusi has shown that part of the great expansion in product liability occurred when the courts extended strict liability from manufacturing defects to design defects. This theory of liability requires courts and juries to second guess product designers and determine if there was a safer alternative available when the product was manufactured. Plaintiffs claim that such an alternative was available; defendants claim not. This leads to complex debates involving engineering and other experts on both sides. Such second guessing is difficult or impossible, so litigation of such issues is very expensive. Many of the major problems identified with the current tort system are due to the extension of strict liability to design defects. It is likely that a contractual solution would lead to little or no liability for design defects, and thus fewer cases filed. Moreover, the cases that would not be filed are the most expensive and difficult, so there would be a great saving from eliminating them.

Another major class of modern liability cases involves a “failure to warn.” Originally it was thought that product warnings would insulate manufacturers from liability. However, the opposite has occurred: manufacturers are often found liable for failure to warn, sometimes in circumstances where consumers have misused the product in dangerous and
unpredictable ways. Viscusi indicates that this expansion in liability for failure to warn is the second major cause of the growth in tort liability in the contemporary U.S. legal system. I would suspect that some liability for failure to warn would remain, but only for risks that were reasonably predictable but not obvious in normal uses of the product. Liability might also attach to failure to indicate precautions that would avoid injury in such normal use. Again, the result would be fewer cases.

B. Damage Payments

It is useful to divide damage payments into three classes. Pecuniary damages compensate consumers for actual out of pocket expenses. The major categories are medical expenses and lost wages. Nonpecuniary damages compensate consumers for other, non-money losses. The most important class of nonpecuniary payments are for pain and suffering. Payments for hedonic losses, or lost pleasure of life, a relatively new and controversial class of payments in the tort system, are also nonpecuniary payments. Punitive damages should be for extremely reckless or grossly negligent behavior, where the goal, in addition to compensating the injured consumer, is to punish the injurer. Today they are used for other purposes, sometimes in bizarre ways.

If we keep in mind that consumers are paying through higher prices for goods and services for whatever damage payments they ultimately receive, then some principles are apparent. Damage payments are like insurance: consumers pay “premiums” as higher prices for products, and receive a payment if injured. Since consumers do find it worthwhile to purchase insurance against medical costs and lost wages, it is appropriate that injurers should also compensate for this class of losses, although some coordination between payments from injurers and payments from direct insurers may be useful. Moreover, it would also be desirable for payments for medical costs to be related to the level of medical insurance that consumers themselves choose so that the moral hazard associated with unlimited medical reimbursement could be avoided, as discussed in Rubin, 1993. Even if there would be cases filed for compensation for pecuniary damages, calculation of these damages is relatively straightforward, and most such cases would be settled; there would be relatively little litigation over this class of damages.

If given a choice, consumers never buy insurance against pain and suffering. There are sound theoretical explanations for this fact, involving the shape of utility functions and the fact that death or injury reduces the marginal utility of wealth. Moreover, consumers do not purchase such insurance when given a choice. This means that the value of such insurance is below its cost (including the costs of operating the system) and, since the cost of operating the tort system is higher than the cost of operating any other insurance system, consumers would be even less willing to pay for compensation for pain and suffering through the tort system than in any other form of insurance. If, for example, we believe that consumers would desire such insurance but that
problems of moral hazard and adverse selection prevent markets from offering it, then we must realize that these problems also exist in using tort law to provide the insurance, and are probably worse.\textsuperscript{24} Thus, it is likely that a voluntary contractual system would not provide compensation for nonpecuniary losses. Since many cases are worth bringing only if there is a chance of collecting nonpecuniary damages, this reform would again reduce the number of product liability cases filed. Moreover, since the level of nonpecuniary damages is highly uncertain, litigation is more likely when this class of damages is requested, so that the reduction in cases that go to litigation (which is more expensive) from elimination of nonpecuniary damages would be substantial.

Punitive damages are a more difficult issue. There are some behaviors of firms that normal tort damages will not adequately deter. These are behaviors that may approach criminality. Moreover, firms will sometimes make efforts to hide their behavior, and will sometimes be successful. Thus, normal penalties will sometimes be insufficient to provide optimal deterrence.\textsuperscript{25} Therefore, in some limited circumstances, punitive damages might be in the interest of consumers. A reasonable approach might be to require a higher standard of proof of blameworthiness for punitive than for other damages. For example, the standard might be the same as that in criminal law, proof “beyond a reasonable doubt.” This would allow some punitive damages, but only in limited circumstances. This standard would eliminate many of the extreme cases observed today. Again, since some matters are worth bringing only if there is a chance of punitive damages, reducing their scope would reduce the number of cases filed, and, since punitive damages are also uncertain, this would reduce litigation as well.

In sum, if contracts were allowed, consumers would probably want strict liability for manufacturing defects and negligence (perhaps with payments based on comparative negligence) for design defects. Consumers would probably want to be compensated for pecuniary damages, but not for nonpecuniary damages. In certain limited circumstances they might also want punitive damages. If warranties were allowed and disclaimers enforced, then these are the terms that would likely be agreed upon by buyers and sellers. The terms would be in the warranty. The result would be many fewer filed cases. Manufacturers would have the option of allowing different terms, and advertising these terms. For example, a manufacturer stressing the safety of its product might agree to pay nonpecuniary damages, and perhaps advertise, “Our product is so safe that if a court ever rules that we have negligently caused a death, we will provide a $1,000,000 additional insurance payment to survivors.”

