Behavioral Law and Economics

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Introduction

Cass R. Sunstein

How does law actually affect people? What do people do in response to the law? Why is the law as it is? How can law be enlisted to improve people's lives? This book attempts to provide some answers. It is also the first general effort to bring behavioral economics to bear on the analysis of law.

In the last two decades, social scientists have learned a great deal about how people actually make decisions. Much of this work requires qualifications of rational choice models, which have dominated the social sciences, including the economic analysis of law. Those models are often wrong in the simple sense that they yield inaccurate predictions. People are not always "rational" in the sense that economists suppose. But it does not follow that people's behavior is unpredictable, systematically irrational, random, rule-free, or elusive to social scientists. On the contrary, the qualifications can be described, used, and sometimes even modeled.

The purpose of this book is to bring new and more accurate understandings of behavior and choice to bear on law. The purpose of this introduction is to say something about the field and about the book's structure and content.

Constructed Preferences

Human preferences and values are constructed rather than elicited by social situations.[1] People do not walk around with menus in their heads: "[O]bserved preferences are not simply read off some 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."[2] Human beings do not generally consult a freestanding "preference menu" from which selections are made at the moment of choice; preferences can be a product of procedure, description, and context at the time of choice: "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."[3]

Analysis of law should be linked with what we have been learning about human behavior and choice. After all, 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 (as suggested by Chapter 2). In this respect the preferences and values of judges and juries can be constructed, not elicited, by the legal system. Certainly this is true for the award of damages, where special problems may arise. But similar points hold outside of the courtroom. The legal system's original allocation of entitlements, and the structures created for exchange (or nonexchange) by law, may well affect people's preferences and values (as suggested by a number of papers in Part II). 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.

We might distinguish among three different tasks of those interested in law: positive, prescriptive, and normative. Positive work is concerned with predictions. What will be the effects of law? Why does law take the form it does? If, contrary to conventional assumptions, people dislike losses far more than they like equivalent gains, predictions will go wrong insofar as they rest on conventional economic assumptions. As we will see, this point has important implications for positive analysis of law, prominently including the Coase Theorem, for which Ronald Coase received the Nobel Prize; indeed, behavioral law and economics shows that the Coase Theorem is often wrong (See chapters 8 and 10).

Prescriptive work is concerned with showing how society might actually reach our shared goals. If we want to decrease poverty, or save more lives, or decrease pollution, how can we do it? Consider the following information campaigns, which conventional analysis deems equivalent. (1) If you use energy conservation methods, you will save $X per year. (2) If you do not use energy conservation methods, you will lose $X per year. It turns out that information campaign (2) is far more effective than information campaign (1).[4] As we will see, important features of human judgment, properly understood, undermine conventional thinking about what will work best; they help explain, to take just one example, precisely why the public service advertising slogan "Drive defensively; watch out for the other guy" is particularly ingenious.

Normative work is of course concerned with what the legal system should do. Recent revisions in understanding human behavior greatly unsettle certain arguments against paternalism in law. They certainly do not make an affirmative case for paternalism, but they support a form of anti-anti-paternalism. If, for example, people use heuristic devices that lead to systematic errors, their judgments about how to deal with risks may be badly misconceived. If people are unrealistically optimistic, they may run risks because of a factually false belief in their own relative immunity from harm, even if they are fully aware of the statistical facts. And if people's choices are based on incorrect judgments about their experience *after choice*, there is reason to question whether respect for choices, rooted in those incorrect judgments, is a good way to promote utility or welfare. None of these points make a firm case for legal paternalism, not least because bureaucrats may be subject to the same cognitive and motivational distortions as everyone else. But they suggest that objections to paternalism should be empirical and pragmatic, having to do with the possibility of education and likely failures of government response, rather than being a priori in nature.

Heuristics and Biases

The first part of the book is concerned with heuristics and biases. It is now well established that people make decisions on the basis of heuristic devices, or rules of thumb, that may work well in many cases but that also lead to systematic errors. It is also well established that people suffer from various biases and aversions that can lead to inaccurate perceptions. Here is a very brief description of several biases and heuristics of particular relevance to law.

Biases

Extremeness Aversion. People are averse to extremes. Whether an option is extreme depends on the stated alternatives (See Chapter 2). 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 most expensive item. In this as in other respects, the framing of choice matters; the introduction of (unchosen, apparently irrelevant) alternatives into the frame can alter the outcome. When, for example, people are choosing between some small radio A and a midsized 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.

Extremeness aversion suggests that a simple axiom of conventional economic theory – involving the irrelevance of added, unchosen alternatives –

is wrong. It also has large 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? This should be a central question for advocates to answer. 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.

Hindsight Bias. According to a familiar cliché, hindsight has 20-20 vision. The cliché turns out to hold an important truth, one with considerable relevance to law. A great deal of evidence suggests that people often think, in hindsight, that things that happened were inevitable, or nearly so. 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. Chapter 3 discusses hindsight bias in detail.

Optimistic Bias. Human beings tend to be optimistic. By itself this seems to be good news; but it can lead them to make big mistakes. Even factually informed people tend to think that risks are less likely to materialize for themselves than for others. Thus 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 automobile accidents, infection from AIDS, heart attacks, asthma, and many other health risks.[5] 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.[6] As Chapter 1 suggests, unrealistic optimism creates a distinctive problem for conventional objections to paternalism in law. If people tend to believe that they are relatively free from risks, they may lack accurate information even if they know statistical facts. As Chapters 5 and 11 suggest, optimistic bias is relevant to a number of areas of law and has some surprising implications.

Status Quo Bias. People tend to like the status quo, and they demand a great deal to justify departures from it. More specifically, people evaluate situations largely in accordance with their relation to a certain reference point; gains and losses from the reference point are crucial. This is a central finding of prospect theory. In law, an ordinary reference is the status quo, which produces status quo bias, an important phenomenon for the law; Chapter 4 discusses the relationship between contract law and status quo bias.

Heuristics

Behavioral economists and cognitive psychologists have uncovered a wide array of heuristic devices that people use to simplify their tasks.

Availability. People tend to think that risks are more serious when an incident is readily called to mind or "available." If pervasive, the availability heuristic will produce systematic errors. 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. The availability heuristic appears to affect the demand for law (see Chapters 1, 13, and 15).

Anchoring. Often people make probability judgments on the basis of an initial value, or "anchor," for which they make insufficient adjustments.[7] The initial value may have an arbitrary or irrational source. When this is so, the probability 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.

Case-based Decisions. Because it is often difficult to calculate the expected costs and benefits of alternatives, people often simplify their burdens by reasoning from past cases,[8] and by taking small, reversible steps. This form of "case-based decision" plays an important role in courts, which tend to think analogically (see Chapter 7).

