# Behavioral Law and Economics: A Progress Report

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The last decade has seen an outpouring of work in "behavioral law and economics;" in the last few years, the outpouring has become a flood.[1] This should not be surprising. Cognitive psychology and behavioral economics have played a role in the work of many economists, including, to name just a few examples, George Akerlof (1991), Kenneth Arrow (1986), Colin Camerer (1990), Robert Frank (1999), Timur Kuran (1995),

For parts of this review I have drawn, in some places quite heavily, on Sunstein (1997) and Jolls, Sunstein, and Thaler (1998). I am particularly grateful to Jolls and Thaler for comments on this paper, for many helpful discussions, and for permission to draw on our joint work; they should be given full credit for the use of our joint work here, and no blame for mistakes on my part. I have tried to give credit to specific places where I have drawn on Jolls et al., but the discussion there has had a more pervasive influence than the particular citations suggest. I am also grateful to Daniel Kahneman and David Schkade for helpful discussions, to Brian Lehman for excellent research assistance and helpful comments, and to Jill Hasday, Saul Levmore, Eric Posner, Richard Posner, and an anonymous reviewer for valuable comments on a previous draft. Many of the topics discussed here are treated in detail in the papers in *Behavioral Law and Economics* (Cass R. Sunstein ed., forthcoming, Cambridge University Press, 1999).

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1. For a very partial list, see for example, Rachlinski (1996; 1998); Loewenstein et al. (1993); Korobkin (1998a); Kelman (1996); Langevoort (1997); Jolls, Sunstein, and Thaler (1998); Hoffman and Spitzer (1993); Sunstein, Kahneman, and Schkade (1998); McCaffery et al. (1995); Jolls (1996); Issacharoff (1996). A valuable symposium is the "Legal Implications of Psychology: Human Behavior, Behavioral Economics, and the Law," 51 *Vanderbilt Law Review* 1499 (1988). For an instructive literature review, overlapping in some ways with that presented here, see Langevoort (1998).

Matthew Rabin (1994), and Richard Thaler (1991). In light of their increasing influence on economics, behavioral approaches were bound to affect economic analysis of law as well.[2] The purpose of this essay is to provide a survey and also a progress report—more particularly, to outline the organizing themes of behavioral law and economics, to see how it departs from standard law and economics, and to suggest some problems, questions, and directions for the future.[3]

The essay comes in five sections. Section 1 discusses the phenomenon of "constructed" preferences, a phenomenon that lies at the heart of disagreements between conventional and behavioral law and economics; an important example involves "judgment reversals." Section 1 also deals with fairness-related behavior, myopia, and bounded rationality. Section 2 explores fairness and in particular the phenomenon of *reciprocity*. This phenomenon is exemplified by the fact that people are sometimes willing to sacrifice their economic self-interest both to benefit those who have been fair to them and to harm those who have been unfair to them. Section 3 deals with mental accounting, a mechanism by which people attempt to overcome their tendency to myopia. Section 4, the longest section, explores a number of problems in bounded rationality. These include loss aversion, a finding of prospect theory with special importance for law, including both contract and tort; biases in judgment; heuristics; and possible differences between "decision utility" and "experience utility," differences that suggest that people often do not maximize their own utility.

Through these various discussions I hope to show how behavioral economics might help to inform predictions about the effects of law and also judgments about what the law ought to be doing. Often behavioral law and economics suggests that the conventional approach misses a great deal. A default rule, for example, may affect underlying preferences in the law of employment and elsewhere (see Isacharoff, 1996; Korobkin, 1997); the set of alternatives placed before a jury or judge may affect outcomes in surprising ways; even if their expected value is the same (see Kelman et al., 1997); a reliably imposed, lenient punishment should have far more de-

2. Most recent issues of the *American Economic Review*, the *Quarterly Journal of Economics*, and the *Economic Review* contain one of more article involving behavioral economics.

3. Good overviews of many of the issues here—not, however, discussing law—are Rabin (1998) and Conlisk (1996).

terrent value than an infrequently imposed, severe punishment (see Jolls, Sunstein, and Thaler, 1998); damage awards are vulnerable to arbitrariness, because of "anchoring" effects and the pervasive problem of "scaling without a modulus" (see Sunstein, Kahneman, and Schkade, 1998); some cases will not settle because of the presence of spite, which can incline people to sacrifice their own material self-interest in order to impose costs on others (see Farnsworth, 1999); because of mental accounting, and contrary to the conventional wisdom, a redistributive tort rule may be more effective than a redistributive tax (see Jolls, 1998).

Of course, any large collection of anomalies and effects raises obvious questions about whether behavioral economics, or behavioral law and economics, can make predictions at all, or whether it is relegated instead to offering merely plausible ex post descriptions of law-related events. Section 5 thus discusses problems for the enterprise of behavioral economics and some areas for future inquiry. It lays special stress on the need for parsimony, the discipline imposed by markets, and the possibility of "debiasing."

## 1. Theoretical Preliminaries

### 1.1. Constructed Preferences

A primary claim of behavioral economics is that human preferences and values are constructed, rather than simply elicited, by social situations (see Slovic, 1995; Tversky, 1996). "Observed preferences are not simply read off one master list; they are actually constructed during the elicitation process.... Different elicitation procedures highlight different aspects of options and suggest alternative heuristics, which give rise to inconsistent responses" (Tversky, 1996, p. 371). This proposition is not meant to deny the possibility or the value of identifying utility functions in order to analyze the consequences of law. It is instead the foundation for a set of claims, empirical in character, about how certain contexts will push judgment and decision in predictable directions.

On this view, human beings do not generally consult a freestanding "preference menu" from which they make selections at the moment of choice; preferences can be a product of procedure, description, and context at the time of choice. Moreover, it is possible to identify the in-

fluence of different procedures, descriptions, and contexts. "Alternative descriptions of the same choice problems lead to systematically different preferences; strategically equivalent elicitation procedures give rise to different choices; and the preference between x and y often depends on the choice set within which they are embedded" (Tversky, 1996, p. 186). One goal of behavioral economics is to link specified features of context with identifiable outcomes—showing, for example, that a choice set of a specified type X will produce outcome A, whereas in an otherwise identical situation, a choice set of some type Y will produce outcome B. A basic goal of behavioral law and economics is to link a better understanding of human behavior with a better set of predictions about the sources and effects of law.

Behavioral economics has special relevance to law, for the legal system is pervasively in the business of constructing procedures, descriptions, and contexts for choice. Most obviously, the legal system creates procedures, descriptions, and contexts in the course of litigated cases. For example, the alternatives selected to be placed before a jury or judge may matter a great deal; liability or conviction on some count A may very much depend on the nature of counts B, C, and D. A judge or jury may choose A, and not B, when C is the only alternative; but when D is introduced, a judge or jury may choose B instead. This outcome is predicted by the phenomenon of extremeness aversion (discussed below), even though, on conventional assumptions, the introduction of some unchosen alternative ought not to affect choices. From this prediction we know a great deal more than we otherwise would; it should be possible to learn a great deal more. Eventually, observers may well be able to make robust predictions about the effects, on juries, of the menu of possible alternatives placed before them. In this respect the preferences and values of judges and juries can be constructed, not elicited, by the legal system.

Certainly something of this kind is true for the award of damages, where special problems may arise; the plaintiff's demand, for example, may serve as an "anchor" for the jury's choice, and different demands can produce different outcomes (see Chapman and Bornstein, 1996). A demand of $100,000 may produce a much higher award than a demand of $20,000, even if the case is otherwise identical, simply because the $100,000 becomes the starting point from which adjustments are made. Similar points hold outside of the courtroom. The legal system's origi-

nal allocation of entitlements, and the structures created for exchange (or nonexchange) by law, may well affect people's preferences and values (see Korobkin, 1998a). People who are originally given an entitlement—say, to be fired only for cause, or to be free from certain occupational hazards—are likely to value the right more than if it were originally given to someone else. The point much bears on the selection of default rules in contract law; contrary to the Coase theorem, different default rules may lead to dramatically different outcomes, even if transactions costs are minimal. Thus, law can construct rather than elicit preferences internally, by affecting what goes on in court, and externally, by affecting what happens in ordinary transactions, market and nonmarket.

Behavioral economists have devoted a good deal of attention to "preference reversals," which occur when people change their choices with different descriptions of options that, on conventional grounds, should be regarded as identical (Thaler, 1992, p. 79). Building on earlier work, Tversky and Thaler find, for example, that people may choose an option A over option B, but also conclude that option B is worth more than option A when the two are valued separately.[4] Their example involves the choice between two highway safety programs designed to reduce the 600 annual fatalities in a hypothetical Middle Eastern country. Program A would reduce the number of fatalities to 570, at an annual cost of $12 million. Program B would reduce the number of fatalities to 500, at an annual cost of $55 million. When asked which program they would choose, about two-thirds of respondents favor program B. When given the same information about the two programs, except the cost of Program B, and then asked to state the cost that would make the two programs equally attractive, more than 90% offer amounts under $55 million. These answers suggest that the same people prefer Program B, thus producing a preference reversal. Tversky and Thaler conclude by invoking the baseball umpire who says, with respect to balls and strikes, "They ain't nothing till I call them"; they find that preference is "a constructive, context-dependent process."

4. The earlier work involved gambles. People tend to choose a bet involving a high chance of winning a small prize over a low chance to win a bigger prize. Thus, people would choose a 7/8 chance to win $6 over a 1/8 chance to win $60. But when asked to state the lowest price for which they would trade the gamble if they owned it, people place a higher price on the lower chance–higher payoff bet. See Lichtenstein and Slovic (1971).

The question remains whether and how these findings are relevant to law. Related research by Kahneman, Ritov, and Schkade (1999) has found "valuation reversals" in two contexts of special importance to the legal system: contingent valuation and punitive damage awards. The punitive damage cases involved, respectively, financial harm and personal injury. When the cases were viewed in isolation, people were willing to support higher awards for the financial harm plaintiffs, partly because of the relatively higher compensatory award in those cases. (The compensatory award thus worked as an "anchor"; see below.) But when the two cases were considered together, about three-quarters of people assessed larger awards for the personal injury case, resulting in a dramatic reversal in median awards. In short, the financial injury judgments plummeted when the two cases were seen together. In cases without anchors, changes were also observed, as the median awards for the financial cases decreased, whereas the median awards for the personal injury cases increased (Kahneman et al., 1999). Similar reversals of judgment were observed not only for dollars but also for ratings, on a bounded numerical scale, of punitive intent. Related findings were observed for contingent valuation problems, where it is found that people's judgments are quite different if cases are studied together rather than separately. More particularly, people's willingness to pay to protect coral reefs is quite high when this issue is investigated in isolation; it is lower when the coral reef problem is examined together with the problem of skin cancer among the elderly (Kahneman, Ritov, and Schkade, 1999). When the problems are taken together, willingness to pay to protect against skin cancer increases, whereas willingness to pay to protect coral reefs falls, sometimes producing valuation reversals.