On the other hand, George Priest has argued that actual consumer product warranties generally did not allow for payment for consequential damages, including injury, and that this is the form that warranties would likely take in a regime of free contract.\textsuperscript{26} He suggests that the inefficiencies of tort law are so great that buyers and sellers will seldom find use of this body of law desirable for compensation. The tradeoff is between extra costs of insurance
(since first party insurance is much less expensive than third party insurance through the tort system) and extra safety through the incentives created by the tort system. If Priest is correct and warranties would disclaim consequential damages, this would imply that consumers would not be willing to pay the costs of the liability system for whatever additional safety use of this system would provide. The issue is (or would be) empirical; as I indicated above, the actual market solution, if the market were allowed to function, would be the one we should rely on. If Priest is correct, there would be even fewer filed cases.

II. Contract and Tort in a Coasian World

Now consider a regime where the tort regime cannot be specified by contract, but where juries are perfect agents for consumers. This model would be consistent with fully informed rational jury self-interest. Since jurors are also consumers and might be involved as plaintiffs in future cases, and since they will pay as consumers for any price increases caused by their decisions, rational behavior might lead them to be such perfect agents. Let us begin with a world of Coasian perfect markets: No one makes errors and the legal system is able to adapt to whatever property rights and decision rules are in place.\footnote{27}

How would the courts behave if the liability were through tort rather than contract? In a perfect Coasian world, the location of liability should not matter. A jury faced with an injured party would act as an agent for others likely to be in a similar situation in the future, and would apply liability rules and award exactly that level and form of damages that the party would have wanted to contract for ex ante. Such a jury would not be concerned with the particular injured party involved in the case because the cost of these injuries is sunk. Rather, the jury would reach a decision that would establish an efficient precedent for future parties. Thus, in a products liability decision, a jury should award exactly the amount that the injured party would have contracted to receive in the event of injury ex ante if such contracts were enforceable. Juries would act as if instructions were: “The imposition of any damage payments will increase prices paid by all consumers for goods and services in the future. Thus, you should consider the extent to which individuals might prefer to pay lower prices for products instead of receiving compensation for actual losses or for pain and suffering.” Then the product price would reflect this level of damage awards, and would be the same as if liability had been assigned through contract.

With respect to liability standards, a jury might choose negligence-contributory negligence or a comparative negligence rule; either can be efficient.\footnote{28} The definition of negligence would be that based on the Hand formula, a cost-benefit measure.\footnote{29} But the current regime, something called “strict liability” interpreted with some ambiguous negligence principles, would probably never be chosen. If juries and courts behaved this way, then potential litigants would realize that they would have greatly reduced chances of
collecting, and would not file cases. Thus, the results would be equivalent to those under a pure contractual regime.

Before discussing juries, however, I consider some of the literature arguing that utility maximization is not the appropriate standard for the law, and some literature claiming that consumers will often sign contracts that are not in their interest because they suffer from information processing or cognitive deficits that lead to systematic errors.

III. Should Consumers Negotiate Efficient Contract? Can They?30

The literature discussed here is part of a second generation criticism of contractual freedom. This criticism is part of a new set of defenses of the current regime in which courts refuse to enforce many contracts. Initially, those opposed to freedom of contract made appeals to “unconscionability,” “unfairness”, the evils of “contracts of adhesion,” and “unequal bargaining power.”31 Economic analysis of these arguments has shown their deep flaws32 so defenders have turned to new arguments.

The economic analysis of product liability as a tort has developed two major policy conclusions: Free contract should be allowed between buyers and sellers to establish the terms that will govern in the case of accident, and consumers would prefer not to be compensated for nonpecuniary damages, including hedonic damages and pain and suffering, if they had a choice. Many legal scholars, wedded to the current system, resist these conclusions.33 Such scholars are turning to a new class of arguments.34 The conclusions of the economic analysis depend on the assumptions of rational, utility maximizing consumers. In order to attack the results of the economic analysis, legal scholars are forced to attack one of these assumptions. Some believe that utility maximization is inappropriate. Others claim that consumers are not sufficiently rational to engage in contract. I consider each stream of this literature; I discuss the anti-utility maximization arguments only briefly, and spend more time on the anti-rationality stream.

A. Should Law Aim at Utility Maximization?

Some scholars have argued that the goal of utility maximization or preference satisfaction is incorrect. Most prominent is the article by Croley and Hanson.35 The simplest form of their argument is that accidents and other reductions in wealth may in theory increase the marginal utility of wealth instead of reducing it, so that it is theoretically possible that nonpecuniary damages would be justified. This is unobjectionable, and, as they recognize, not novel. But they also present a more complicated argument consistent with non-utility maximizing behavior. They argue that individuals might contemplate alternate utilities in different states of the world and decide to shift wealth (and thus utility) to states where the “baseline” utility is lower. This decision might be made even if it is inconsistent with rational maximizing behavior (that is, with shifting wealth to higher marginal utility states). They call individuals who
have such preferences “equimachers” to distinguish them from “maximizers.” This argument, however, rests on explicit non-maximizing behavior, and thus is at best problematic.