The various biases and heuristics raise a large question: Can individuals and institutions make metadecisions, or second-order decisions, that will make it more likely that things will go well? Chapter 7 discusses a number of possibilities.

Valuation

The second part of the book deals with valuation. How do people react to gains and to losses? The legal system frequently deals with dollars; can people think well about dollars? What are the characteristics of their thinking?

Loss Aversion. People are especially averse to losses. They are more displeased with losses than they are pleased with equivalent gains – roughly speaking, twice as displeased. Contrary to economic theory, people do not treat out-of-pocket costs and opportunity costs as if they were equivalent.

Loss aversion has important implications for positive analysis of law. It means, for example, that the Coase Theorem is in one respect quite wrong. Recall that the Coase Theorem proposes that when transaction 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 is wrong because the allocation of the legal entitlement may well matter, for those who are initially allocated an entitlement are likely to value it more than will those without the legal entitlement. Thus 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 (tradable) right to discharge at will. 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. The legal entitlement creates an *endowment effect*, that is, a greater valuation stemming from the mere fact of endowment. Chapters 8, 10, 12, and 13 relate this finding to a number of legal issues.

There is a further point. 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 how the event is framed. The status quo is usually the reference point, so that losses are understood as such by reference to existing distributions and practices; but it is possible to manipulate 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 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 to people's choices.[9]

For present purposes, the most important source of reference points is the law – where has the legal system placed the initial entitlement? Much of Part II discusses the effects of this initial allocation.

Loss aversion also raises serious questions about the goal of 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? Juries appear to believe that the amount that would be demanded pre-injury 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. Chapter 10 treats this issue in detail.

Mental Accounting. A simple and apparently uncontroversial assumption of most economists is that money is fungible. But the assumption is false. Money comes in compartments. 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. A glance at ordinary practice shows that people often organize decisions in terms of separate budgets and accounts. Thus 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, and the practice of mental accounting has a range of implications for law and policy. It suggests, for example, that government may be able to create certain mental accounts by creative policy making. It also suggests that there may 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. 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, but lawyers will not understand those mechanisms well unless they see that money itself is not fungible. Chapter 11 deals with mental accounting in the context of legal rules.

The Difficulty, Outside of Markets, of Mapping Normative Judgments Onto Dollars. 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? Chapter 9 suggests that in many contexts, normative judgments of a sort are both predictable and nonarbitrary. With respect to bad behavior that might produce punitive damages, for example, people come up with relatively uniform judgments on a bounded numerical scale. Similar findings have been made for environmental amenities in the context of contingent valuation. But the act of mapping those normative judgments onto an unbounded dollar scale produces considerable "noise" and arbitrariness. When people are asked how much they are willing to pay to protect two thousand birds, or how much a defendant should be punished for reckless conduct leading to personal injury, the numbers they generate seem to be stabs in the dark.

The legal system, however, frequently relies on just those stabs. Thus the award of damages for libel, sexual harassment, and pain and suffering is affected 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 scale can be translated into dollars.

The Demand for Law

The third part of the book deals with the demand for law. Why is law as it is? Behavioral law and economics provides some distinctive answers.

Self-serving bias. People's judgments about fairness are self-serving, and they tend to be both unrealistically optimistic and overconfident about their judgments. 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 percent. The point bears on the otherwise largely inexplicable phenomenon of bargaining impasses (see Chapter 14). Why don't more cases settle? Why does the legal system spend so much on dispute settlement? 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.

Cooperation, Fairness, Spite, and Homo Reciprocans. 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. This is sometimes true, and often it is a useful simplifying assumption. But people also may want to be treated fairly and 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. Rather than being *homo economicus*, people may be *homo reciprocans*.[10]

Consider, for example, the ultimatum game (discussed in Chapter 1). 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 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 percent of the total. Offers of less than 20 percent are often rejected. Often there is a 50-50 division. These results cut across the level of the stakes and also across diverse cultures.

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. Do companies always raise prices when circumstances create short-term scarcity? For example, are there social constraints on price increases for snow shovels after a snowstorm, or for umbrellas during a rainstorm? It may well be that contracting parties are reluctant to take advantage of misfortune, partly because of social constraints on self-interested behavior. Here there is much room for future work. Experimental work shows a high degree of cooperation in Prisoner's Dilemma situations, especially when people are speaking

with one another.[11] Chapter 12 shows that acrimony, or spite, can play an important role in determining legal outcomes.

Availability Again and Social Influences. We have seen that people make judgments about probability on the basis of judgments about available or easily retrievable instances. Moreover, the availability heuristic operates in an emphatically social environment. People often think and do what (they think) other people think and do. Partly this is because when a person lacks much personal information, he will sensibly rely on the information of others. If you don't 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. 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 (see Chapter 15).

The Future

Behavioral law and economics is in its very early stages, and an enormous amount remains to be done. Some of the outstanding questions are foundational and involve the nature of economics itself: Can behavioral economics generate a unitary theory of behavior, or is it an unruly collection of effects? Is it too ad hoc and unruly to generate predictions in the legal context? As compared with approaches based on ordinary rationality assumptions, does behavioral economics neglect the value of parsimony? In what sense is behavioral economics a form of economics at all?

Many unanswered questions are empirical, and these remain to be studied in both real-world and experimental settings. An especially important issue has to do with the possibility of increasing cooperative behavior and decreasing spiteful behavior. What are the preconditions for the two? When does law produce one or the other? From another direction, it would be highly desirable to have a full data set of jury awards in cases involving injuries that are hard to monetize (libel, pain and suffering, sexual harassment, and intentional infliction of emotional distress), and to see what factors account for high or large awards. Whether normative judgments are widely shared, and dollar awards widely divergent (as found in Chapter 9), is an intriguing issue in numerous areas of the law.

A very large question involves the extent to which education can counteract cognitive and motivational distortions, so as to eliminate some of the

effects described above. (Some of these effects of course should not be considered distortions; people who care about reciprocity can keep themselves out of a lot of trouble.) Is it possible for those involved in law to "debias" people, 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?

Despite its length, this book is intended above all as a beginning – to new and improved understandings of the real-world effects of law, and ultimately to better uses of law as an instrument of social ordering.