Kahneman and his coauthors believe that in many settings, dollar responses to public questions express "attitudes" rather than "preferences" and also that attitudes have distinctive properties, including a tendency to valuation reversals and judgment reversals. If true, this claim has important implications for many legal contexts, including not only jury judgments in general but also criminal sentencing and expenditures in the regulatory state. A possible implication is that judgments of cases and problems in isolation—and isolation is typical of the legal system—will lead to many problems. Isolated judgments may produce global or systematic irrationality, as jurors (and perhaps judges and representatives) reach conclusions that do not cohere with other judgments, simply because cases are exam-

ined in isolation. In any case the constructed nature of judgments about dollars, and the potential for "judgment reversals," bears much further study.

## 1.2. Fairness, Myopia, and Bounded Rationality

Much of behavioral economics can be organized under the headings of fairness-related behavior, myopia, and bounded rationality. (These categories are analyzed in depth under the rubric of "three bounds"—bounded rationality, bounded willpower, and bounded self-interest—in an essay by Thaler [1996] and an article by Jolls, Sunstein, and Thaler [1998], and I draw heavily on that analysis here.) The underlying evidence is not best taken to demonstrate that people are "irrational" or that their behavior is unpredictable and arbitrary. Thaler's term "quasi-rational" is a more helpful description of real world agents. The notion of "quasi-rationality" should be taken to suggest departures from standard economic assumptions, but departures that are systematic and predictable, and thus a legitimate basis for predicting human behavior.[5] Among the consequences for law is an appreciation of why government intervention may not be necessary to solve collective action problems; an understanding of the important and pervasive phenomenon of "compliance without enforcement" (relevant, for example, to nonsmoking policy); a better understanding of information-forcing default rules in the context of employment law; a sense of how informational campaigns might actually achieve their goals; and a rejection of the sometimes-dogmatic antipaternalism of conventional law and economics. I present the underlying mechanisms very briefly here; readers interested in more details, and responses to counterarguments, might consult Goldstein and Hogarth (1997), Thaler (1991), Arkes and Hammond (1986), and Kahneman, Slovic, and Tversky (1982).

*Fairness.* The first point has to do with the ingredients of most people's utility functions. Most people care, some of the time, about being fair and about being treated fairly, and they will sacrifice their material self-interest

5. And not only human; pigeons and rats have been found to behave in accordance with prospect theory rather than expected utility theory. See Kagel, Battalio, and Green (1995).

in order to promote these goals.[6] In response to perceived antisocial behavior, people sometimes sacrifice their own economic interest in order to impose punishment. Cooperation sometimes exists even without legal constraints on uncooperative behavior, and spitefulness can produce serious problems, as in vengeful behavior before and during litigation (consider a bad divorce).

As emphasized in Jolls, Sunstein, and Thaler (1998) and earlier work in behavioral economics, the content of "fairness" depends on existing social norms and in particular on the *reference point* (see Jolls, Sunstein, and Thaler, 1998, pp. 1511–12; Thaler, 1991). A deviation from a reference point, as in an increase in the price of snow shovels after a snowstorm, is likely to trigger a judgment of unfairness. Thaler suggests, in a set of arguments with many implications for law, that interindustry wage differentials are partly a product of "perceived equity in setting wages" (Thaler, 1992, p. 49). The basic point here is that predictions and prescriptions will sometimes go wrong if they disregard the effects of fairness-related judgments in producing social outcomes. Moreover, the demand for law often reflects not only or even mostly interest-group pressure, but widespread fairness judgments (Jolls, Sunstein, and Thaler, 1998, pp. 1493–97, 1510–16).

*Myopia.* Many people are myopic, at least some of the time. As Thaler and Shefrin have emphasized, people—in their capacity as "doers" rather than "planners"—overemphasize the short term and care less about the future than conventional theory would predict (see Thaler, 1991). Myopia helps account for impulsive behavior and for people's inability, some of the time, to stop smoking or drinking, to spend wisely, or to save money over time. Sometimes people take steps to overcome their own myopia. Conventional analysis might explain the underlying phenomena by reference to tastes; perhaps people have strong preferences for early consumption and simply discount the future.[7] In many settings, the conventional and behavioral accounts will offer similar predictions. But some anomalies—in particular, precommitment strategies, practices of mental

6. Some of this work overlaps with that based on "signaling"; see Eric Posner (1998). The difference lies in the suggestion that sometimes people will act fairly even if no one is observing.

7. This is the tendency in Becker (1997).

accounting, and different effects of punishments with the same expected value—seem hard to explain without introducing behavioral factors (see Thaler, 1991, pp. 77–90). These points are relevant to law insofar as they help explain cooling-off periods and compulsory savings programs and also insofar as they help make sense, on normative grounds, of apparently paternalistic regulation.

*Bounded rationality.* The idea of bounded rationality includes several different points. The first involves the kinds of cognitive errors that can come from biases in judgment and from efforts to economize on decision costs ("heuristics"). Biases fall in various categories; they include hindsight bias, optimistic bias, and extremeness aversion. Efforts to economize on decision costs are responsible for *rules of thumb*, or heuristics. Rules of thumb—as in the process of deciding on appropriate numbers (for many things, including real estate prices or pain-and-suffering awards) by choosing an "anchor" and then making adjustments—reduce the costs of making decisions, but they may not be fully rational if people could make far fewer errors by acting as good Bayesians.

A second form of bounded rationality comes from *framing effects*. People's reaction to a choice may depend on how it is described; hence identical, but differently worded, problems can elicit quite different responses. Consider clients deciding whether to settle or to go to trial. If they are told that, of 100 litigants, 90 who go to trial win, they may be far more likely to go to trial than if they are told that of 100 litigants, 10 who go to trial lose (cf. Redelmeier, Rozin, and Kahneman, 1993).

Some aspects of bounded rationality are modelled by *prospect theory*, which is intended as a more accurate description of behavior than expected utility theory. For purposes of law, the first key feature of prospect theory, departing from expected utility theory, is that people are *loss averse*, that is, they dislike losses more than they like corresponding gains (a topic taken up below). It follows that the value function is less steep for losses than for gains. The second key finding is that people care a great deal about *certainty* (thus people would prefer a reduction of risk from 0.1 to 0.0 to a reduction of 0.3 to 0.1). The value function identified by prospect theory is defined over some reference point, which appears natural but can be manipulated (a topic also discussed below). The value function is also concave for losses and convex for gains, a shape based on the finding

that the difference between 0 and 100 appears greater than the difference between 1,000 and 1,100, no matter what the sign of the magnitudes. An important implication is that people are risk seeking for losses (they would choose an 80% chance to lose $4,000 over a certain loss of $3,000) and risk averse for gains (they would prefer a certain gain of $3,000 over an 80% chance to gain $4,500).

A recent survey collects a wide range of real world practices or analogies tending to support prospect theory; many of them are relevant to law (see Camerer, forthcoming). Drawing on that survey (and the studies cited there), consider the following examples:

- There is a longstanding puzzle about the reason for the "equity premium," by which investors sacrifice a great deal by their choices of bonds as compared to stocks; stocks have a much higher average return. The equity premium seems best explained by the fact that people are not averse to variable returns but are (consistently with prospect theory) especially averse to losses in a given year (see Benartzi and Thaler, 1995).
- Prospect theory predicts that, since people dislike incurring losses, investors will be willing to hold onto stocks that have lost value (compared to purchase price) and will be eager to sell stocks that have risen in value. This result has been confirmed by a careful field study (see Odean, forthcoming).
- Pennsylvania and New Jersey offered the same basic insurance packages, including an inexpensive one without a right to sue and a more expensive one with a right to sue. In Pennsylvania, the default option was the less costly one; in New Jersey, the default option was the more expensive one. Consistently with loss aversion, a majority selected the default option in both states.
- If consumers are loss averse, they will dislike price increases more than they like the gain from price cuts, and the amount by which they will reduce purchases when prices rise will be greater than the amount by which they will increase purchases when prices fall. Studies have shown this asymmetry in price elasticities for both eggs and orange juice.

## 2. Fairness and *Homo Reciprocans*: Sacrificing Material Self-Interest, with Special Reference to Kindness and Spite

Economists sometimes assume that people are self-interested, in the sense that they are focused on their own welfare rather than that of others and in the sense that material welfare is what most concerns them. For some people some of the time, this is certainly true, and it is a useful simplifying assumption; for many projects in the economic analysis of law, it is unexceptionable. But people also want to be treated fairly, and they may be willing to punish people who treat them unfairly, even at the expense of their material self-interest. People may also want to act fairly, and, perhaps even more important, they want to be seen to act fairly, especially but not only among nonstrangers. For purposes of understanding law, what is especially important is that people may sacrifice their economic self-interest in order to be, or to appear, fair. As Robert Axelrod showed more than a decade ago, *reciprocal fairness*—or kindness, understood as a willingness to sacrifice material self-interest—can be quite important (see Axelrod, 1984). People may meet kindness with kindness and unkindness with spite.[8] It follows that rather than being *homo economicus*, people may be *homo reciprocans* (see Fehr and Gachter, 1998, and unpublished study; Fehr and Schmidt, unpublished study), in the sense that people respond kindly to gifts and retaliate when mistreated, even at the expense of their material self-interest.[9] Those interested in behavioral law and economics have only begun to explore the implications of this phenomenon for law.

### 2.1. A Simple Game

Consider, for example, the ultimatum game.[10] The people who run the game give some money, on a provisional basis, to the first of two players. The first player is instructed to offer some part of the money to

8. For a formal discussion, see Rabin (1993).

9. With respect to *homo reciprocans*, I am simplifying here some complex arguments. An early discussion of kindness and retaliation in the labor market is Akerlof (1982).

10. An outline of the game and results can be found in Thaler (1991). For recent discussion, see Slonim and Roth (1998), which found a slight decline with very high stakes, but offers still far above what conventional analysis would predict.

the second player. If the second player accepts that amount, he can keep what is offered, and the first player gets to keep the rest. But if the second player rejects the offer, neither player gets anything. Both players are informed that these are the rules. No bargaining is allowed. Using standard assumptions about rationality, self-interest, and choice, economists predict that the first player should offer a penny and the second player should accept. But this is not what happens. Offers usually average between 30% and 40% of the total. Offers of less than 20% are often rejected. Often there is a 50-50 division. These results generally cut across the level of the stakes (in poor countries, the game has been played for several months in wages, with no difference in results) and also across diverse cultures (see Thaler, 1992).