In an unusual article, Pryor rejects the standard utility analysis of risk, and argue that risks should be valued from the perspective of the injured person rather than of the uninjured decision maker.36 Her claim is that uninjured persons cannot understand the utility function of those who are injured or disabled, and so ex ante judgments of ex post marginal utility should not count. Such a theory is fundamentally inconsistent with expected utility maximization, or indeed, with rational decision making. Any experience might change ex post utility relative to ex ante anticipation, but we do not on this basis prescribe consumer choices. Most specifically, her theory would seem to imply that all insurance policies should have a mandatory “pain and suffering” component, since those purchasing insurance would undervalue this category.

Feldman believes that there should be compensation for nonpecuniary losses, but she reaches this conclusion by rejecting economic analysis and by arguing that “preferences should not determine tort awards.”37 Rather, she would allow some measure of paternalism in deciding on optimal tort policy. But again, an argument rejecting preferences is a peculiar argument, at least from the perspective of maximization of welfare, the starting point of economic analysis.

In a sense, it might be argued that these articles indicate the correctness of the economic approach. If the only arguments against this approach are based on achieving something other than maximization of consumer welfare, then the arguments must be convincing for those who value human satisfaction as a goal.

B. Irrationality

The second stream of articles criticizing the economic approach argue that people in entering into transactions are not sufficiently rational to do so correctly. These arguments are based on alleged errors in human decision making, found by both economists and psychologists in experimental laboratory situations.

Before discussing particular examples of this analysis, a caveat is needed. There is no doubt that in experimental situations, subjects commit predictable errors, of the sort discussed below and elsewhere in the literature. But there is a real debate regarding to the extent to which these errors affect actual market behavior. For example, experimental markets seem to give efficient outcomes, even though individual participants may behave inefficiently.38 It may be that, even if individuals make errors, market forces are sufficiently powerful to override these errors, as Becker argued long ago,39 and that major policy outcomes should not be based on a preliminary and contested literature. In addition, I do not believe that the policy claims are justified by the literature. In what follows I critique arguments for restrictions on free
bargaining which have been made by Richard Hasen, Howard Latin, Melvin Eisenberg.

Richard Hasen uses psychological analyses of decision making under uncertainty to attempt to shed light on contract and tort issues. His argument is that since there are known biases in consumer processing of information, the legal system should take these into account. In the context of this analysis, this argument would indicate that reliance on contracts would be inefficient because people would agree to inappropriate contracts. In particular, Hasen is concerned with “framing” effects, the fact that in laboratory experiments subjects treat decisions differently if the payoffs resulting from these decisions are expressed (“framed”) in terms of losses or gains. For example, subjects are apparently more willing to try an experimental medicine if they are told that “80% of the people taking this medicine will survive” than if they are told “20% of the people taking this medicine will die.” (Experienced physicians are subject to the same bias.) Hasen claims that in many contexts, manufacturers take advantage of this bias in providing contractual terms and that the legal system should adjust.

There are two problems with this analysis. First, it proves too much: the issues raised by Hasen apply to many aspects of seller behavior, not just to contract terms. Second, the same biases would be exhibited by other legal decision makers. In particular, as discussed below, courts would be subject to the same biases, and therefore the legal system might not be able to correct the problems Hasen identifies.

As an example of overgenerality, Hasen discusses the credit terms made famous in Williams v. Walker-Thomas Furniture Co., the well-known Washington, D.C. case in which the terms of a credit contract were overturned as being unconscionable. The term can be expressed in terms of gains or of losses:

Term G (Gain frame): The buyer may retain all of the goods purchased from the seller provided that all payments are made on time to the seller. If all payments are not made on time the buyer may not retain the goods.

Term L (Loss frame): The seller will not repossess all the goods purchased by the buyer provided that all payments are made on time to the seller. If all payments are not made on time the seller will repossess the goods.

Hasen claims that expressing the contract in the Gain frame will be perceived as more desirable by potential buyers and will lead to larger sales and profits than expressions in the Loss frame. He therefore suggests that legal definitions of unconscionability be expanded to include framing effects, so that contracts framed in the “gain” mode would be unconscionable.
But the same effects exist, if they exist at all, with respect to all product characteristics. Advertisers generally provide information in Gain frames. Automobile manufacturers advertise that “Our car will get 20 miles per gallon” not “Our car will get no more than 20 miles per gallon.” Macy’s advertises a “One day sale” not “364 days of higher prices.” Portable computers advertise “Four hour battery life” not “If you leave our computer on for more than four hours, you will lose your data.” If advertisers provided this sort of adverse information, consumers would view them as demented. Moreover, the fact that all advertisers provide claims in gain frames means that consumers are used to interpreting commercial information in this way, and presumably able to discount any framing effects. Like many legal scholars writing about contracts, Hasen treats contract terms as if they were different than other product characteristics. However, arguments that apply to contractual terms also apply to other aspects of products, and there is no reason to treat terms as different.

Next, Howard A. Latin has argued that people make systematic errors in interpreting warnings, and that the use of warnings to eliminate liability is therefore bad policy. That is, he would eliminate any defense in a product liability action based on the existence of an adequate warning.