Notes

1 See Paul Slovic, The Construction of Preference, 50 *Am. Psychol.* 364 (1995); Amos Tversky, Rational Theory and Constructive Choice, in *The Rational Foundations of Economic Behavior* (Kenneth Arrow et al. eds., 1996).
2 Amos Tversky, Shmuel Sattath, and Paul Slovic, Contingent Weighting in Judgment and Choice, 95 *Psychol. Rev.* 371 (1988).
3 Tversky, supra note 1, at 186.
4 See Elliot Aronson, *The Social Animal* 124–5 (6th ed. 1996).
5 See Neil Weinstein, Optimistic Biases About Personal Risks, 246 *Science* 1232 (1989).
6 Laurie Bauman and Karolyn Siegel, Misperception Among Gay Men of the Risk for AIDS Associated with Their Sexual Behavior, 17 J. *Applied Soc. Psychol.* 329 (1987).
7 See David Kahneman and Amos Tversky, Judgment Under Uncertainty: Heuristics and Biases in Judgment Under Uncertainty 3 (David Kahneman et al. eds., 1982).
8 See Itzhak Gilboa and David Schmeidler, Case-Based Decision Theory, 110 *Q.J. Econ.* 605 (1995).
9 See Robin Gregory, Sarah Lichtenstein, and D. MacGregor, The Role of Past States in Determining Reference Points for Policy Decisions, 55 *Org. Behav. & Hum. Decision Processes* 195 (1993).
10 See Ernst Fehr and Simon Gachter, How Effective Are Trust- and Reciprocity-Based Incentives, in *Economics, Values, and Organization* 337 (Avner Ben-Ner and Louis Putterman eds., 1998).
11 See *The Handbook of Experimental Economics* 111–73 (John H. Kagel and Alvin E. Roth eds., 1995) 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 also R. Ellickson, *Order Without Law* (1991). I believe that ultimately these two lines of inquiry will merge into a unitary field of inquiry.

Part I

Overview and Prospects

1 A Behavioral Approach to Law and Economics

Christine Jolls, Cass R. Sunstein, and Richard H. Thaler

Our goal in this chapter is to advance an approach to the economic analysis of law that is informed by a more accurate conception of choice, one that reflects a better understanding of human behavior and its wellsprings. We build on and attempt to generalize earlier work in law outlining behavioral findings by taking the two logical next steps: proposing a systematic framework for a behavioral approach to economic analysis of law, and using behavioral insights to develop specific models and approaches addressing topics of abiding interest in law and economics. The analysis of these specific topics is preliminary and often in the nature of a proposal for a research agenda; we touch on a wide range of issues in an effort to show the potential uses of behavioral insights.

We suggest that an approach based on behavioral economics will help with the three functions of any proposed approach to law: positive, prescriptive, and normative. The positive task, perhaps most central to economic analysis of law and our principal emphasis here, is to explain both the effects and content of law. How will law affect human behavior? What will individuals' likely response to changes in the rules be? Why does law take the form that it does? The prescriptive task is to see how law might be used to achieve specified ends, such as deterring socially undesirable behavior. The normative task is to assess more broadly the ends of the legal system. Behavioral analysis suggests problems with conventional economic arguments against paternalism – based on the view that citizens invariably understand and pursue their own best interests – but also problems with many forms of government intervention, since bureaucrats are, after all, behavioral actors too.

Foundations: What Is "Behavioral Law and Economics"?

In order to identify, in a general way, the defining features of behavioral law and economics, it is useful first to understand the defining features of law and economics. As we understand it, this approach to the law posits that

legal rules are best analyzed and understood in light of standard economic principles. Gary Becker offers a typical account of those principles: "[A]ll human behavior can be viewed as involving participants who (1) maximize their utility (2) from a stable set of preferences and (3) accumulate an optimal amount of information and other inputs in a variety of markets."[1] The task of law and economics is to determine the implications of such rational maximizing behavior in and out of markets, and its legal implications for markets and other institutions.

What then is the task of behavioral law and economics? How does it differ from standard law and economics? These are the questions we address below.

Homo Economicus and Real People

The task of behavioral law and economics, simply stated, is to explore the implications of actual (not hypothesized) human behavior for the law. How do "real people" differ from *homo economicus*? We will describe the differences by stressing three important "bounds" on human behavior, bounds that draw into question the central ideas of utility maximization, stable preferences, rational expectations, and optimal processing of information.[2] People can be said to display bounded rationality, bounded willpower, and bounded self-interest.

All three bounds are well documented in the literature of other social sciences, but they are relatively unexplored in economics (although there is a burgeoning recent literature). Each of these bounds represents a significant way in which most people depart from the standard economic model. While there are instances in which more than one bound comes into play, at this stage we think it is best to conceive of them as separate modeling problems. Nonetheless, each of the three bounds points to systematic (rather than random or arbitrary) departures from conventional economic models, and thus each of the three bears on generating sound predictions and prescriptions for law.

Bounded Rationality. Bounded rationality, an idea first introduced by Herbert Simon, refers to the obvious fact that human cognitive abilities are not infinite.[3] We have limited computational skills and seriously flawed memories. People can respond sensibly to these failings; thus it might be said that people sometimes respond rationally to their own cognitive limitations, minimizing the sum of decision costs and error costs. To deal with limited memories we make lists. To deal with limited brain power and time we use mental shortcuts and rules of thumb. But even with these remedies, and in some cases because of these remedies, human behavior differs in systematic ways from that predicted by the standard economic model of unbounded rationality. Even when the use of mental shortcuts is rational, it can produce predictable mistakes. The departures from the standard model can be

divided into two categories: judgment and decision making. Actual judgments show systematic departures from models of unbiased forecasts, and actual decisions often violate the axioms of expected utility theory.

A major source of differences between actual judgments and unbiased forecasts is the use of rules of thumb. As stressed in the pathbreaking work of Daniel Kahneman and Amos Tversky, rules of thumb such as the availability heuristic – in which the frequency of some event is estimated by judging how easy it is to recall other instances of this type (how "available" such instances are) – lead us to erroneous conclusions. People tend to conclude, for example, that the probability of an event (such as a car accident) is greater if they have recently witnessed an occurrence of that event than if they have not.[4] What is especially important in the work of Kahneman and Tversky is that it shows that shortcuts and rules of thumb are predictable. While the heuristics are useful on average (which explains how they become adopted), they lead to errors in particular circumstances. This means that someone using such a rule of thumb may be behaving rationally in the sense of economizing on thinking time, but such a person will nonetheless make forecasts that are different from those that emerge from the standard rational-choice model.