The results of the ultimatum game are highly suggestive. Perhaps people will not violate norms of fairness, even when doing so is in their economic self-interest, at least if the norm violations would be public.[11] There are several reasons why they might fail to violate such norms: anticipated spite (note the behavior of the responders in the ultimate game); internalized norms; or adverse reputational effects.[12] Some people may exhibit a form of "inequity aversion," in the sense that they will sacrifice material payoffs in order to produce more equitable outcomes.[13] Rabin (1993) has developed a formal model designed to show the role of fairness in individual judgments. He shows that people may sacrifice material self-interest to help people who have been kind; that they may sacrifice their material self-interest to publish unkind people; and that these motivations have a smaller effect if the material consequences of sacrificing becomes larger.

As emphasized by Jolls, Sunstein, and Thaler (1998, p. 1511), of special importance to fairness-related behavior is the selection of a *reference*

11. An especially striking set of experimental outcomes can be found in Fehr and Tougareva (unpublished study).

12. Compare the results in the Dictator Game, where an owner of a sum is permitted to allocate it as he wishes; here there is a some tendency toward sharing the proceeds, though it is far less pronounced than in the ultimate game; note also that sharing decreases with anonymity (see Bohnet and Frey, 1999; Kagel and Roth, 1994, pp. 298–302).

13. See Fehr and Schmidt (unpublished study). This paper shows how a certain number of inequity-averse people can help produce what the authors call cooperative, competitive, and noncooperative outcomes.

*point* or *reference transaction*. Price increases in the event of unanticipated events—for example, a snowstorm—are likely to be perceived as unfair, insofar as they represent a departure from the status quo, which provides the relevant reference point (see Kahneman, Knetsch, and Thaler, 1986; Jolls, Sunstein, and Thaler, 1998, pp. 1510–15). What counts as unfair depends on what it is (perceived as) a deviation from, and the perception may be manipulable by participants in markets or in law.

## 2.2. Implications for Law

This account bears on a variety of questions of relevance to law. It helps explain why in close-knit communities legal intervention may not be required to solve collective action problems, and indeed law may not much matter, as people organize their affairs via norms rather than law (see Ellickson, 1991). Norms of reciprocity may well develop because people have the ability to impose social sanctions on those who do not comply with those norms, thus creating a self-enforcing system of reciprocity. In the same vein, experimental work shows a high degree of cooperation in prisoners' dilemma situations, especially when people are speaking with one another.[14] Experimental work also shows a large role for reciprocal altruism in labor markets (Fehr and Gachter, 1998). A possible general conclusion is that legal intervention is not always necessary to solve prisoners' dilemmas. Social norms may well do the work of law, producing cooperation where materially self-interested agents would fail to do so. The agents who populate behavioral economics are, in this important respect, less likely to need government help than are the agents who populate conventional economics.

Some experimental work suggests too that markets may not work the way they are supposed to, because people's judgments of fairness operate to discipline and constrain market behavior. It appears, for example, that people would like to punish companies that violate perceived fairness, even when they are acting rationally, as, for example, by increasing the price of snow shovels after a snowstorm (see Kahneman, Knetsch, and

14. See Kagel and Roth (1994, pp. 111–73), for an overview. There is thus a close relation between some behavioral research and the growing and apparently independent interest in regulation via social norms. See Ellickson (1991). I believe that ultimately these two lines of inquiry will merge into a unitary field of inquiry.

Thaler, 1986b).[15] Such increases are widely perceived as unfair. Departures from the reference point that is relevant for fairness judgments—the presnowstorm price—are strongly disapproved. This point may help explain the existence of otherwise puzzling legal barriers to self-interested behavior. Here there is much room for future work. Do companies always raise prices when circumstances create short-term scarcity? Are there, in fact, social constraints on price increases for snow shovels after a snowstorm, or for umbrellas during a rainstorm? Do these seemingly small examples bear on the setting of wages and on interindustry wage differentials (see Thaler, 1992, pp. 36–49)? It may well be that contracting parties are reluctant to take advantage of the misfortunes of another, partly because of social constraints on self-interested behavior; thus, the idea of the "efficient breach" may misdescribe contracting reality, especially when reputational interests are involved. Jolls, Sunstein, and Thaler suggest the possibility that fairness judgments help account for the content of law, by outlawing unfair departures from a reference point (1998, pp. 1510–16).

A particular finding of the ultimatum game is that people are sometimes willing to sacrifice their economic self-interest in other to punish wrongdoers. Indeed, there are familiar circumstances in which a gain to another person is a loss to an agent (consider a bad divorce), and this point—the starting point for an economic analysis of spite—may bear on the prospects for settlement. Suggestive data have been gathered by Ward Farnsworth, indicating that bargaining does not occur in part because of spite (see Farnsworth 1999). Investigating approximately twenty nuisance cases in which injunctive relief was sought and either granted or denied after full litigation before a judge, Farnsworth found no case in which the parties tried to contract around the judge's order. Farnsworth's interviews suggested a behavioral explanation. The victorious parties felt specially entitled to the right that they won, and they did not want to confer any benefit on the party they had bested, even if the benefit might turn out to be mutual.

15. A study at the University of Chicago Law School found, however, that Chicago law students do not share this widespread fairness judgment. See Houston and Sunstein, (forthcoming 1999). It would be interesting to know if this is a law student effect or a University of Chicago Law School effect.

### 2.3. Might Increased Costs Sometimes Increase Behavior?

Behavioral work involving reciprocity bears on the effects of financial incentives. Usually it is assumed that people will do less of some activity X if they are forced to pay for doing it. But in an intriguing real-world study, it has been shown that this is not the case (see Gneezy and Rustichini, forthcoming). The introduction of small fines for lateness in picking up children at school actually produced more, not less, in the way of lateness. The behavioral explanation would be that when no fine is in place, parents do not wish to impose on teachers, perhaps for reputational reasons, perhaps for reasons of conscience. Parents will rarely be late, and even more rarely very late, because the reputational and psychic cost of doing so is high (if teachers will not be paid in the event of lateness). Or a system of reciprocal altruism may be in place: Teachers agree to spend a little extra time at work, and parents agree to do what they can to arrive on time, so as to minimize the burden. But when a fine is introduced, parents believe that they can "buy" the extra labor, and hence the cost (reputational and psychic) associated with lateness is reduced or removed. Hence, there is more lateness; the introduction of a fine actually reduces the costs of lateness. It would be valuable to see under what circumstances this result could be replicated. (If the economic cost of lateness is quite high, one would not expect to see the fine resulting in more lateness.)

## 3. Myopia: The Case of Mental Accounting

A simple and apparently uncontroversial assumption of most economists is that money is "fungible." Indeed, if anything is fungible, money is. But the assumption appears to be false, at least some of the time. As Thaler suggests, many people act as if their money resides in compartments (see Thaler, 1991, pp. 25–47). In other words, people create "frames" that result in mental accounts through which losses and gains, including losses and gains in simple monetary terms, are not fungible with each other. To some extent, mental accounting can be viewed as a response to, and an example of, myopia. Frequently mental accounting works as a method by which people can overcome their own impulsiveness or tendency to overlook the long term.

A glance at ordinary practice shows that people often organize decisions in terms of separate budgets and accounts, and they often segment these accounts. Some money is for retirement; some is for vacation; some is for college tuition; some is for mortgage or rental payments. Mental accounting is an important aspect of financial self-control; it can be understood as a kind of precommitment strategy.[16]

What are the implications of mental accounting for law and policy? There appears to be a demand for publicly created mental accounts, perhaps as a self-control strategy, as, for example, with Social Security and other programs with an apparent paternalistic dimension. One reason for mental accounting is to help with possible problems of self-control, and people may enlist law in this endeavor. If so, it is hard to object to the resulting enactments as "paternalistic." The better view would be that they reflect a form of autopaternalism. Some statutes that appear to prevent people from making choices as they wish may be best understood as responsive to the widespread desire to have separate mental accounts. Of course, there are private mechanisms for accomplishing this goal; lawyers will not understand those mechanisms well unless they see that money itself is not fungible.

The practice of mental accounting suggests that that government may be able to create certain mental accounts by creative policy making. If government wants to encourage savings, for example, it may seek to give distinctive labels to certain accounts, so as to discourage people from dipping into those accounts too readily. This idea suggests the possibility of restructuring social security, not by abolishing any effort to promote savings for old age but by facilitating the creation of specified private accounts, perhaps accompanied by penalties for current use.

The practice of mental accounting also suggests that redistributive legal rules may be more effective than they seem (see Jolls, 1998). Jolls suggests that, although taxes operate "as a direct charge against incomes," the costs of redistributive rules "may be viewed as expenditures out of income... and heightened expenditures out of income may produce fewer

16. Mental accounting is also a familiar strategy among people winning in a casino or gambling house who subsequently differentiate between "house money" (i.e., winnings) and "their" money. Continuing to play with the money won and losing (with almost certain probability) does not appear to involve the same type of "waste" as playing with and losing the same amount of money that had been obtained in another way (see Dawes, 1998).

work disincentives than direct charges against income" (1998, p. 1670). If this is so, those who receive money (from tort law or taxation) and those who give money (from tort law or taxation) may respond differently, depending on whether tort law or taxation is responsible. Those who are taxed may face a stronger work disincentive than those who are faced with a redistributive legal rule.

Most of behavioral work involving mental accounting deals with money, but the phenomenon is far broader. In the moral domain, for example, there is reason to think that people engage in a form of accounting as well (see Kuran, 1998), treating actions of which they are ashamed, or proud, as falling in distinct compartments and possibly as requiring a kind of compensation from future acts in the same compartment. Someone who has acted uncharitably toward a student or a friend might, for example, act quite generously to another student or friend, so as to even out the account. This effect can be felt at the social level as well, as the demand for law reflects a desire to produce sensible accounts (by, for example, going slow on clean water legislation after having gone quickly on clean air legislation). Of course, much more work would be necessary to turn these speculations into something more systematic.

Because people are myopic, and have high and sometimes hyperbolic discount rates, it may be necessary to rethink conventional economic analysis of the criminal law (see Jolls, Sunstein, and Thaler, 1998, pp. 1538–41). If criminals do not concern themselves with the future, and focus on the short term, a system of reliable but relatively lenient punishments may have far more deterrent power than a system of infrequently enforced but stringent punishments. And for young people who greatly discount the future, an increase in punishment from, say, twenty years to twenty-five or thirty years may have little effect at all on the level of criminal activity.

## 4. Bounded Rationality

### 4.1. Loss Aversion

A great deal of work in behavioral law and economics emphasizes a key finding of prospect theory (see Kahneman and Tversky, 1979): in many contexts, people are averse to losses (Thaler, 1992, pp. 70–74). People are

more displeased with losses than they are pleased with equivalent gains—roughly speaking, twice as displeased. Contrary to conventional economic theory, out-of-pocket costs can loom much larger than opportunity costs.