It is difficult to know exactly what to make of this article. It does not take a deep knowledge of modern cognitive theory – or graduate training in law or economics – to know that some consumers sometimes do not follow all warnings meticulously. But what does this simple fact (expanded into 100 law review pages with 439 footnotes) tell us? Virtually nothing. The goal is the solution to some maximization or minimization problem. For the answer to such a problem, more than qualitative information is needed; we must have some way of determining the optimal level of care and warnings, and simply demonstrating that there are complex ways in which warnings may fail does not help us make the necessary calculations.

Latin virtually admits as much. When he discusses policy, he agrees that all actual tests will be suboptimal, and that the factors he discusses are difficult to factor into a legal decision. However, he prefers to err on the side of “too much” safety even though he understands that this will impose costs on society. In fact, it appears that his entire analysis of cognitive errors is simply aimed at his goal of arguing for stricter liability whenever possible. Indeed, although he does pay lip-service to cost benefit analysis, he discusses the amount of safety which is “feasible” as a goal throughout the paper, and argues that firms should make products safer rather than relying on warnings.

There are other difficulties in Latin’s analysis; I discuss one. A key point in the analysis is the distinction Latin draws between the “Rational Risk Calculator” (RRC) and the “Mistake and Momentary Inattention” (MMI) models. The first, of course, is the basic law and economics model, which assumes that consumers rationally calculate risk-benefit tradeoffs and make product purchases accordingly. The latter is his preferred model, and assumes that accidents are due to the named factors. But the inconsistency between
these models is more imagined than real. One dimension on which products may be safer is exactly their ability to counter momentary inattention. Antilock brakes, to take a relatively familiar example, are particularly beneficial if a driver suddenly observes (as the result of a moment of carelessness or inattention, perhaps) that unless he jams the brakes immediately, he will have an accident. If the brakes still do not do the job, seat belts, air bags, or merely driving a heavier car, will still minimize the impacts of the carelessness. Warnings can allow consumers to make appropriate decisions regarding the likely effects of expected levels of inattention, where one decision may be buying the appropriate product.

Finally, Melvin Eisenberg uses arguments from the theory of cognitive errors to explain the courts’ unwillingness to enforce contractual terms in several contexts. Here we consider his discussion of “standard form contracts.” Eisenberg takes the standard analysis of “contracts of adhesion” and dresses it up on modern psychological terminology. The devils in Eisenberg’s analysis are “bounded rationality, optimistic disposition, systematic underestimation of risks, and undue weight on the present as compared with the future.” But the chief devil, and the one discussed most, is “rational ignorance.” Sellers know things about contracts that buyers do not know because it does not pay buyers to know them, and sellers use this knowledge to “slant things in favor of the form givers.”

There are three major errors in Eisenberg’s analysis (and in the analysis of adhesion contracts in general). These are: treating contract terms as being different from other elements of the product; assuming that contract terms are the main determinant of firm behavior; and ignoring price effects.

Perhaps because lawyers (including academic lawyers) study contract formation but not actual manufacturing of real goods, they seem to believe that contract terms are different than other product characteristics. Let me quote from Eisenberg at some length:

First, a form contract often contains a large number of legal terms. Form insurance contracts, for example, typically contain thirty, forty, or more terms. Moreover, the meaning and effect of the preprinted provisions will often be inaccessible to lay persons. In part, this is because the terms are often written in exceedingly technical prose. Even if the terms are clearly written, however, the form taker will usually be unable to fully understand their effects, because preprinted terms characteristically vary the form taker’s baseline legal rights, and most consumers do not know their baseline rights.

Now consider a slightly (but not misleadingly) altered version of this paragraph:

First, a computer often contains a large number of parts. Laptops, for example, typically contain thirty, forty, or more
parts. Moreover, the purpose and use of the parts will often be inaccessible to lay persons. In part, this is because the parts often perform exceedingly technical functions. Even if the functions are clearly explained, however, the computer buyer will usually be unable to fully understand their effects, because parts characteristically vary the chip’s baseline performance, and most consumers do not know their chip’s baseline performance.

Conclusion? Because of asymmetric information and the fact that many of the parts of my computer or software will not be used often (or at all, for any one user) we must still all be using 1960s IBM mainframes, and the machine on which I think I am writing this is an illusion.

Silly? Perhaps. Unfair? I don’t think so. The world is full of highly complex products made of numerous obscure parts, and of chemicals with unpronounceable names performing highly technical and unintelligible functions. We rationally don’t know much about any of these things – no more, and perhaps less, than we know about contracts. But that does not mean that the manufacturers “slant” the products towards themselves. On the contrary, manufacturers, driven by forces of competition, are constantly changing products to improve them, even though we may not understand why or how. It is difficult to understand how contract terms are different.

The other two points have already been addressed. Eisenberg overweighs the importance of contract terms in determining firm behavior and performance. Contract terms are only a part – a small part – of what motivates firms. Firms produce products and honor agreements because reputations are valuable, and anything they do that lowers the value of reputations has severe consequences for the firm.