Just as unbiased forecasting is not a good description of actual human behavior, expected utility theory is not a good description of actual decision making. While the axioms of expected utility theory characterize rational choice, actual choices diverge in important ways from this model, as has been known since the early experiments by Allais and Ellsberg.[5] There has been an explosion of research in recent years trying to develop better formal models of actual decision making. The model offered by Kahneman and Tversky, called prospect theory, seems to do a good job of explaining many features of observed behavior, and so we draw on that model here.[6]

Bounded Willpower. In addition to bounded rationality, people often display bounded willpower. This term refers to the fact that human beings often take actions that they know to be in conflict with their own long-term interests. Most smokers say they would prefer not to smoke, and many pay money to join a program or obtain a drug that will help them quit. As with bounded rationality, many people recognize that they have bounded willpower and take steps to mitigate its effects. They join a pension plan or "Christmas Club" (a special savings arrangement under which funds can be withdrawn only around the holidays) to prevent undersaving, and they don't keep tempting desserts around the house when trying to diet. In some cases they may vote for or support governmental policies, such as Social Security, to eliminate any temptation to succumb to the desire for immediate rewards. Thus, the demand for and supply of law may reflect people's understanding of their own (or others') bounded willpower; consider "cooling off" periods for certain sales and programs that facilitate or even require saving.

Bounded Self-interest. Finally, we use the term bounded self-interest to refer to an important fact about the utility function of most people: They care, or act as if they care, about others, even strangers, in some circumstances. (Thus, we are not questioning here the idea of utility maximization, but rather the common assumptions about what that entails.) Our notion is distinct from simple altruism, which conventional economics has emphasized in areas such as bequest decisions. Self-interest is bounded in a much broader range of settings than conventional economics assumes, and the bound operates in ways different from what the conventional understanding suggests. In many market and bargaining settings (as opposed to nonmarket settings such as bequest decisions), people care about being treated fairly and want to treat others fairly if those others are themselves behaving fairly. As a result of these concerns, the agents in a behavioral economic model are both nicer and (when they are not treated fairly) more spiteful than the agents postulated by neoclassical theory. Formal models have been used to show how people deal with both fairness and unfairness; we will draw on those models here.

Applications. When is each bound likely to come into play? Any general statement will necessarily be incomplete, but some broad generalizations can be offered. First, bounded rationality as it relates to judgment behavior will come into play whenever actors in the legal system are called upon to assess the probability of an uncertain event. Second, bounded rationality as it relates to decision-making behavior will come into play whenever actors are valuing outcomes. Bounded willpower is most relevant when decisions have consequences over time; our example is criminal behavior, where the benefits are generally immediate and the costs deferred. Finally, bounded self-interest (as we use the term) is relevant primarily in situations in which one party has deviated substantially from the usual or ordinary conduct under the circumstances; in such circumstances the other party will often be willing to incur financial costs to punish the "unfair" behavior.

Testable Predictions

Behavioral and conventional law and economics do not differ solely in their assumptions about human behavior. They also differ, in testable ways, in their predictions about how law (as well as other forces) affects behavior. Behavioral law and economics is, we claim, law and economics with a higher "R^2" – that is, greater power to explain observed data. To make the differences between the behavioral and standard approaches more concrete, consider the three "fundamental principles of economics" set forth by Richard Posner in his *Economic Analysis of Law*,[7] in a discussion that is, on these points, quite conventional. To what extent would an account based on behavioral law and economics offer different "fundamental principles"?

The first fundamental principle for the conventional approach is downward-sloping demand: total demand for a good falls when its price rises. This prediction is, of course, valid. However, confirmation of the prediction of downward-sloping demand does not suggest that people are optimizing. As Becker has shown, even people choosing at random (rather than in a way designed to serve their preferences) will tend to consume less of a good when its price goes up as long as they have limited resources.[8] This behavior has also been demonstrated with laboratory rats.[9] Thus, evidence of downward-sloping demand is not evidence in support of optimizing models.

The second fundamental principle of conventional law and economics concerns the nature of costs: "Cost to the economist is 'opportunity cost,' " and "'[s]unk' (incurred) costs do not affect decisions on prices and quantity."[10] Thus, according to traditional analysis, decision makers will equate opportunity costs (which are costs incurred by foregoing opportunities – say, the opportunity to sell one's possessions) to out-of-pocket costs (such as costs incurred in buying possessions); and they will ignore sunk costs (costs that cannot be recovered, such as the cost of nonrefundable tickets). But each of these propositions is a frequent source of predictive failures. The equality of opportunity costs and out-of-pocket costs implies that, in the absence of important wealth effects, buying prices will be roughly equal to selling prices. This is frequently violated, as is well known. Many people holding tickets to a popular sporting event such as the Super Bowl would be unwilling to buy tickets at the market price (say $1,000), yet would also be unwilling to sell at this price. Indeed, estimates of the ratio of selling prices to buying prices are often at least two to one, yet the size of the transaction makes it implausible in these studies to conclude that wealth effects explain the difference.[11] As described below, these results are just what behavioral analysis suggests.

The traditional assumption about sunk costs also generates invalid predictions. Here is one: A theater patron who ignores sunk costs would not take into account the cost of a prepaid season pass in deciding whether to go out on the evening of a particular performance;[12] but in a study of theater patrons, some of whom were randomly assigned to receive discounted prices on prepaid passes, the patrons who received discounts were found to attend significantly fewer performances than those who did not receive discounts, despite the fact that (due to random assignment) the benefit-cost ratio that should have mattered – benefits and costs going forward – was the same on average in the two groups.[13] In short, sunk costs mattered; again, the standard prediction proved invalid.

The third fundamental principle of conventional law and economics is that "resources tend to gravitate toward their most valuable uses" as markets drive out any unexploited profit opportunities.[14] When combined with the notion that opportunity and out-of-pocket costs are equated (see fundamental principle two), this yields the Coase Theorem – the idea that initial assignments of entitlements will not affect the ultimate allocation of resources

so long as transaction costs are zero.[15] Many economists and economically oriented lawyers think of the Coase Theorem as a tautology; if there were really no transaction costs (and no wealth effects), and if an alternative allocation of resources would make some agents better off and none worse off, then of course the agents would move to that allocation. Careful empirical study, however, shows that the Coase Theorem is not a tautology; indeed, it can lead to inaccurate predictions (see Chapter 8). That is, even when transaction costs and wealth effects are known to be zero, initial entitlements alter the final allocation of resources. These results are predicted by behavioral economics, which emphasizes the difference between opportunity and out-of-pocket costs.

Consider the following set of experiments (described more fully in Chapter 8) conducted to test the Coase Theorem; let us offer an interpretation geared to the particular context of economic analysis of law. The subjects were forty-four students taking an advanced undergraduate course in law and economics at Cornell University. Half the students were endowed with tokens. Each student (whether or not endowed with a token) was assigned a personal token value, the price at which a token could be redeemed for cash at the end of the experiment; these assigned values induce supply and demand curves for the tokens. Markets were conducted for tokens. Those without tokens could buy one, while those with tokens could sell. Those with tokens should (and do) sell their tokens if offered more than their assigned value; those without tokens should (and do) buy tokens if they can get one at a price below their assigned value. These token markets are a complete victory of economic theory. The equilibrium price was always exactly what the theory would predict, and the tokens did in fact flow to those who valued them most.