Loss aversion has many implications for positive and prescriptive analysis of law, and it therefore deserves separate treatment here. Consider the following:

• Many people interested in behavioral law and economics have noticed that loss aversion suggests that the Coase theorem is in one respect quite wrong (see, e.g., Hoffman and Spitzer, 1993; Jolls, Sunstein, and Thaler, 1998).[17] Recall that the Coase theorem says that, when transactions costs are zero, the allocation of the initial entitlement will not matter, in the sense that it will not affect the ultimate state of the world, which will come from voluntary bargaining. The theorem can lead to inaccurate predictions because the allocation of the legal entitlement may well matter to the ultimate outcome. This is because those who are initially allocated an entitlement are likely to value it more than those without the legal entitlement.

Endowment effects have been shown for both coffee mugs and chocolate bars; the initial allocation of the right much affects the ultimate outcome (see Thaler, 1992, pp. 63–78). The legal entitlement creates an *endowment effect* (a term originally coined by Thaler, 1991, pp. 7–10); that is, a greater valuation stemming from the mere fact of endowment. In experimental research, for example, an endowment effect has been shown for default rules in the law of contract. The parties' understanding of the default rule much affected their ultimate outcome, and different default rules produced different outcomes (see Korobkin, 1998a). As noted, a natural experiment in the real world, involving choice of insurance policies, pro-

17. Loss aversion does not suggest that the Coase theorem is wrong insofar as it suggests that when transactions costs are zero, the result will be efficient regardless of who gets the initial entitlement; it suggests only that even when transactions costs are the zero, the allocation of the initial entitlement can affect the ultimate outcome. Different results can both be efficient. Note also that conventional analysis predicts one circumstance under which the result under zero transaction cost bargaining will differ with the initial assignment of rights: wealth effects. When there are only two people in a desert, and they are stranded, the initial allocation will be final, regardless of transaction costs (see Richard Posner 1998, p. 56). The contribution of behavioral law and economics is to show that the initial assignment may matter even when wealth effects are small or zero.

duced a similar result (see Camerer, forthcoming); in both cases citizens could change from the default policy, but in both cases, the default option tended to stick. There is a great deal of evidence that prospect theory captures real-world behavior (see Camerer, forthcoming).

From this research, it is reasonable to hypothesize, for example, that workers allocated a (waivable) right to be discharged only for cause may well value that right far more than they would be if employers were allocated a (waivable) right to discharge employees at will. The ultimate result of the bargain may be quite different depending on the initial allocation of the entitlement (see Issacharoff 1996). Thus, breathers of air may well value their (tradable) right to be free from air pollution far more than they would if polluters had been given a (tradable) right to emit polluting substances into the air. Especially large endowment effects have been shown in the environmental area, for reasons that remain ill-understood (see Sunstein, 1997, chap. 10).

• Loss aversion raises serious questions about the tort system. Should damages measure the amount that would restore an injured party to the status quo ante, or should they reflect the amount that an injured party would demand to be subject to the injury before the fact? An intriguing experiment by McCaffery, Kahneman, and Spitzer (1995) suggests that people serving as jurors believe that the amount that would be demanded preinjury is far greater than the amount that would restore the status quo ante. The legal system appears generally to see the compensation question as the latter one, though it does not seem to have made this choice in any systematic way.

• Loss aversion also bears on appropriate remedies for violations of tort law. When should courts award injunctions, and when should they award damages? The answer may be affected by an understanding of the circumstances in which people would demand a great deal—perhaps a lot more than market value—to part with their good. It has been suggested that the legal system shows an awareness of loss aversion insofar as it awards specific performance for certain losses (see Rachlinski and Jourden, 1998). There is also reason to think that the legal system recognizes that a loss will be valued differently from an equivalent gain (see Cohen and Knetsch, 1992). And in an experimental setting, an endowment effect was shown for goods protected by a property rule, but not for goods protected by a liability rule, in a way that has important im-

plications for traditional thinking about the choice among remedies (see Rachlinski and Jourden, 1998).

• Loss aversion has implications for an understanding of the labor market and of employment law, and in particular for "life-cycle" models of employment. Would you rather make $70,000 this year, $60,000 next year, $50,000 the following year, and $40,000 the year after; or would you want the sequence to be reversed? Standard economics predicts that people would prefer the first option, reasoning that it is better to get the larger sums as early as possible so that they can be used or invested. But contrary to conventional assumptions, many people appear to prefer increasing wage profiles (see Loewenstein and Sicherman, 1991).[18] And this point may help account for the fact that wages tend to increase over time, even when productivity is decreasing (see Jolls, 1996). The existence of increasing wage profiles bears on issues under the Age Discrimination in Employment Act, including mandatory retirement and the circumstances under which an adverse effect on older workers should count as a form of discrimination at all.[19]

• An additional point is most relevant to prescriptive work. What qualifies as a loss or gain depends on a *reference point*, which can be manipulated. As noted, reference points also matter a great deal to judgments of fairness (see Thaler, 1991, pp. 199–238; Jolls, Sunstein, and Thaler, 1998, pp. 1510–12). People are averse to losses, but whether an event "codes" as a loss or a gain depends not on simple facts but on a range of contextual factors, including on how the event is framed. The status quo is usually the reference point, so losses are understood as such by reference to existing distributions and practices; but it is possible to recharacterize the frame so as to make a change code as a loss rather than a gain, or vice versa. Consider a company that says "cash discount" rather than "credit

18. Increasing wage profiles are also predicted by models involving "efficiency wages," by which employers seek to prevent shirking (see Akerlof, 1984, pp. 145–174; Richard Posner, 1996). As developed by Akerlof, the theory of the efficiency wage has an important behavioral dimension, based as it is on a notion of reciprocal altruism, with employers paying above-market wages and employees responding with increased effort, in what Akerlof sees as a "partial gift exchange." So understood, the theory of the efficiency wage is connected with the discussion of *homo reciprocans*, below.

19. Thus there is possible use of behavioral economics in understanding early retirement incentive plans.

card surcharge" or a parent who says that for behavior X (rather than behavior Y) a child will be rewarded, as opposed to saying that for behavior Y (rather than for behavior X) a child will be punished; or familiar advertisements to the effect that "you cannot afford not to" use a certain product. In environmental regulation, it is possible to manipulate the reference point by insisting that policy makers are trying to "restore" water or air quality to its state at time X; the restoration time matters a great deal for people's choices (see Gregory, Lichtenstein, and MacGregor, 1993).

## 4.2. Biases

Cognitive psychologists have shown that people suffer from various biases and aversions that can lead them to inaccurate perceptions of facts. I offer here a very brief description of several biases of particular relevance to law. The principal implications are twofold. First, law, and actions related to law, may not have the intended or anticipated effect. If, for example, people are risk optimists, provision of statistical information may not lead them to alter their behavior to the extent that most people believe that they are immune from or able to control hazards faced by others. Second, there may be room for apparently paternalistic law designed to overcome problems produced by biases—above all, perhaps, by designing appropriate informational strategies, but also through the use of legal coercion.

*Extremeness Aversion.* It is well established that people are averse to extremes (see Kelman, Rottenstreich, and Tversky, 1996). When, for example, people are choosing between some small radio A and a midsize radio B, most may well choose A; but the introduction of a third, large radio C is likely to lead many people to choose B instead. Thus, the introduction of a third, unchosen (and in that sense irrelevant) option may produce a switch in choice as between two options.

Whether an option is extreme depends, of course, on the stated alternatives. Extremeness aversion gives rise to *compromise effects*. As between given alternatives, most people seek a compromise. Almost everyone has had the experience of switching to, say, the second most expensive item on some menu of options, and of doing so partly because of the presence of the very most expensive item. In this as in other respects, the fram-

ing of choice matters; the introduction of (unchosen, apparently irrelevant) alternatives into the frame can alter the outcome.

Extremeness aversion suggests that a simple axiom of conventional economic theory—involving the irrelevance of added, unchosen alternatives—is wrong. It also has consequences for legal advocacy and judgment as well as for predictions about the effects of law. How can a preferred option best be framed as the "compromise" choice? When should a lawyer argue in the alternative, and what kinds of alternative arguments are most effective? Other things being equal, juries and judges may well try to choose a compromise solution, and what "codes" as the compromise solution depends on what alternatives are made available. And in elections, medical interventions, and policy making, compromise effects may matter a great deal, as people tend to choose the approach that seems to fall between the extremes.

*Optimistic Bias and the Law of Risk.* Ordinarily, human beings tend to be optimistic about themselves. Even factually informed people, aware of aggregate data, tend to think that risks are less likely to materialize for themselves than for others. Thus, for example, more than 90% of drivers think that they are safer than other drivers and less likely to be involved in serious accidents (see Taylor, 1989, pp. 10–11). Owners of companies have an exaggerated sense of the likelihood that they will continue to be in business; in experiments and in the real world, entry into markets seems affected by excessive optimism (see Camerer and Lovallo, 1999). People also believe that they are peculiarly unlikely to get divorced (see Baker and Emery, 1993). There is systematic overconfidence in risk judgments, as the vast majority of people believe that they are less likely than other people to be subject to infection from AIDS, heart attacks, asthma, and many other health risks (see Weinstein, 1989). Reflecting illusions about their own practices, gay men appear systematically to underestimate the chance that they will get AIDS, even though they do not lack information about AIDS risks in general (see Bauman and Siegel, 1987). One of the most depressing findings in cognitive psychology is that only one group of people have an accurate sense of their own capacities and of what other people think of them: the chronically depressed (see Taylor, 1989, pp. 39–40). In an illustration of special poignancy in the academic setting, about

94% of college professors rate themselves as better than their average colleagues at their jobs (see Baumeister, 1998).

If people are unrealistically optimistic, an understanding of risk-related facts may not produce the anticipated changes in behavior. If the goal is to induce less in the way of drug use or drunk driving, government should attend to the problem that people will exaggerate the safety of their own behavior; hence the slogan, "drive defensively; watch out for the other guy" had a high degree of behavioral ingenuity. On the normative side, those interested in behavioral law and economics have noticed that unrealistic optimism creates a distinctive problem for conventional objections to paternalism in law (Jolls, Sunstein, and Thaler, 1998, pp. 1541–43). If people tend to believe that they are relatively free from risks, they may lack accurate information even if they know statistical facts. A great deal of further work remains to be done on this problem. Unrealistic optimism may well be counteracted by markets and market-like forces, though even here there is contrary evidence (see Langevoort, 1997). And optimistic bias may help explain why so many people enter "winner-take-all" markets—those in which the fortunate few do enormously better than most—even when the probability of success is quite low and the discounted value of the investment is also low (see Frank and Cook, 1995). Legal intervention, perhaps in the form of information, perhaps in the form of corrective taxes, may be necessary to supply a corrective.