Finally, price. As Atiyah has recently noted, “[E]conomists are now trying to remind lawyers (though here with, so far, little success) that interfering with some of the terms of a contract probably only affects the price of the bargain, and so may be idle or positively harmful to those who it is sought to help.”\footnote{48} Like Hasen, Eisenberg spends much of his analysis on Williams v. Walker-Thomas Furniture. What Eisenberg does not address is the effect of this decision on the costs of credit to consumers in Washington – the “price of the bargain.”

The critique of “contracts of adhesion” has the analysis exactly backwards. In private markets, there is a chance for competition, and if buyers do not like the terms offered by one seller and are willing to pay the costs of more favorable terms, other sellers can be expected to compete and offer better terms. But if the courts order all sellers to offer the same terms, then buyers are forced to buy on those terms or go without. There is no possibility for alternative contract terms, no matter how much the consumer may dislike the court imposed terms. Thus, the true contracts of adhesion with take-it-or-leave-it terms are those written by the courts; it is these contracts that are inescapable,
and these terms that can not be avoided. Moreover, these terms have been written by self-interested parties, interested in their own incomes, just as Eisenberg alleges happens in standard form contracts. The difference is that, in the former case, the parties are attorneys rather than manufacturers, and that there is no possibility of competition or change as long as the courts refuse to enforce contractually-specified terms.

IV. Will Juries Get It Right?

Since tort has replaced contract for product liability issues, one major impact is that cases are tried as accidents, rather than being decided as contractual issues. In addition, many more cases are brought and tried; in a contractual regime, many matters that now lead to liability would not generate litigation. As argued above, if courts were perfect agents for parties to future transactions, then this change should not matter. I first present some evidence showing that juries do not even attempt to choose efficient rules, and in fact resent attempts to inform them of such terms or to induce them to accept them. I then discuss the applicability of the literature on cognitive errors to juries, and show that we would expect the results of this literature to exactly apply to court decisions – even more than to consumers engaging in transactions. Finally I show that this literature suggests that juries should be expected to make poor decisions.

A. Pinto

Juries seldom have a chance to consider explicit cost-benefit analysis, for reasons that will be clear. There was one famous case where a jury was confronted with exactly such evidence, and the result was a public policy disaster. This was the Ford Pinto case.\textsuperscript{49} Schwartz\textsuperscript{50} persuasively shows that juries are totally unwilling to accept any hint of an analysis explicitly measuring the cost of lives saved. This is true even when the law expressly requires such balancing. It was the fact that Ford had undertaken such calculations that induced the jury to award large punitive damages in this case. Moreover, the strength of the jury’s ire was sufficiently strong so that virtually no defense lawyer is willing to make arguments relating to cost. Schwartz’ distillation of conversations with several defense lawyers contains the following statement:\textsuperscript{51}

However, one argument that you should almost never make is that the manufacturer deliberately included a dangerous feature in the product’s design because of the high monetary cost that the manufacturer would have incurred in choosing another design. If you do argue this, you’re almost certain to lose on liability, and you can expose yourself to punitive damages as well.

But arguments regarding the cost of safety improvements are the essence of efficient, rational decision making with respect to safety.\textsuperscript{52} If such
arguments cannot be made before a jury, then it is unlikely that juries can efficiently act as agents for consumers, and unlikely that reliance on juries will lead to correct outcomes. Indeed, because of the results of *Pinto* and the ability of plaintiffs to obtain documents through discovery, this case has probably meant that many firms are unwilling to even undertake such cost benefit analysis for internal planning purposes, let alone to make such arguments before a jury. In this sense, *Pinto* has probably lead to excess harm and injury in the economy.

**B. Is Experimental Evidence Relevant for Juries?**

I mentioned above that there is a major debate in the economics literature regarding the extent to which experimental evidence on cognitive errors is relevant for analyzing market behavior. But this debate is not relevant in the case of juries. Rather, individuals serving on juries are in virtually identical situations as experimental subjects. Moreover, jurors are in a situation which would almost maximize the chance of reaching erroneous or irrational decisions.

Experimental evidence of errors in decision making was first provided by psychologists. Economists were skeptical of these results, and attempted to replicate the experiments in order to correct for what they perceived as misspecifications. Camerer indicates that the main differences are that psychologists use natural stimuli, do not pay subjects, and do not repeat tasks. Economists pay subjects, prefer blandly labeled random devices as stimuli, and insist on repeating tasks.

Consider a jury. It makes a decision about an accident that has already (really) occurred, the essence of a natural stimulus, and moreover often one with a substantial emotional load. Jurors are not paid for correct decisions. Finally, cases and juries are unique, so there is no chance of a juror repeating the situation and learning of correct answers.

The efforts of experimental economists were aimed at finding treatments that would lead subjects to make more rational decisions. The changes in treatment used by economists went some distance (though not all the way) towards achieving this goal. Thus, to the extent that the institutions governing juries are like those used by psychologists and unlike those used by economists in experiments, then these institutions are more likely to lead to relatively less rational decisions and to more cognitive errors.