However, life is generally not about tokens redeemable for cash. Thus another experiment was conducted, identical to the first except that now half the students were given Cornell coffee mugs instead of tokens. Here behavioral analysis generates a prediction distinct from standard economic analysis: Because people do not equate opportunity and out-of-pocket costs for goods whose values are not solely exogenously defined (as they were in the case of the tokens), those endowed with mugs should be reluctant to part with them even at prices they would not have considered paying to acquire a mug had they not received one.

Was this prediction correct? Yes. Markets were conducted and mugs bought and sold. Unlike the case of the tokens, the assignment of property rights had a pronounced effect on the final allocation of mugs. The students who were assigned mugs had a strong tendency to keep them. Whereas the Coase Theorem would have predicted that about half the mugs would trade (since transaction costs had been shown to be essentially zero in the token experiments, and mugs were randomly distributed), instead only 15 percent of the mugs traded. And those who were endowed with mugs asked more

than twice as much to give up a mug as those who didn't get a mug were willing to pay. This result did not change if the markets were repeated. This effect is generally referred to as the "endowment effect"; it is a manifestation of the broader phenomenon of "loss aversion" – the idea that losses are weighted more heavily than gains – which in turn is a central building block of Kahneman and Tversky's prospect theory.

There are at least three important lessons here. First, markets are indeed robust institutions. Even naive subjects participating at low stakes produce outcomes indistinguishable from those predicted by the theory *when trading for tokens*. Second, when agents must determine their own values (as with the mugs), outcomes can diverge substantially from those predicted by economic theory. Third, these departures will not be obvious outside an experiment, even when they exist and have considerable importance. That is, even in the mugs markets, there was trading; there was just not as much trading as the theory would predict. These lessons can be applied to other markets; we offer some examples below.

The Role of Market Forces

In some (fairly unusual) circumstances, such as futures trading, market forces are strong enough to make the three "bounds" irrelevant for predictive purposes. The point is important; it suggests that while human beings often display bounded rationality, willpower, and self-interest, markets can sometimes lead to behavior consistent with conventional economic assumptions. Then the question becomes when, exactly, do market forces make it reasonable to assume that people behave in accordance with those assumptions? What circumstances apply to most of the domains in which law and economics is used?

In this regard it is instructive to compare the market for futures contracts with the market for criminal activity. Consider the proposition that a potential criminal will commit some crime if the expected gains from the crime exceed its expected costs.[16] Suppose a criminal mistakenly thinks that the expected gains outweigh the expected costs, when in fact the opposite is true. First notice that no arbitrage will be possible in this situation. If someone is unfortunate enough to commit a crime with a negative expected value, then there is no way for anyone else to profit directly from his behavior. Outside of financial markets (and not always there), those who engage in low-payoff activities lose utility but do not create profit opportunities for others. Nor do they typically disappear from the market. (Even poorly run firms can survive for many years; consider GM.) Being a bad criminal is rarely fatal, and except possibly for organized crime, there is little opportunity for "hostile takeovers." Finally, the decision to enter a life of crime is not one that is made repeatedly with many opportunities to learn. Once a teenager has dropped out of high school to become a drug dealer, it is difficult to switch to dentistry.

Parsimony

A possible objection to our approach is that conventional economics has the advantage of simplicity and parsimony. At least – the objection goes – it provides a theory. By contrast, a behavioral perspective offers a more complicated and unruly picture of human behavior, and perhaps that picture will make prediction more difficult, precisely because behavior is more complicated and unruly. Everything can be explained in an ex post fashion – some tool will be found that is up to the task – but the elegance, generalizability, and predictive power of the economic method will be lost. Shouldn't analysts proceed with simple tools? We offer two responses. First, simplicity and parsimony are indeed beneficial; it would be highly desirable to come up with a model of behavior that is both simple and right. But conventional economics is not in this position, for its predictions are often wrong.

Second, to the extent that conventional economics achieves parsimony, it often does so at the expense of any real predictive power. Its goal is to provide a unitary theory of behavior, a goal that may be impossible to achieve. By itself the notion of "rationality" (the centerpiece of traditional analysis) is not a theory; to generate predictions it must be more fully specified, often through the use of auxiliary assumptions. Indeed, the term "rationality" is highly ambiguous and can be used to mean many things. A person might be deemed rational if her behavior (1) conforms to the axioms of expected utility theory; (2) is responsive to incentives, that is, if the actor changes her behavior when the costs and benefits are altered; (3) is internally consistent; (4) promotes her own welfare; or (5) is effective in achieving her goals, whatever the relationship between those goals and her actual welfare. We observe departures from most of these definitions; thus, with respect to (1), scholars have documented departures from expected utility theory for nearly fifty years, and prospect theory seems to predict behavior better. With respect to (4) and (5), people's decisions sometimes do not promote their welfare or help them to achieve their own goals; and with respect to (3), behavioral research shows that people sometimes behave in an inconsistent manner by, for example, indicating a preference for X over Y if asked to make a direct choice, but Y over X if asked to give their willingness to pay for each option.[17] Many of our examples will thus show that people are frequently not rational if the term is understood to mean (1), (3), (4), or (5). As for (2), without some specification of what counts as a cost and a benefit, the idea of responsiveness to incentives is empty. If rationality is used to mean simply that people "choose" what they "prefer" in light of the prevailing incentives, then the notion of rationality offers few restrictions on behavior. The person who drinks castor oil as often as possible is rational because she happens to love castor oil. Other self-destructive behavior (drug addiction, suicide, etc.) can be explained on similar grounds. It is not even clear on this view whether rationality is intended as a definition of "preference" or as a prediction.

If such a notion of rationality allowed for good predictions, then perhaps there would be no reason for complaint; the problem, however, is that so high a degree of flexibility leaves the theory with few a priori restrictions. A theory with infinite degrees of freedom is no theory at all. For example, consider whether it is a paradox (as many economists think) that so many people vote (despite the virtual certainty that no one person's vote will alter the outcome). 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 amid the storm, that more people voted simply because voting seemed especially valiant in those circumstances (so much for predictions based on this form of rationality). Conventional economics sometimes turns to stronger forms of rationality in response, and those forms provide stronger predictions in some cases; but those predictions are often inaccurate, as described above and as illustrated by the examples considered below.