*Self-Serving Bias and Settlements.* We have seen that people sometimes care about fairness, but their judgments about fairness are systematically self-serving. In any random couple, it is highly likely that addition of answers to the question, "What percentage of the domestic work do you do?" will produce a number greater than 100%. The point bears on the otherwise largely hard-to-explain phenomenon of bargaining impasses (see Babcock and Loewenstein, 1997). Why do some cases fail to settle? Why does the legal system spend so much on dispute settlement?

As suggested by Jolls et al., part of the answer lies in the fact that self-serving bias—a belief that one deserves more than other people tend to think—affects both parties to a negotiation, and this makes agreement very difficult.[20] Babcock, Wang, and Loewenstein (1996) have studied

20. This paragraph is based on Jolls, Sunstein, and Thaler (1998, pp. 1502–04).

the consequences of self-serving bias for negotiation impasse in public school teacher contract negotiations in Pennsylvania. They show that self-serving bias, in the form of fairness judgments about what communities are "comparable," help account for impasse and strikes. Experimental studies reach a similar conclusion, as students, including law students, reach quite disparate judgments about what would be fair after they have been assigned to one or another side in a tort dispute (see Babcock et al., 1995; Loewenstein et al., 1993). Thus, there were large self-serving biases in assessments of the judge's award. The subjects acting as the plaintiffs guessed an average $14,527 higher than the defendants, and the plaintiffs' fair settlement values averaged $17,709 higher than those of the defendants.

*Hindsight Bias and Legal Mistakes.* According to a familiar cliché, hindsight has 20-20 vision. The cliché has important truth, one with considerable relevance to law (see Rachlinski, 1998). People often think, in hindsight, that things that happened were inevitable, or nearly so. Of course, the fact that something happened provides some information about the risky behavior. But people tend to believe that something was nearly inevitable if it actually happened, even if this is quite false. The resulting "hindsight bias" can much distort legal judgment if, for example, juries end up thinking that an accident that occurred would inevitably have occurred. Judgments about whether someone was negligent may well be affected by this bias; if a bad outcome occurred, juries are likely to believe that it was inevitable. For decision makers prone to hindsight bias, the line between strict liability and negligence may be quite thin.

It is possible that many rules in the law are attuned to hindsight bias. An extensive study by Rachlinski (1998) finds a number of illustrations, as in patent law, where courts are asked to assess whether an invention was "nonobvious" by examining the time of invention, with certain factors designed to ensure that present judgments about what is "obvious" do not interfere with the judgment. To take another example, the "business judgment" rule in corporate law prevents legal authorities from second-guessing managerial decisions in contexts in which the second-guessing may be systematically biased. Jolls, Sunstein, and Thaler (1998, pp. 1527–31) suggest that an understanding of hindsight bias might show that legal rules should be changed in cases involving alleged negligence, in order

to counteract the judgment that because an unfortunate event happened, it was bound to happen.

## 4.3. A Note on Framing and Legal Ethics

Loss aversion and extremeness aversion suggest possible "framing" effects. A change can be framed as a loss or a gain, and whether an option looks extreme depends on the comparison set, which can be manipulated. Cognitive psychologists, above all Kahneman and Tversky, have shown many such framing effects. An especially important one involves drawing the subject's attention to good outcomes or bad outcomes. Thus, if people are told, "of 100 people who have this operation, 90 are alive five years later," they will respond far more favorably than if they are told, "of 100 people who have this operation, 10 are dead five years later." The point bears on government information campaigns and also on legal ethics. It would be easy for a lawyer to draw attention to the percentage of victories or losses (even if the lawyer has aggregate data), and it may matter a great deal which the lawyer chooses.

## 4.4. Heuristics

Behavioral economists and cognitive psychologists have uncovered a wide array of heuristic devices that people use to simplify their tasks. Heuristics are not biases, and often they are good, because they economize on decision costs; but they can lead to several mistakes. The major implications have to do with the demand for law (fueled, often, by the availability heuristic), the nature of legal reasoning (often conducted by reference to precedent), and the setting of damage awards (much affected by anchoring, and prone to the distinctive problems that come from "scaling without a modulus").

*Availability, with a Note on Social Influences, Dupes, Freeloaders, and Cascades.* People tend to think that events are more likely if an example is readily called to mind or "available" (see Kahneman and Tversky, 1979). If pervasive, the availability heuristic will produce systematic errors. For example, assessments of risk will be pervasively biased, in the sense that people will think that some risks (of a nuclear accident, for example) are high, whereas others (of a stroke, for example) are relatively low. There is evidence that people's judgments about risk levels are

much affected by the availability heuristic (see Baron, 1994). The availability heuristic appears to affect the demand for law, especially in the area of risk regulation; Noll and Krier (1990) and Jolls, Sunstein, and Thaler (1998, pp. 1518–21) have discussed this point in considerable detail.

Of course, the availability heuristic operates in an emphatically social environment, and social influences may "amplify" the effects of the heuristic, in a way that helps account for much behavior, including that behavior that produces the supply of and demand for law (see Kuran and Sunstein, 1999). People often think what (they think) other people think. Sometimes they do what (they think) others do. Partly this is because when a person lacks much personal information, he will sensibly rely on the information of others (see Hirshleifer, 1995). If you do not know whether pesticides cause cancer, or whether hazardous waste dumps are a serious social problem, you may as well follow what other people seem to think. And partly this is because of reputational influences. If most people think that hazardous waste dumps are a serious social problem, or that laws should ban hate crimes, you might go along with them so that they do not think that you are ignorant, malevolent, or callous.[21]

For the most part, an emphasis on informational and reputational influences is entirely consistent with conventional economics, though it has implications that have not been sufficiently exploited. An analyst attuned to informational and reputational influences might predict, for example, that people are more likely to vote if they think that most people are voting; that tax compliance is more likely if people think that most people comply; that college students are more likely to drink heavily, or to use unlawful drugs, if they think that this is what most college students are doing; and that teenagers in poor neighborhoods are more likely to join gangs if they think that most teenagers are gang members.[22] Behavioral economics adds two points. The first is an understanding of how the availability heuristic interacts with these influences; sometimes a salient event or anecdote can interact with informational and reputational forces so as to create cascade effects (see Kuran and Sunstein, 1999). In addition, behavioral economics emphasizes the role of reciprocity in producing these effects. People do not want to be either dupes or freeloaders, and hence

21. Compare the discussion of signaling and witch-hunts in Eric Posner (1998).
22. For evidence, see Perkins (1997, pp. 177–206).

they are most likely to contribute to some social goal if they believe that others are doing so as well.

These points have a wide range of implications for the content of law. They help explain the supply of, and the demand for, government regulation. "Availability cascades" help drive law and policy in both fortunate and unfortunate directions. They can eliminate public torpor by drawing attention to problems that, although serious, have long been overlooked. On the other hand, they can produce public concern or outrage about problems that have little claim to the public fisc. An important task for the legal system is therefore how to promote better priority setting.

*Anchoring, with Special Reference to Damage Awards.* Often people make judgments about appropriate numbers, including probabilities, on the basis of an initial value, or "anchor," for which they make insufficient adjustments (see Kahneman and Tversky, 1979). When people lack information, this may be the best that they can do. The problem is that the initial value may have an arbitrary or irrational source. When this is so, the assessment may go badly wrong. Jury judgments about damage awards, for example, are likely to be based on an anchor; this can produce a high level of arbitrariness. There is considerable experimental evidence to this effect; in particular, the plaintiff's demand makes a great deal of difference, in a process of "the more you ask for, the more you get" (see Chapman and Bornstein, 1996).

If the plaintiff's demand influences jury awards, it is possible that the legal system should take corrective steps by, for example, allowing appellate courts to exercise greater control in the interest of preventing unjustified unequal treatment, or by preventing the jury from hearing demands that are legally unacceptable, for constitutional or other reasons. It is quite possible that an unlawfully high demand from the plaintiff will greatly inflate the resulting award, and even if that award is itself within legal limits, there is something troublesome about allowing such a demand to be its "anchor" or basic source. A great deal of work remains to be done on the real-world effects of anchors when juries and judges are dealing with dollar amounts.

*Case-Based Decisions and Decision Costs.* Legal reasoning is pervasively analogical in character; judges often reason by reference to past

cases. Conventional economics offers some explanations; analogical reasoning, or at least respect for the past, can increase predictability and at the same time reduce decision costs for judges. But conventional approaches have yet to explain why reasoning "by analogy" is so pervasive.[23]

Behavioral law and economics provides some insight into why this might be so. If decision costs are put to one side, expected utility theory is demanding, simply because it is difficult to calculate the expected costs and benefits of alternatives. People often simplify their burdens by reasoning from past cases and by taking small, reversible steps. Economists have offered an account, behavioral in spirit but independent of law, of an alternative to expected utility theory: case-based decision theory (see Gilboa and Schmeidler, 1995). The account should be counted as a genuine (though apparently inadvertent) contribution to jurisprudence. Those who reason from past cases can reduce the burdens of thinking problems through from the ground up, and in a way that may minimize the sum of error costs and decision costs. An understanding of behavioral economics may in this sense illuminate some important aspects of legal reasoning.

### 4.5. Mapping Judgments Onto Dollars: "Scaling Without A Modulus"

Often the legal system requires judges or juries to make judgments of some kind and then to translate those judgments into dollar amounts. How does this translation take place? Can it be done well? Behavior evidence suggests that, in many contexts, normative judgments of a sort are both predictable and nonarbitrary (see Sunstein, Kahneman, and Schkade, 1998). With respect to bad behavior that might produce punitive damages, for example, people come up with relatively uniform judgments on a bounded numerical scale. At least it can be said that the judgment of any group of twelve people is a good predictor of the judgments of other groups of twelve people (see Sunstein, Kahneman, and Schkade, 1998). Similar findings have been made for environmental amenities in the context of contingent valuation (see Kahneman, Schkade, and Sunstein, 1998). But the act of mapping those normative judgments onto an unbounded dollar scale produces considerable "noise" and arbitrariness. When people are asked how much a defendant should be punished for reckless conduct

23. See the skeptical remarks in Richard Posner (1990, pp. 86–100).

leading to personal injury, the numbers they generate are highly variable, and the decision of any particular group of twelve people cannot well predict the judgments of other groups of twelve people (see Sunstein, Kahneman, and Schkade, 1998). This finding has been confirmed for deliberating juries, where the relevant effects are extremely pronounced.[24]

Insofar as this problem infects the award of damages, conventional economists need not be troubled, but many economists are enthusiastic about the process of contingent valuation, where similar problems have been shown to arise. When people are asked how much they are willing to pay to protect 2,000 birds, or 200 birds, the same kind of arbitrariness has been found (see Kahneman and Ritov, 1994). The apparent reason is that people have great trouble "scaling without a modulus," that is, they are not in a good position to generate predictable dollar amounts when they are not given a modulus, or standard, to compare with the case at hand. The problem of scaling without a modulus occurs in many areas in which juries (and judges) are asked to generate dollar amounts. It appears in areas not involving dollars as well. Consider, for example, the Americans with Disabilities Act, which makes it necessary to decide whether a suggested accommodation is "reasonable" and whether it creates an "undue hardship." There is great deal of variability in the law, not least because it is extremely hard to decide whether a particular accommodation is reasonable, or a particular hardship undue, without a modulus to cabin the inquiry. (Cost-benefit analysis would work as well.) Or consider the question of whether an occupational hazard creates a "significant risk" within the meaning of judicial interpretations of the Occupational Safety and Health Act. Without some kind of modulus, the bare idea of "significance" is a recipe for arbitrariness.