Many of the scholars discussed above (Hasen, Latin, Eisenberg) argued that cognitive effects would lead to biases in decision-making so that consumers would likely make errors in signing contracts. They used this argument to justify interference with contractual freedom, and court intervention in private transactions. But interference with free contract will imply that more contractual disputes will go to juries. Juries are more likely to be subject to bias than are consumers. Consumers sign many contracts and buy many products. Consumers pay directly whatever costs are associated with errors, and so receive feedback from erroneous decisions. Thus, consumers have a chance to
learn. Juries have no such chance. Jurors (as consumers) may end up paying higher price for goods and services because of their decisions as jurors, but the link is neither obvious nor immediate. As a teacher of law and economics, I can say that it is not intuitively obvious either. Thus, if we believe that cognitive biases are important in decision-making (and I am personally ambivalent on this issue), then we must believe that they are more severe with respect to jurors than with respect to individuals engaging in exchange for their own benefit.

C. Expected Jury Biases

What does the cognitive literature tell us about particular biases we might expect from jurors in product liability matters? In general, the predictions all point in the same direction: juries are likely to award damages more often and award higher damage payments than consumers would desire ex ante. This additional level of payments will arise partially through a greater likelihood of finding liability and partially through awarding larger damages than would be desired ex ante. Since the errors discussed are systematic, there is no presumption that awards would be random, and a finding of predictability in pain and suffering awards would not be inconsistent with the theory proposed here. Awards will be predictable and they may be internally consistent, but they will be biased upward relative to efficient levels.

Consider first liability. In a negligence system (and in the odd version of “strict liability” that governs our current product liability system) a firm is negligent if it does not take all cost justified precautions. But of course whether a precaution is cost justified depends in part on the probability of the harmful event occurring. A jury observes the product after an accident has happened and must then attempt to infer what level of precautions would have been efficient when the product was made and sold. There are reasons to expect that juries will form incorrect estimates of the relevant probability.

One common cognitive error is “hindsight bias.” Once an event has occurred, then subjects view the probability of that event as being greater than before the event occurred. Thus, a jury, faced with an already existing accident, will believe that the probability of the accident ex ante was greater than may be objectively true. Therefore, even if a firm behaved non-negligently and took all cost justified precautions, a jury may find negligence because of its overestimate of the probability of the accident. There is both actual and experimental evidence of the importance of hindsight bias in a litigation context, leading to excessive liability.

A similar result follows from what has sometimes been called the “law of small numbers.” This is the tendency of experimental subjects to overgeneralize from small samples. Thus, if the major relationship jurors have with some product is observation of the effects of a mishap regarding this product, then the jurors might well view the product as being more dangerous than it is, again giving rise to overestimates of the risk associated with the product.
Two other effects identified in the cognitive literature will reinforce this overestimate of probabilities of harm. First, there is evidence that low probability events (approximately, events with probabilities less than .2) are overweighed in decision making, and product injuries are very low probability events. Second, subjects tend to be overconfident of the accuracy of their assessments of probabilities so that there is no obvious mechanism that would lead to correction of these erroneous estimates. Jurors would be expected to be overly confident of their estimates of proper damage levels, so there is no reason to expect juror doubt or uncertainty to reduce the level of damages. Subjects also have a biased tendency to interpret new evidence as consistent with their initial hypothesis, so that if jurors start with a belief that the defendant firm is probably negligent, then they will confirm this belief too often.

Finally, there is evidence that individuals greatly undervalue “probabilistic insurance,” defined as “an action that reduces but does not eliminate the probability of a loss.” Many products involved in products liability are exactly of this sort. Medical care and pharmaceuticals reduce but do not eliminate risks, and much litigation is in fact over the remaining risk. To the extent that jurors undervalue the risk reduction that has occurred, so they will undervalue the benefits of the product, and be excessively likely to find liability. The cost of excess liability for such risk-reducing products is particularly high, since such liability can lead to increased prices reduced amount demanded for risk-reducing products, such as vaccines.

As for damages, it is very likely that juries will find greater levels of damage payments when viewing an accident ex post than consumers would have wanted to contract for ex ante. One of the major results of cognitive experiments is that losses are overweighed relative to gains. Before an accident, both the accident and the payment for the accident may be viewed as losses (“If you are injured, you will lose $10,000 in wages and medical payments.” “If you are covered for these injuries, you will pay $10 more for this product.”) Thus, it may be that consumers will weight gains and losses approximately correctly. Moreover, consumers ex ante are accustomed to making exactly these calculations routinely in markets. But after the accident the actual suffered loss will have excess weight.

One important element discovered by cognitive scientists is the “endowment effect.” “Individuals evaluate choices based on absolute changes in value, from a baseline that is typically the status quo, attaching more disutility to losses than utility to gains, and being highly subject to purely formal or semantic manipulation, as in the specification of the status quo, throughout.” One implication is that losses are overvalued relative to gains. But once the accident has occurred, then all that is salient are losses. Losses, not product benefits or money saving from reduced prices, are the entire focus of the trial. Indeed, the evidence from Pinto, cited above, suggests that jurors are unwilling to consider the ex ante perspective (that is, the perspective of the cost of additional precautions.) Therefore, cognitive theory indicates that juries will
systematically place more weight on the actual accident and award more in damages than consumers would desire ex ante.