We now turn to positive, prescriptive, and normative issues. Our purpose is not to settle all of them, but to show the promise of behavioral economics in casting light on a wide range of questions. A great deal of work would be necessary to justify authoritative judgments on most of these questions. What follows should be taken partly as a proposal, perhaps in the spirit of the early economic analysis of law, for a research agenda to be carried out with a new set of tools.

Behavior of Agents

The Ultimatum Game and Fairness

The Game and Its Sunk-Cost Variation. We begin with bounded self-interest, the third bound described above. A useful first example of this bound is agents' behavior in a very simple bargaining game called the ultimatum game. In this game, one player, the Proposer, is asked to propose an allocation of a sum of money between herself and the other player, the Responder. The Responder then has a choice. He can either accept the amount offered to him by the Proposer, leaving the rest to the Proposer, or he can reject the offer, in which case both players get nothing. Neither player knows the identity of his or her counterpart, and the players will play against each other only once, so reputations and future retaliation are eliminated as factors.

Economic theory has a simple prediction about this game. The Proposer will offer the smallest unit of currency available, say a penny, and the Responder will accept, since a penny is better than nothing. This turns out to be a very bad prediction about how the game is actually played. Responders

typically reject offers of less than 20 percent of the total amount available; the average minimum amount that Responders say they would accept is between 20 and 30 percent of that sum.[18] Responders are thus willing to punish unfair behavior, even at a financial cost to themselves. This is a form of bounded self-interest. And this response seems to be expected and anticipated by Proposers; they typically offer a substantial portion of the sum to be divided – ordinarily 40 to 50 percent.[19]

Economists often worry that the results of this type of experiment are sensitive to the way in which the experiment was conducted. What would happen if the stakes were raised substantially, or if the game was repeated several times to allow learning? In this case, we know the answer. To a first approximation, neither of these factors changes the results in any important way. Raising the stakes from $10 per pair to $100, or even to more than a week's income (in a poor country) has little effect; the same is true of repeating the game ten times with different partners.[20] (Of course, at some point raising the stakes would matter; probably few people would turn down an offer of 5 percent of $1,000,000.) We do not see behavior moving toward the prediction of standard economic theory.

Thus, the factors that many economists thought would change the outcome of the game did not. But, as we learned in a study conducted for this chapter, a factor that economic theory predicts will not have an effect, namely the introduction of a sunk cost, does have an effect. As noted above, economics predicts that decision makers will ignore sunk costs in making their choices (see fundamental principle two above); but in fact decision makers often do not behave in this way. Do sunk costs alter behavior in the ultimatum game? To find out, we asked classroom volunteers to bring $5 – what would become a sunk cost for them – to class. Students were given a form asking them how they would play both roles in an ultimatum game in which the $10 to be divided was contributed half by the Proposer and half by the Responder. They were told that their role would be determined by chance, so they had to decide first what offer to make if they were chosen to be a Proposer and then what minimum offer they would be willing to accept if they were a Responder.[21] We also ran a version of the standard ultimatum game (without sunk costs by the students) as a control.

Although economic theory says that the sunk-cost variation of the ultimatum game will have no effect on behavior (since the $5 collected from each student is a sunk cost and should therefore be ignored by the players), we predicted that in this domain sunk costs would matter. In particular, we anticipated that Responders would feel that they had an "entitlement" to the $5 they had contributed to the experiment and would therefore be reluctant to accept less. This is precisely what we found. In the original version of the game, when the $10 to be divided was provided to subjects by the experimenter, the average minimum amount demanded by Responders was $1.94. In the sunk-cost version, where the students each paid $5 to

Table 1.1. *Ultimatum Game Results*

	Average Demand	Percent Demanding $4.00	Percent Demanding $5.00
MIT MBA	$3.21	61%	32%
UC MBA	3.73	67	40
UC Law	3.35	47	23

participate, the average demand was $3.21 for a group of MIT MBA students, $3.73 for a group of University of Chicago (UC) MBA students, and $3.35 for a group of UC Law students (see Table 1.1). Each of these means is significantly different from the control value of $1.94 under any conventional measure of statistical significance. Looking past means, 61 percent of the MIT students demanded at least $4.00, and 32 percent demanded a full refund of their $5.00. For UC MBA students, 67 percent demanded at least $4.00, and 40 percent demanded $5.00. The UC Law students were slightly less extreme: 47 percent demanded at least $4.00, and 23 percent demanded $5.00.

Note that our emphasis here, as well as in the ordinary ultimatum game, is on the fairness behavior of Responders, not on affirmative concerns for fairness on the part of Proposers. (As noted above, their behavior appears fully consistent with financially maximizing responses to Responders' fairness behavior; other experimental results support this conclusion.)[22] We do know, however, that in other contexts people appear to display affirmative concerns for fairness.[23]

The fairness results obtained in various experimental settings, such as the ultimatum game, cannot be explained on grounds of reputation. The parties are interacting anonymously and in a one-shot fashion. Of course, many real-world situations may reflect a combination of reputational and fairness factors. The ultimatum game results show that people will often behave in accordance with fairness considerations even when it is against their financial self-interest *and no one will know*. Thus, for instance, most people leave tips in out-of-town restaurants that they never plan to visit again.

Fairness, Acrimony, and Scruples. *Theoretical considerations.* How can economic analysis be enriched to incorporate the behavior observed in the ultimatum game and its sunk-cost variant? As we have indicated, the first step is to relax the assumption, common to most economic theorizing, of "unbounded self-interest." This assumption implies that Proposers should offer the smallest sum possible, and Responders should accept. An alternative view is offered in the following account:

> In the rural areas around Ithaca it is common for farmers to put some fresh produce on a table by the road. There is a cash box on the table, and customers are expected

to put money in the box in return for the vegetables they take. The box has just a small slit, so money can only be put in, not taken out. Also, the box is attached to the table, so no one can (easily) make off with the money. We think that the farmers who use this system have just about the right model of human nature. They feel that enough people will volunteer to pay for the fresh corn to make it worthwhile to put it out there. The farmers also know that if it were easy to take the money, someone would do so.[24]

We emphasize that this is not a story of simple altruism. As noted, such altruism is sometimes recognized in conventional economics; our account, in contrast, is a more complicated story of reciprocal fairness. A concern for fairness is part of most agents' utility function. The results of the ultimatum game, like the behavior of the Ithaca shoppers, cannot readily be explained on grounds of simple altruism. First of all, the games are played between anonymous strangers. What reason is there to believe that these people care about one another? (Most of us give little of our wealth to anonymous strangers whom we have no reason to believe are any worse off than we are. Similarly, most people driving by a farm do not pull over and stuff two dollars through the mail slot, even in Ithaca. Fairness behavior is probably reciprocal.) Second, we observe not only apparently "nice" behavior (generous offers) but also "spiteful" behavior (Responders turning down small offers at substantial cost to the Proposers). In the ultimatum game, people appear simultaneously nicer and more spiteful than conventional assumptions predict.