The legal system, however, frequently relies on the resulting highly variable and unreliable measures. Thus, the award of damages for libel, sexual harassment, and pain and suffering are infected by severe difficulties, as is the award of punitive damages in general. An understanding of those difficulties may well lead to concrete reform proposals. Perhaps the "mapping" can occur by a legislative or regulatory body that decides, in advance, on how a normative judgment made by a bounded numerical

24. The data have been collected and analyzed and will appear in a work in progress by Schkade, Sunstein, and Kahneman (forthcoming).

scale can be translated into dollars. From the theoretical point of view, the most ambitious work on these topics suggests that, in some settings, it is best to assume that people have "attitudes" rather than preferences and that attitudes have a distinctive structure and distinctive propensities (see Kahneman, Schkade, and Sunstein, 1998). As noted, one of the propensities of attitudes is toward a kind of "judgment reversal," as when, for example, two cases are seen one way in isolation (with injury A eliciting a higher punitive damage award than injury B, or harm A producing a higher contingent valuation than harm B), but a quite different way when the two cases are seen together (as the number for B becomes higher than the number for A) (see Kahneman, Ritov, and Schkade, 1999).

## 4.6. Decision Utility and Experience Utility, with General Notes on Paternalism

In conventional economics, it is often assumed that the utility of experience is best measured by the anticipated utility shown by people's decisions. But a good deal of recent research (see Kahneman, 1996; Loewenstein and Schkade, forthcoming) shows that there may well be systematic differences between the utility expected at the time of decision and the utility actually experienced as a result of decision. People's judgments about their experience at the time of decision can be mistaken; they may have a hard time assessing what the experience will actually be like.

There are many examples of this divergence between decision utility and experience utility. We can infer from the phenomenon of loss aversion that people value goods more when they own them than when they do not. This "endowment effect" has been observed in many settings (see Thaler, 1991, pp. 167–86). But in recent experiments, people have been unable to predict the endowment effect, and thus unable to predict their own tastes (see Loewenstein and Adler, 1995; Loewenstein and Schkade, forthcoming). Behaviorally informed analysts have argued that this point bears on when and whether to take workers' waivers of their legal rights as sufficiently informed (see Issacharoff, 1996). This finding is paralleled by many studies showing that people do not accurately predict the consequences of certain major events, such as winning the lottery or becoming paraplegic. (Winning the lottery produces much lower hedonic gains than expected, and people adjust to becoming paraplegic much more easily than expected [see Loewenstein and Schkade, forthcoming].)

An especially important example of inaccurate anticipated utility comes from a study dealing with HIV testing. People are quite terrified of their reaction if they find that they are HIV positive; they predict a high degree of panic and depression. But evidence suggests that people are able to adapt fairly well to the bad news, and their panic and depression are far less severe than they feared (see Sieff, Dawes, and Loewenstein, forthcoming). Pessimistic expectations about how they would react to a positive result might therefore lead people to "undertest"; people are likely to be especially averse to undergoing a process of which they are very fearful. It might follow that regulatory approaches—education, persuasion, financial incentives, conceivably coercion—would make a good deal of sense.

Some economists have urged that people have adequate information about the risks of smoking and that additional regulation is therefore inappropriate (see Viscusi, 1993). Perhaps most people do know many of the basic "facts." But a study of high school students suggests a problem. About one-third of adolescent smokers believed that there was no risk from smoking a pack of cigarettes daily for the first few years after starting to smoke. Young people who smoked believed that they were personally less at risk from smoking. And 85% of high school teenagers who smoked occasionally believed that they would not be smoking in five years, whereas only 58% had actually quit after five years, and 37% had increased their consumption. About 32% of those who smoked one pack daily believed that they would quit in five years, but only 13% did in fact (see Slovic, 1998).

When people's decisions mispredict their experience, a common argument against paternalism—to the effect that ordinary people choose what will promote their welfare—is no longer plausible. Frank (1999), for example, has argued that people often make purchases with the (false) thought that these purchases will make them happier; the fact of the systematic misjudgment makes him argue for a progressive consumption tax, which will lead people in more productive directions. The question is whether it will ultimately be possible to be systematic about issues of this kind—to know, with some precision, when people's decisions will produce bad experiences.

From what has been said thus far, it would be possible to think that behavioral law and economics leads to general sympathy for paternalism. If people make mistakes about probabilities, because of various biases and

heuristics, should the law not help them? And if people mispredict their own experience, is there not a great deal of room for paternalistic assistance, even or especially if we care about utility? But behavioral law and economics offers ambiguous answers to these questions, and certainly no full-blown defense of paternalism. To be sure, people's "revealed preferences" may not promote their well-being, and people are prone to make mistakes. But government is subject to similar errors. Indeed, the demand for law may produce the same kinds of problems that we find at the individual level, and it is even possible that those problems will be amplified by social influences and interest-group mobilization (see Kuran and Sunstein, 1999). The cognitive errors made by ordinary people do seem to be replicated in statutory and administrative law (see Viscusi, 1992, p. 149).

It is probably best to think that behavioral economics produces less basis for paternalism than for anti-antipaternalism, or in other words for a pragmatic and empirical, rather than a dogmatic and a priori, inquiry into whether government should disrupt individual choices (see Jolls, Sunstein, and Thaler, 1998, pp. 1541–44). There is also good reason to consider institutional arrangements that might insulate government from some of the unfortunate effects of cognitive and motivational errors. One of the chief advantages of bureaucracy, at least in principle, is that it can ensure that judgments will be based on facts rather than intuitions, in such a way as to reduce the problems introduced by biases and heuristics (see Kuran and Sunstein, 1999).

## 5. The Future

Behavioral law and economics remains in its early stages, and an enormous amount remains to be done. For example, it is important to know the circumstances in which people act quasi-rationally or instead rationally. Perhaps markets, or market-like institutions, can lead people in the direction of rationality. There is also a question whether behavioral law and economics might not be too unruly to count as a "theory" at all; perhaps it is simply a collection of effects. Finally, it is important to know what strategies might be used to "debias" agents, or to help them to overcome cognitive and motivational limitations.

## 5.1. Parsimony and Predictions

A possible objection to behavioral law and economics is that it is not a theory at all but an unruly collection of phenomena and effects, often based on ad hoc or unreliable evidence, and in any event lacking predictive power. If behavioral law and economics points to a long list of heuristics, and an equally long list of biases, and a complicated utility function, isn't it doomed to ex post accounts? Isn't it better to work with the simpler tools of conventional economics, just because of their simplicity?[25]

Probably the best brief conclusion is that it is unproductive to see a *general* struggle between economic analysis of law and behavioral law and economics. The question is what kinds of assumptions produce good predictions about the effects of law, and this will vary with context. Sometimes the simple assumptions of conventional analysis work entirely well; sometimes it is necessary to introduce complications by, for example, saying a bit more about what is counted in the utility function (such as a desire to be treated fairly, and a willingness to punish those who act unfairly), or incorporating bounded rationality (in the form, for example, of optimistic bias or anchoring).

Parsimonious assumptions have helped to identify the effects of (to take just a few examples) rent control; increases in the cost of labor (through the minimum wage, occupational safety and health, and related legislation); statutes forbidding discrimination on the basis of age, race, and sex; legal controls on new (as opposed to old) pollution sources; and much more. In some settings, a great deal can be learned with the conventional tools, and it is not necessary to introduce further complications. For example, it is far from clear that behavioral economics can add much to analysis of the effects of the minimum wage.[26]

Jolls, Sunstein, and Thaler (1998, pp. 1487–89) suggest, however, that conventional economics sometimes achieves parsimony at the expense of predictive power, which is absent when predictions are false or when no predictions are offered at all. Behavioral law and economics promises to

25. This section borrows from and adapts some of the discussion in Jolls, Sunstein, and Thaler (1998, pp. 1487–89); here, as elsewhere, Jolls and Thaler should not be blamed for errors.

26. Of course, this cannot be determined a priori. For example, an announcement of an increase in the minimum wage might have a more-than-expected effect on the supply of labor, because of information-processing issues.

be an improvement when it offers better predictions, even if with less parsimonious tools.

The most ambitious goal of conventional economics of course is to provide a unitary theory of behavior. By itself, however, the notion of "rationality" (the centerpiece of traditional analysis) provides no unitary theory. The term is quite ambiguous, at least until it is specified. In conventional economic analysis of law, it is sometimes unclear whether the term means that people respond to incentives; that their decisions promote their welfare; that they are self-interested; that they choose the best means to achieving their goals, whatever their goals are; that they are consistent; that they behave in accordance with expected utility theory; that they are in some sense optimizers. Behavioral research has raised serious questions about most of these, at least as an empirical matter (see Tversky, 1996).

For many uses of rationality in law, the crucial task is to specify what counts as a cost and a benefit for the relevant agents. Is it a puzzle that people vote? That they vote in snowstorms? That they use drugs in college? That they use drugs more if they think most of their friends use drugs? That they engage in unprotected sex? That they engage in more, or less, unprotected sex when the risk of HIV infection increases? These are questions about the content of the relevant utility function; without knowing what people count as costs and benefits, the idea of responsiveness to incentives is empty.[27]

These puzzles cannot be evaluated in the abstract. In many areas relevant to law, it is not necessary to worry a great deal about the content of people's utility functions or about quasi-rationality; as I have noted, conventional theory has enjoyed important successes. Whether it is sufficient depends on the particular prediction and what the evidence shows. The point here is that sometimes the theory leads to false predictions and sometimes (when the underlying notions are not specified and disciplined) to no predictions.

27. Jolls, Sunstein, and Thaler write: "For example, consider whether it is a paradox (as many economists think) if many people vote. If it is a paradox, so much the worse for the rationality assumption; if it is not a paradox, what does the assumption predict? Does it merely predict that people will respond to changes in conditions—for example, fewer people will vote when it is snowing? If so, the prediction is not bad, but surely it would be possible to say, after an unusually large vote amidst the storm, that more people voted simply because voting seemed expecially valiant in those circumstances (so much for predictions based on this form of rationality)" (1998, p. 1489).