There is even some experimental evidence demonstrating this. Calfee and Winston have shown that ex ante consumers are not willing to pay much for compensation for pain and suffering, as the theory would predict. On the other hand, experimental studies of ex post compensation for pain and suffering report, consistent with cognitive theory, that the “frame” in which the problem is set determines the outcome. McCaffery et al. test an additional implication of the endowment effect, the difference between “willingness to pay” and “willingness to accept.” There is strong experimental evidence that consumers will demand more to give something that they own up than they would be willing to pay to buy the same item. In an injury context, this implies that if jurors are asked to award compensation based on the ex ante (selling price) perspective, values should be larger than if the award is framed in terms of the ex post (making whole) perspective; and this is what they find. Of course, both amounts provide more insurance and compensation than the true ex ante amount that theory would predict consumers would be willing to pay for, and more than is consistent with the experimental evidence provided by Calfee and Winston.

This argument is especially relevant for Hasen’s analysis, discussed above. Assume that Hasen is correct and there are framing effects, so that a return expressed as a loss is viewed as less desirable than the value of the same return expressed as a gain. Now consider a jury. In a products liability case, the jury is faced with an actual rather than a potential loss. Thus, the jury begins with a loss frame. If framing effects lead to a bias, then juries should be especially susceptible to this bias. If we accept Hasen’s arguments regarding framing effects, then we should rely more on contract and less on tort than otherwise because many product related juries will not lead to litigation under a contract analysis.

Two other factors identified in the cognitive literature cut in the same direction, towards increased damage payments. First, after an accident, the victim is identifiable; indeed, he (or his heirs) is in court. Before the accident, the chance of harm is to a “statistical” or unidentified individual. But there is evidence that people tend to overweight harms to identifiable individuals relative to harms to statistical individuals. Second, there is evidence of “anchoring” in decision-making – a failure to fully adjust initial estimates of values using Bayes theorem to reflect new information. But the jury begins with a loss and a claim for damages, rather than with a neutral expected value calculation. If awards are adjusted from the initial point, then they will again be biased upwards.

Note that most of the experimental literature discussed above deals with individuals (or with individuals bargaining or trading with each other.) A jury is a collective decision-maker, and so might behave somewhat differently. However, if all individuals are subject to some bias, then a collective composed
of those same individuals should be subject to the same bias. Indeed, in the experimental simulations of juries mentioned above, decisions were made by individuals told to behave as jurors; no experimental aggregation was performed.

V. Would Judges Do Better than Juries?

It might appear that one factor determining the outcome of litigation is whether the case is decided by a judge or by a jury. If some question is decided as a matter of law, it is decided by a judge; if it is treated as a matter of fact, it goes to a jury. A common theme from the nineteenth century to today is the effort to keep issues out of the hands of juries. Atiyah, for example, states that “Juries were not only unpredictable; they were slow.” Gilmore discusses the “uneasy, inarticulate distrust of the role of the civil jury.” It is generally thought that the purpose is to prevent the natural sympathetic or redistributive impulses of jurors from leading to inefficient or otherwise undesirable outcomes. Others believe that this effort was and continues to be a class-based effort aimed at preserving the status quo in society. The argument here is that juries will make systematic errors that will harm consumers.

However, it is quite possible that judges are almost as subject to the sort of cognitive errors discussed above as are jurors. Judges do see many cases, and so it would appear that they would have a chance to learn. Nonetheless, to the extent that decisions have effects in markets, judges do not actually observe the results of their decisions, since judges do not study markets, and would therefore not receive the feedback needed to be able to improve their decision making. As Cammerer discusses at several points, when “experts” are given the same tasks as students in experiments, then they do about the same as students in settings where there is little feedback, although they do better where there is more feedback (e.g. in weather forecasting).

The distinction between tort and contract is apparently in part an issue of framing, as discussed above. If an injury is treated as a tort, then decision-makers, judges or jurors, seek to assign appropriate damages. If such injuries were treated under contract and if there were clear disclaimers, then decision-makers would perforce be bound to find different results. Moreover, more importantly, as I have argued above, many fewer cases would be brought in the first place if such matters were treated as contractual issues. Thus, the legal framework governing product related injuries apparently has great significance.

Conclusion

Economic analysis indicates that treating injuries associated with purchased products would be more efficiently handled under contract, where there is scope for competition to craft efficient rules and remedies. This of course is contrary to the current practice, where such injuries are treated as torts. Recently, some supporters of this tort-based product liability jurisprudence have argued for this preference because they have claimed that
utility maximization is incorrect as a goal for law; this is a puzzling argument. Others claim that modern findings about peoples’ cognitive abilities suggest that individuals cannot rationally enter into contracts. But if tort replaces contract, then courts will make decisions for individuals, and there is no reason to expect courts to be exempt from the cognitive errors attributed to consumers. Indeed, there are reasons to expect juries and perhaps judges to do even worse.

Defenders of the current tort system sometimes argue in terms of empowerment of consumers. They argue that consumers should retain their right to trials in product liability matters. Moving from tort to contract does not reduce consumers’ rights. Rather, it gives them an additional right, the power to sign contracts and agree not to pay to have their cases heard by a court. Since there are reasons for expecting courts to make systematic mistakes that cost consumers money and reduce social wealth, the right to waive trials through binding contracts is valuable and should be returned to consumers.

* Helpful comments were received from participants at the Donner Conference and at a seminar at Emory University. Blame for errors remains with the author.

1. For notational convenience, I will refer to these as “product liability” in what follows. This is the only type of tort law that I address.