The sort of balanced conception of human nature suggested by the ultimatum game results and the practices of farmers in Ithaca need not be informal or ad hoc. It is possible to incorporate material and nonmaterial motives, such as the desire to be fair (to those who have been fair) and also to be spiteful (to those who have not been fair), in a rigorous analysis. An elegant formal treatment is offered by Matthew Rabin in a model of fairness.[25] Rabin's framework incorporates three stylized facts about behavior. Stated simply and nonformally:

A. People are willing to sacrifice their own material well-being to help those who are being kind.
B. People are willing to sacrifice their own material well-being to punish those who are being unkind.
C. Both motivations (A) and (B) have a greater effect on behavior as the material cost of sacrificing becomes smaller.[26]

Rabin shows how these assumptions about behavior can explain the behavior observed in the ultimatum game as well as other games of cooperation such as the Prisoner's Dilemma. Related work, bearing on the appropriate role of law, has shown the role of such behavior in helping to produce norms that solve collective action problems.[27]

Rabin's theory can be viewed as a theory of manners and principles. Generalizing from Rabin's treatment, we might say that people can be understood as having preferences for (1) their own material payoffs and (2) those of some others they know well, and in addition they have preferences about (3) the well-being of some strangers whose interests are at stake, (4) their own reputation, and (5) what kind of person they wish to be. A person's willingness to cooperate or to help others can be seen as a function of these variables. The last factor is important and especially easy to overlook; the desire to think of yourself as an honest, principled person helps explain why most of us (though not all) do leave tips in strange restaurants and would leave money in the box at the roadside stand. As Rabin says, people are willing to sacrifice their own material well-being to help those who are being or have been kind. Of course, these desires compete with others in a world of scarce resources. We don't recommend that Mercedes dealers adopt the roadside stand selling technique.

Thus behavioral economic agents have manners and scruples that can lead them to be "nice" in some settings. But, as we observe in the ultimatum game, people can also be provoked to be spiteful. Sometimes the fact that another person will lose, in a material or other sense, is a benefit to the agent; these are the conditions for spite. An agent may calculate that the costs of benefiting another person argue strongly against a deal, even if the agent would benefit materially. Thus Responders who receive (relatively) small offers are willing to decline them in order to punish the rude Proposers who tried to grab too much for themselves, even when the small offer is a substantial amount of money. Notice that this spiteful behavior is also "principled": People are willing to pay to punish someone who has been unfair. This is the same behavior that drives boycotts, in which consumers refrain from buying something they normally enjoy in order to punish an offending party. Conventional economics has sometimes recognized such behavior, but it has received little attention in law and economics, where, unfortunately, it may often be quite relevant.[28]

Spiteful behavior is common under conditions of acrimony, such as during a fight or argument. Under these circumstances, even married couples will say and do things to hurt the other party; under bad conditions, the hurting, material or otherwise, is part of the agent's gain. A loss to another is a gain to oneself; even the idea of thinking of oneself as a certain kind of person (not a doormat or a dupe) can lead in the direction of inflicting losses. (Concern with not establishing a reputation as a doormat or a dupe may also play a role.) This is of course the converse of circumstances of cooperative behavior. Unfortunately, acrimony is particularly prevalent in many legal settings, before, during, and after litigation. Much protracted litigation – cases that fail to settle early and amicably – may arise precisely because the two sides were unable to deal with matters in a more friendly manner. (Divorces that end up in court are, almost by definition, acrimonious.) We

suspect that spiteful behavior is frequently observed in conditions of acrimony even when reputational concerns are unimportant; for example, we think that the average contestant in a divorce case that ends up in court would be likely, in the role of Responder in the ultimatum game playing against his soon-to-be-ex-spouse, to reject low offers, not wanting the Proposer to benefit greatly.[29]

What is "Fair"? Absent acrimony, spiteful behavior – such as rejection of small offers in the ultimatum game – is typically observed in situations where one party has violated a perceived "norm of fairness." This raises an obvious question: What is "fair"? In the ultimatum game, most people regard an offer of, say, a penny to the Responder as "unfair." This perception is an illustration of a more general pattern: People judge outcomes to be "unfair" if they depart substantially from the terms of a "reference transaction" – a transaction that defines the benchmark for the parties' interactions.[30] When the interactions are between bargainers dividing a sum of money to which neither is more entitled than the other (and this is common knowledge), the "reference transaction" is something like an equal split; substantial departures are viewed as unfair and, accordingly, punished by Responders. If parties are bargaining over the division of money and both have reason to view one side as more entitled than the other, then the "reference transaction" is a split that favors the more-entitled party.[31] And if the parties are a consumer and a firm in the market, the "reference transaction" is a transaction on the usual terms for the item in question.[32] We will have much more to say about this last context below. For now our goal is simply to offer our general definition of what is "fair" and to make clear that we do not view the term as a vague and ill-defined catch-all. Rather, we view it as having a reasonably well-specified meaning that can generate useful predictions across a range of contexts.

Norms. Fairness-related norms are a subset of a large category of norms that govern behavior and that can operate as "taxes" or "subsidies." An analysis like that above could be undertaken for many decisions in which people care not only about material self-interest but also about their reputations and their self-conception – for example, through purchasing books, suits, and vacation spots, or through smoking, recycling, and discriminating on the basis of race and sex, or through choosing friends, restaurants, and automobiles. A better understanding of the ingredients of individual utility could help a great deal with both the positive and prescriptive analysis of law. For example, it might help us understand more about (and be better able to predict in related contexts in the future) the massive changes in behavior that have followed largely unenforced bans on smoking in public places – the phenomenon of "compliance without enforcement."[33]

Bargaining Around Court Orders

Coasian Prediction. As noted above, an important aspect of law and economics is the Coase Theorem, which says that the assignment of a legal entitlement will not influence the ultimate allocation of that entitlement when transaction costs and wealth effects are zero. A straightforward application of this idea is that when a court enters a judgment, whether in the form of an injunction or a damage award, the parties are likely to bargain to a different outcome if that outcome is preferable to what the court did and the transaction costs and wealth effects are small. (Thus, for instance, if the court enters a prohibitively high damage award but the activity in question is efficient, the parties should bargain for a lower damage level, since this would increase the surplus to be shared between them.) To whom an entitlement is allocated after litigation, and how it is protected (by a property rule or a liability rule), are irrelevant to the ultimate allocation of the entitlement in these circumstances.