But none of this supports behavioral economics. And it is true that in its current state, behavioral economics is not a unitary theory, and partly because of the sheer number of biases and heuristics, there are contexts in which it is unable to make firm ex ante predictions. Might a loss-averse person succumb to unrealistic optimism and engage in some kind of otherwise inexplicable gamble? And do we know what to predict when unrealistic optimism and loss aversion point in different directions?

From the standpoint of positive theory, problems are certainly caused by the sheer number of the effects that make up behavioral economics. Some social theorists believe that, in the social sciences, the search for lawlike generalizations is futile and that it is possible only to come up with "mechanisms," which do not permit reliable predictions.[28] It may well be that some of behavioral law and economics will consist of ex post descriptions of outcomes rather than genuine predictions. Analysis of this kind is hardly worthless. And if this pessimistic view is not justified, the only solution is to acquire more information, and to go back and forth between data and theory, so as to see whether it is possible to know the circumstances in which one or another effect is more likely to be at work. A great deal remains to be done, not least in predicting conduct when more than one effect is likely to be at work.

But even for the moment, those interested in behavioral law and economics do not lack predictions. For example, they will predict that, other things being equal, the incidence of some cooperative activity (voting, recycling, not smoking, not abusing drugs) is likely to increase when it is perceived that most people are contributing. There is strong evidence to this effect (see Perkins, 1997, pp. 177–206). They will also predict that highly publicized incidents will have an extremely large effect on the public demand for regulation. There is strong evidence to this effect as well (see Kuran and Sunstein, 1999). They will predict, finally, that losses from the status quo will register as more important than equivalent gains and that this will affect individual reactions to law and also the demand for law. There is also evidence that this is true (see Section 3 above).[29]

28. Jon Elster is the most influential advocate of this view. See Elster (1998, chap. 1).

29. A set of predictions about the effects of dollar responses can be found in Kahneman, Ritov, and Schkade (1999).

## 5.2. From Quasi-Rationality to Rationality?

A second objection has to do with the domain of behavioral law and economics. Might it not be the case that markets, for example, will turn quasi-rational agents into fully rational agents? Work on the endowment effect has shown that there is no such effects for tokens. The point suggests that where goods are fully fungible—as in ordinary markets?—the endowment effect may be irrelevant. It is also clear that markets will tend to counteract some of the tendencies that we have discussed. It might seem, for example, that people who are unrealistically optimistic, or who are readily manipulated, will not do well in managing large companies.

In some circumstances, market forces are indeed strong enough to make behavioral economics irrelevant for predictive purposes. Then the question becomes whether it is possible to identify those circumstances. This is a large question, and we lack authoritative answers. When there are repeated decisions, and when people have an opportunity to learn, the conventional approach is more likely to be successful. But this statement leaves many questions unanswered, and, as I have suggested, behavioral economics has a role to play in markets and market-like settings as well. A great deal of work remains to be done on this topic.

## 5.3. Debiasing and Institutional Solutions

A final question involves the extent to which education or other debiasing strategies can counteract cognitive and motivational distortions so as to eliminate some of the effects described above. Is it possible for those involved in law to push people toward greater rationality, in the process, perhaps, lengthening human lives? What institutions work best at reducing the effects of biases? Would a broader understanding of behavioral economics produce learning and thus make it less necessary to use behavioral economics?

There is some work on these questions. Unfortunately, the relevant work tends to show that quasi-rationality is robust and that it is hard to do much about it. Even experts are susceptible to most of the effects discussed here (see Baron, 1994). With respect to self-serving bias, it does not do much good to ask people to read and consider both sides of an argument; once people know what side they are on, their views seem entrenched, and a reading of competing views seems only to strengthen their convictions (in a form of "confirmatory bias"). The only intervention

that seems to work is to require people to make their own arguments for the other side (see Babcock, Loewenstein, and Issacharoff, 1993). The good news is that some of these effects, such as a taste for fairness, should not be characterized as distortions; on the contrary, such tastes may help solve prisoners' dilemmas, and it is striking to see that economics majors are less likely to adhere to fairness norms that produce solutions (see Frank, 1993). (Perhaps economics majors, and law students immersed in conventional economics, need to be "debiased"!)

If debiasing generally does not work, we might think that social forces, market and nonmarket, might press individuals and institutions in the direction of metadecisions, or second-order decisions, that will make it more likely that things will go well. We might expect, for example, boundedly rational agents to come up with institutions that will overcome their own bounded rationality. They might, for example, make a second-order decision in favor of rules, so as to reduce the errors produced with on-the-spot decisions (see Sunstein and Ullmann-Margalit, 1999). We might expect social institutions to help counteract some of the relevant problems; certainly an evolutionary account would so suggest.

There is some affirmative evidence here. For example, the legal system contains mechanisms to reduce the problems associated with hindsight bias (see Rachlinski, 1998). It also appears responsive to the difference between out-of-pocket costs and opportunity costs (Cohen and Knetsch, 1992). Many legal institutions might be investigated in an effort to see whether and how they overcome some of the difficulties discussed here. Such an investigation might even reveal an implicit understanding of behavioral economics on the part of those involved in the legal system.

## 5.4. The Future

Behavioral law and economics is obviously flourishing; but it remains, in its early stages, perhaps not so different from that of conventional law and economics in, say, 1971. No treatise organizes the field, and a great deal of further research remains to be done, theoretical and empirical. For example, there is no systematic work on the relationship between damage awards and the various ingredients of cases involving libel, sexual harassment, and intentional infliction of emotional distress. There is only preliminary work on the role of "anchors" in awards by juries and judges. Nor is there much work on the relationship between legal rules and reciprocity

and on the important question whether and how legal rules might solve prisoner's dilemmas without requiring large levels of public enforcement activity. Under what circumstances does a legal provision (for example, one that bans smoking or requires recycling) become self-enforcing? We lack much information about whether and how legal rules change preferences themselves; this is a promising area for both experimental and empirical work. Nor do we know a great deal about the effects of social institutions in overcoming cognitive and motivational limitations.

There can be no question that human beings care about fairness, that they can be myopic, and that they exhibit bounded rationality. The questions for the future are whether an understanding of the underlying phenomena can lead to better predictions about the effects of law, more reliable prescriptions about how law might promote social goals, and more refined judgments about when the legal system should respect or reject individual choices.

## References

Akerlof, George. 1982. "Labor Contracts as Partial Gift Exchange," 97 *Quarterly Journal of Economics* 543–69.

———. 1984. *An Economic Theorist's Book of Tales*. Cambridge: Cambridge University Press.

———. 1991. "Procrastination and Obedience," 81 *American Economics Review* 1–19.

Arkes, Hal, and Kenneth Hammond. 1996. *Judgment and Decision Making: An Interdisciplinary Reader*. Cambridge: Cambridge University Press.

Arrow, Kenneth. 1986. "Rationality of Self and Others in an Economic System," 59 *Journal of Business* S385–99.

Axelrod, Robert M. 1984. *The Evolution of Cooperation*. New York: Basic.

Babcock, Linda, and George Loewenstein. 1997. "Explaining Bargaining Impasse: The Role of Self-Serving Biases," 11 *Journal of Economic Perspectives* 109–36.

Babcock, Linda, George Loewenstein, and Samuel Issacharoff. 1993. "Creating Convergence: Debiasing Biased Litigants," 23 *Law and Social Inquiry* 913–25.

Babcock, Linda, George Loewenstein, Samuel Issacharoff, and Colin Camerer. 1995. "Biased Judgments of Fairness in Bargaining," 85 *American Economics Review* 1337–43.

Babcock, Linda, Xianghong Wang, and George Loewenstein. 1996. "Choosing the Wrong Pond: Social Comparisons in Negotiations that Reflect a Self-Serving Bias," 111 *Quarterly Journal of Economics* 1–19.

Baker, Lynn, and Robert Emery. 1993. "When Every Relationship Is Above Average: Perceptions and Expectations of Divorce at Time of Marriage," 17 *Law and Human Behavior* 439–50.

Baron, Jonathan. 1994. *Thinking and Deciding*. 2nd ed. Cambridge: Cambridge University Press.

Bauman, Laurie, and Karolyn Siegel. 1987. "Misperception among Gay Men of the Risk for AIDS Associated with Their Sexual Behavior," 17 *Journal of Applied Social Psychology* 329–50.

Baumeister, Roy F. 1998. "The Self," in Daniel T. Gilbert et al., eds., 1. *The Handbook of Social Psychology*. New York: Oxford University Press.

Becker, Gary. 1997. *Accounting for Tastes*. Cambridge, MA: Harvard University Press.

Benartzi, Shlomo, and Richard Thaler. 1995. "Myopic Loss Aversion and the Equity Premium Puzzle," 110 *Quarterly Journal of Economics* 73–92.

Bohnet, Iris, and Bruno Frey. 1999. "Social Distance and Other-Regarding Behavior in Dictator Games," 89 *American Economics Review* 335–39.

Camerer, Colin. 1990. "Behavioral Game Theory," in Robin Hogarth, ed., *Insight in Decision Making*. Chicago: University of Chicago Press.

———. Forthcoming. "Prospect Theory in the Wild: Evidence from the Field," in Daniel Kahneman and Amos Tversky, eds., *Choices, Values, and Frames*.

Camerer, Colin, and Dan Lovallo. 1999. "Overconfidence and Excess Entry: An Experimental Approach," 89 *American Economics Review* 306–18.

Chapman, Gretchen, and Brian Bornstein. 1996. "The More You Ask For, The More You Get," 10 *Applied Cognitive Psychology* 519–40.

Cohen, David, and Jack Knetsch. 1992. "Judicial Choice and Disparities between Measures of Economic Values," 30 *Osgoode Hall Law Journal* 737–70.

Conlisk, John. 1996. "Why Bounded Rationality?" 34 *Journal of Economic Literature* 669–700.

Dawes, Robyn M. 1998. "Behavioral Decision Making and Judgment," in Daniel T. Gilbert et al., eds., 1 *The Handbook of Social Psychology*. New York: Oxford University Press.

Ellickson, Robert. 1991. *Order without Law*. Cambridge, MA: Harvard University Press.

Elster, Jon. 1998. *Rationality and the Emotions*. Cambridge: Cambridge University Press.

Farnsworth, Ward. 1999. "Do Parties to Nuisance Suits Bargain after Judgments?" 6 *University of Chicago Law Review* 373–436.

Fehr, Ernst, and Simon Gachter. 1998. "How Effective Are Trust- and Reciprocity-Based Incentives," in Avner Ben-Ner and Louis Putterman, eds., *Economics, Values, and Organization*. Cambridge: Cambridge University Press.

Frank, Robert. 1993. "Does Studying Economics Inhibit Cooperation?" 7 *Journal of Economics Perspectives* 159–71.