5. This section is based in part on Paul H. Rubin, Fundamental Reform of Tort Law,


9. Indeed, as discussed below, the nature of cognitive decision making is such that the loss in reputation may be greater than would be warranted by the injury, since individuals seem to overweigh losses.


19. To be fair to the lawyers, I should point out that this class of damages was invented

20. For a discussion of one such case, with some analysis of the economics of punitive damages, see Paul H. Rubin, John E. Calfee and Mark F. Grady, BMW v Gore: Mitigating The Punitive Economics of Punitive Damages, 5 Supreme Court Econ. Rev. 179 (1997).

21. These payments are called “subrogation.” Subrogation -- payment from the injurer to the victim’s insurance carrier -- seems to be common in automobile accidents, but not in other accidents. It may be that the transactions costs of determining if such payments are available are too great, given the relatively small number of tortious injuries. Further research on this topic would be useful.

22. Steven P. Croley and Jon D. Hanson, The Nonpecuniary Cost of Accidents: Pain-and-Suffering Damages in Tort Law, 108 Harvard L. Rev. 1785 (1995) claim that consumers do want such insurance, and purport to provide examples, but come up with only a few marginal instances where insurance decisions are difficult to explain. The article is criticized in more detail below and in John E. Calfee and Paul H. Rubin, Indicting Liability: How the Liability System Has Turned Against Itself, American Enterprise Institute, Washington (forthcoming 1998).

23. The strongest theoretical argument for such payments is Mark Geistfeld, Placing a Price on Pain and Suffering: A Method for Helping Juries Determine Tort Damages for Nonmonetary Injuries, 83 California L. Rev. 773. However, this article does not provide a useful way of actually computing the optimal value for such damages, if they are desired, and does not consider risk reducing products such as medical care and vaccines. See Calfee and Rubin, Indicting Liability, for a more complete discussion.


26. George Priest, A Theory of the Consumer Product Warranty, 90 Yale L.J. 1297 (1981). Priest’s sample of warranties was obtained at a time when courts were already unwilling to enforce such disclaimers, so it is not clear what form warranties would take now if it were worthwhile for firms to spend resources crafting them.

27. These assumptions go beyond those needed for the Coase theorem, but I believe they are in the spirit of such a world. Ronald H. Coase, The Problem of Social Cost, 3 J. L. & Econ. 1 (1960).


30. The two major treatises on the economics of torts (Landes and Posner 1987, and Shavell, 1987) both argue that contract is not an efficient solution to risks associated with purchased products. The basic argument against contractual solutions for product liability
problems is that product related injuries are rare events and consumers do not have enough information to rationally contract regarding such risks. I have discussed this argument at length in Rubin (1993) and will not repeat that discussion here.


34. This is not to say that all scholars have abandoned the previous generation of arguments; for example, see W. David Slawson, Binding Promises: The Late 20th-Century Reformation of Contract Law, Princeton University Press, Princeton (1996), or Jean Braucher, The Afterlife of Contract, 90 Northwestern University L. Rev. 49 (Fall, 1995, a Symposium issue on “Reconsidering Grant Gilmore’s ‘The Death of Contract’”).


38. Cammerer, supra note 4, at 674-75.


41. 350 F.2d 445 (D.C. Cir. 1965).

42. Id. at 431.


44. W. Kip Viscusi, Individual Rationality, Hazard Warnings, and the Foundations of Tort Law, 48 Rutgers L. Rev. 625 (1996) points out that Latin was overly pessimistic.
regarding the extent to which individuals are unable to respond to warnings, and that they do have a role in the tort system.


46. Id. at 243.

47. Id. at 241.


51. Id. at 1038.

52. I myself have numerous times attempted to convince product liability defense lawyers that economic testimony about cost-benefit analysis of the sort that is routinely performed at the Consumer Product Safety Commission would help their cases; they have all implicitly agreed with the quoted statement.

53. Camerer, supra note 4, at 680.


56. Cammerer, supra note 4, at 613.

57. Hal R. Arkes and Cindy A. Schipani, Medical Malpractice v. the Business Judgment Rule: Differences in Hindsight Bias, 73 Oregon Law Review 587 (1994) find that there is significant hindsight bias in actual medical malpractice litigation.

58. Kim A. Kamin and Jeffrey J. Rachlinski, Ex Post Ex Ante: Determining Liability in Hindsight, 19 Law and Human Behavior 89 (1995) find experimental subjects are likely to find liability after an event has occurred in a situation where subjects viewing the same situation before the event find precautions not worthwhile. In their experimental treatment, 24% of the ex ante subjects found taking a precaution worthwhile, but 56% in the ex post situation found negligence for failure to take the same precaution.

59. Cammerer, supra note 4, at 602.

60. See, e.g., id. at 641.
61. Id. at 590-91.


63. Noll & Krier, supra note 4, at 758-59.

64. Calfee and Rubin, supra note 3.


68. Supra note 66.

69. Noll and Krier, supra note 4, at 749.

70. Id. at 754.

71. Sunstein, supra note 54, McCaffery et al, supra note 66.

72. Supra note 1, at 390-91. See also at 123, 732.

73. Supra note 1, at 99. See also at 42.


75. Cammerer, supra note 4, at 593-4, 611-612.