———. 1999. *Luxury Fever*. New York: Free Press.

Frank, Robert, and Phillip Cook. 1995. *The Winner-Take-All Society*. New York: Free Press.

Gilboa, Itzhak, and David Schmeidler. 1995. "Case-Based Decision Theory" 110 *Quarterly Journal of Economics* 605–39.

Gneezy, Uri, and Aldo Rustichini. Forthcoming. "A Fine Is a Price," *Journal of Legal Studies*.

Goldstein, William, and Robin Hogarth. 1997. *Research on Judgment and Decisionmaking*. Cambridge: Cambridge University Press.

Gregory, Robin, Sarah Lichtenstein, and Donald MacGregor. 1993. "The Role of Past States in Determining Reference Points for Policy Decisions," 55 *Organizational Behavior and Human Decision Processes* 195–206.

Hirshleifer, David. 1995. "The Blind Leading the Blind: Social Influence, Fads, and Informational Cascades," in Mariano Tammasi and Kathryn Ierulli, eds., *The New Economics of Human Behavior.* Chicago: University of Chicago Press.

Hoffman, Elizabeth, and Matthew Spitzer. 1993. "Willingness to Pay vs. Willingness to Accept: Legal and Economic Implications," 71 *Washington University Law Quarterly* 59–114.

Houston, Christopher, and Cass R. Sunstein. 1999. "Risk Allocation among Law Students," *Journal of Legal Education* (forthcoming).

Issacharoff, Samuel. 1996. "Contracting for Employment: The Limited Return of the Common Law," 74 *Texas Law Review* 1783–1812.

Jolls, Christine. 1996. "Hands Tying and the Age Discrimination in Employment Act," 74 *Texas Law Review* 1813–46.

———. 1998. "Behavioral Economics Analysis of Redistributive Legal Rules," 51 *Vanderbilt Law Review* 1653–77.

Jolls, Christine, Cass R. Sunstein, and Richard H. Thaler. 1998. "A Behavioral Approach to Law and Economics," 50 *Stanford Law Review* 1471–1550.

Kagel, John H., Raymond C. Battalio, and Leonard Green. 1995. *Economic Choice Theory: An Experimental Analysis of Animal Behavior*. Cambridge: Cambridge University Press.

Kagel, John, and Alvin Roth, eds. 1994. *Handbook of Experimental Economics*. Princeton, NJ: Princeton University Press.

Kahneman, Daniel. 1996. "New Challenges to the Rationality Assumption," in Kenneth J. Arrow, Enrico Colombatto, Mark Perlman, and Christian Schmidt, eds., *The Rational Foundations of Economic Behavior*. New York: St. Martin's Press.

Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. 1986a. "Fairness and the Assumptions of Economics," 59 *Journal of Business* S285–324.

Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. 1986b. "Fairness as a Constraint on Profit-Seeking: Entitlements in the Market," 76 *American Economics Review* 728–41.

Kahneman, Daniel, and Ilana Ritov. 1994. "Determinants of Stated Willingness to Pay for Public Goods," 9 *Journal of Risk and Uncertainty* 5–30.

Kahneman, Daniel, Ilana Ritov, and David Schkade. 1999. "Economic Preferences or Attitude Expressions? An Analysis of Dollar Responses to Public Issues," *Journal of Risk and Uncertainty* (forthcoming).

Kahneman, Daniel, David Schkade, Ilana Ritov, and Cass R. Sunstein. 1999. *Reversals of Judgment: The Effect of Cross-Category Comparisons on Intendedly Absolute Scales* (unpublished manuscript).

Kahneman, Daniel, David Schkade, and Cass R. Sunstein. 1998. "Shared Outrage and Erratic Awards: The Psychology of Punitive Damages," 16 *Journal of Risk and Uncertainty* 49–86.

Kahneman, Daniel, Paul Slovic, and Amos Tverskey, eds. 1982. *Judgment under Uncertainty: Heuristics and Biases*. Cambridge: Cambridge University Press.

Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision Under Risk," 47 *Econometrica* 263–92.

Kelman, Mark, Yuval Rottenstreich, and Amos Tversky. 1996. "Context-Dependence in Legal Decisionmaking," 25 *Journal of Legal Studies* 287–318.

Korobkin, Russell. 1998a. "Inertia and Preference in Contract Negotiation," 51 *Vanderbilt Law Review* 1583–1651.

———. 1998b. "The Status Quo Bias and Contract Default Rules," 83 *Cornell Law Review* 608–87.

Kuran, Timur. 1995. *Private Truths, Public Lies*. Cambridge, MA: Harvard University Press.

———. 1998. "Moral Overload and Its Alleviation, in Economics, Values, and Organization," in Avner Ben-Ner and Louis Putterman, eds., *Economics, Values and Organizations*. Cambridge: Cambridge University Press.

Kuran, Timur, and Cass R. Sunstein. 1999. "Availability Cascades and Risk Regulation," 51 *Stanford Law Review* 1131–92.

Langevoort, Donald. 1997. "Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (And Cause Other Social Harms)," 146 *University of Pennsylvania Law Review* 101–72.

———. 1998. "Behavioral Theories of Judgment and Decision-Making in Legal Scholarship: A Literature Review," 51 *Vanderbilt Law Review* 1499–54.

Lichtenstein, Sarah, and Paul Slovic. 1971. "Reversals of Preference between Bids and Choices in Gambling Decisions," 89 *Journal of Experimental Psychology* 46–55.

Loewenstein, George, and Daniel Adler. 1995. "A Bias in the Prediction of Tastes," 105 *Economic Journal* 929–37.

Loewenstein, George, Samuel Issacharoff, Colin Camerer, and Linda Babcock. 1993. "Self-Serving Assessments of Fairness and Pretrial Bargaining," 22 *Journal of Legal Studies* 135–59.

Loewenstein, George, and Nachum Sicherman. 1991. "Do Workers Prefer Increasing Wage Profiles," 9 *Journal of Labor Economics* 67–84.

Loewenstein, George and David Schkade. Forthcoming. "Wouldn't It Be Nice? Predicting Future Feelings," in E. Diener, N. Schwartz, and D. Kahneman, eds., *Hedonic Psychology: Scientific Approaches to Enjoyment, Suffering, and Well-Being,* New York: Sage.

McCaffery, Edward J., Daniel Kahneman, and Matthew Spitzer. 1995. "Framing the Jury: Cognitive Perspectives on Pain and Suffering Awards," 81 *Virginia Law Review* 1341–1420.

Noll, Roger G., and James E. Krier. 1990. "Some Implications of Cognitive Psychology for Risk Regulation," 19 *Journal of Legal Studies* 747–79.

Odean, Terrance. 1998. "Are Investors Reluctant to Realize Their Losses?" 53 *Journal of Finance* 1775–98.

Perkins, H. Wesley. 1997. "College Student Misperceptions of Alcohol and Other Drug Norms among Peers: Exploring Causes, Consequences, and Implications for Prevention Programs," in *Designing Alcohol and Other Drug Prevention Programs in Higher Education: Bringing Theory into Practice.*

Posner, Eric A. 1998. "Symbols, Signals, and Social Norms in Politics and the Law," 27 *Journal of Legal Studies* 765–98.

Posner, Richard A. 1990. *The Problems of Jurisprudence.* Cambridge, MA: Harvard University Press.

———. 1996. *Aging and Old Age.* Cambridge, MA: Harvard University Press.

———. 1998. *Economic Analysis of Law,* 5th ed. Boston: Aspen Law & Business.

Rabin, Matthew. 1993. "Incorporating Fairness into Game Theory and Economics," 83 *American Economics Review* 1281–1302.

———. 1994. "Cognitive Dissonance and Social Change," 23 *Journal of Economic Behavior and Organization* 177–94.

———. 1996. "Psychology and Economics," 36 *Journal of Economic Literature* 11–46.

Rachlinski, Jeffrey J. 1996. "Gains, Losses, and the Psychology of Litigation," 70 *Southern California Law Review* 113–85.

———. 1998. "A Positive Psychological Theory of Judging in Hindsight," 65 *University of Chicago Law Review* 571–625.

Rachlinski, Jeffrey, and Forest Jourden. 1998. "Remedies and the Psychology of Ownership," 51 *Vanderbilt Law Review* 1541–82.

Redelmeier, Donald A., Paul Rozin, and Daniel Kahneman. 1993. "Understanding Patients' Decisions," 270 *Journal of the American Medical Association* 72–76.

Schkade, David, Cass R. Sunstein, and Daniel Kahneman. Forthcoming. "Are Juries More Erratic than Individuals?" *Columbia Law Review.*

Sieff, Elaine M., Robyn M. Dawes, and George Loewenstein. Forthcoming. "Anticipated versus Actual Reaction to HIV Test Results," *American Journal of Psychology.*

Slonim, Robert, and Alvin Roth. 1998. "Learning in High Stakes Ultimatum Games," 66 *Econometrica* 569–96.

Slovic, Paul. 1995. "The Construction of Preference," 50 *American Psychologist* 364–71.

———1998. "Do Adolescent Smokers Know the Risks?" 45 *Duke Law Journal* 1133–45.

Sunstein, Cass R. 1997a. "Behavioral Analysis of Law," 64 *University of Chicago Law Review* 1175–95.

———. 1997b. *Free Markets and Social Justice.* Oxford: Oxford University Press.

———, ed. Forthcoming. *Behavioral Law and Economics.* Cambridge: Cambridge University Press.

Sunstein, Cass R., Daniel Kahneman, and David Schkade. 1998. "Assessing Punitive Damages," 107 *Yale Law Journal* 2071–152.

Sunstein, Cass R., and Edna Ullmann-Margalit. Forthcoming. "Second-Order Decisions," *Ethics.*

Taylor, Shelley. 1989. *Positive Illusions.* New York: Basic Books.

Thaler, Richard H. 1991. *Quasi-Rational Economics.* New York: Sage.

———. 1992. *The Winner's Curse.* Princeton, NJ: Princeton University Press.

———. 1996. "Doing Economics without Homo Economicus," in Steven G. Medema and Warren J. Samuels, eds., *Foundations of Reseach in Economics.* New York: Elgar Publishing.

Tversky, Amos. 1996. "Rational Theory and Constructive Choice," in Kenneth Arrow et al., eds., *The Rational Foundations of Economic Behavior.* London: MacMillan.

Viscusi, W. Kip. 1992. *Fatal Tradeoffs.* New York: Oxford University Press.

———. 1993. *Smoking: Making the Risky Decision.* New York: Oxford University Press.

Weinstein, Neil D. 1989. "Optimistic Bias about Personal Risks," 246 *Science* 1232.

Worth, E. 1995. "Note: In Defense of Targeted ERIPS: Understanding the Interaction of Life-Cycle Employment and Early Retirement Incentive Plans," 74 *Texas Law Review* 411–45.