Behavioral Analysis. Influenced by behavioral economics, many legal commentators have observed that in light of the endowment effect described above (an aspect of prospect theory, and thus an instance of bounded rationality), the assignment of a legal entitlement may well affect the outcome of bargaining, even when transaction costs (as conventionally defined) and wealth effects are zero. This conclusion is suggested by the mugs experiments described above, as well as by a substantial body of other evidence on the endowment effect.[34] Although the endowment effect suggests generally that the assignment of a legal entitlement may affect the outcome of bargaining, such an effect is especially likely when the entitlement is in the form of a court order obtained after legal proceedings between opposing parties (our focus here). This is so for several reasons.

First, the process of going through litigation may strengthen the endowment effect. Experimental evidence suggests that there is an especially strong endowment effect when a party believes that he has earned the entitlement or that he particularly deserves it.[35] Of course someone who has received a court judgment in his favor will believe that he has earned it. Such a person may also believe strongly that this outcome is fair, based on the self-serving bias discussed in the following section.

Bounded self-interest, and specifically the acrimony notions developed above, provide an additional reason we might expect less bargaining in real-world settings than in law and economics texts. Even if there are financial gains from making a deal, it is difficult to bargain without communication, and litigants are often not on speaking terms by the end of a protracted trial. Even if communication is possible, bargains are unlikely to be struck when both sides take pleasure in making the other side worse off; in such circumstances it can be difficult to reach agreements on settlements even

if they would substantially improve the lot of both parties. For all of these reasons, behavioral research suggests that injunctions and damage awards may stick even with low transaction costs (as conventionally defined).

It is of course true that most cases settle, so that those which do not, and which thus produce court orders, may be atypical in some respects. But that does not mean they are unimportant objects of study for purposes of positive analysis. With conventional law and economics, behavioral analysis is concerned with the fact (and the consequences of the fact) that some cases proceed to trial.[36]

Evidence. Conventional economic theory and behavioral analysis thus generate distinct predictions about what happens after trials. These theories can therefore be tested with empirical evidence. What happens once a court judgment has been entered? How often do the parties bargain to a different outcome? Consider the set of cases where the court has assigned an entitlement to the party who values it less. In these circumstances, the standard theory would predict contracting around the court order whenever transaction costs (as conventionally defined) and wealth effects are small. (The possibility of asymmetric information is discussed below in connection with the existing empirical findings.) The behavioral theory predicts that even in such cases, there will often be no recontracting. Since it is unlikely that court orders are, across the board, uniquely efficient, it should be possible to test these differing predictions.

Even without this detailed type of information, data gathered by Ward Farnsworth suggest that there is much less posttrial bargaining than the economic model would predict (see Chapter 12). Farnsworth interviewed attorneys from approximately twenty nuisance cases in which injunctive relief was sought and either granted or denied after full litigation before a judge. In not a single case of those Farnsworth studied did parties even attempt to contract around the court order, even when transaction costs were low, and even when an objective third party might think that there was considerable room for mutually advantageous deals. Conventional analysis might attribute failures to reach an ultimate agreement to asymmetric information; but under such analysis it is difficult to explain the complete failure even to negotiate. It is also interesting to note that the lawyers interviewed said that the parties would not have reached a contractual solution if the opposite result had been reached. (This last point also means that the no-bargaining result cannot be explained by supposing that the court orders entered were uniquely efficient.)

The lawyers' explanations for these results are behavioral in character. Once people have received a court judgment, they are unwilling to negotiate with the opposing party, partly because of an unwillingness by victorious plaintiffs to confer advantages upon their opponents. Having invested a great deal of resources in pursuing the case all the way to court and through

a trial, victors perceive themselves as having a special right to the legally endorsed status quo, and they are unlikely to give that right up, especially to their opponent, for all, or most, of the tea in China.

Failed Negotiations

Even among the well-mannered, fair-minded agents that populate behavioral economics, self-interest is very much alive and well. For often there will be room for disagreement about what is fair (or, equivalently, what is the appropriate reference transaction) – and thus there will be the opportunity for manipulation by self-interested parties. These parties may tend to see things in the light most favorable to them; while people care about fairness, their assessments of fairness are distorted by their own self-interest. This is a form of bounded rationality – specifically, a judgment error; people's perceptions are distorted by self-serving bias.

This form of bias can help to explain the frequency of failed negotiations. It is quite common, in cases involving divorce, child custody, and even commercial disputes, to see protracted litigation in circumstances in which it might be expected that the parties would be able to reach negotiated solutions (although it of course remains the case that most suits settle). On the standard account, the existence of such protracted litigation is somewhat of a puzzle. With a good sense of the expected value of suit, parties should settle more than they do. It may be possible to explain some of the observed behavior in terms of asymmetric information and signaling, which may interfere with settlement prospects. However, this account is difficult to test. By contrast, the effects of self-serving bias in negotiations have been tested empirically (see Chapter 14), and the results support our account here.

Mandatory Contract Terms

Wage and Price Effects. One of the most frequent claims in the economic analysis of law is that the imposition of mandatory terms on parties to a contract will make both parties worse off; it will operate as an effective tax on their transaction. For example, rules granting employees a particular level of workplace safety, or tenants the right to a habitable apartment, will make employers and employees, or landlords and tenants, worse off. In this section, we suggest that bounded rationality, in particular the endowment effect, casts doubt on the conventional law and economics claim. Our analysis here parallels that offered by Richard Craswell several years ago in the context of mandatory product warranties;[37] we build upon Craswell in emphasizing the employment setting and in drawing upon a recent empirical study of the effects of mandatory contract terms.

The conventional argument against mandatory terms such as those just mentioned has two steps. First, since the parties did not bargain for the term in question when left to their own devices, the cost of the term must exceed its benefit (otherwise they would have agreed to it on their own). The second step in the conventional argument is that imposing a mandatory term in these circumstances will operate as a tax on the parties, causing the wage to fall (or, in the case of a habitable apartment, the price to rise) by somewhere between the benefit and the cost of the term, and causing the number of profitable trades to fall. This analysis assumes an upward-sloping (not vertical) labor supply curve, but, at least for the worker group discussed below in connection with the existing empirical evidence (female employees), this assumption is clearly reasonable.

The conventional account thus offers sharp predictions about the effects of imposing mandatory contract terms. Do the data bear out these predictions? The leading study in this area is by Jonathan Gruber; Gruber examines the effects of imposing mandatory coverage of childbirth expenses in employer-provided insurance policies.[38] Imposition of the mandatory health-insurance term – which represented a substantial departure from the usual contractual arrangements prior to the mandate – caused the wages of affected workers (most prominently, married women of childbearing age) to fall by at least the cost of the mandated coverage according to most of the author's estimates. The study also found that the hours of employment of these workers were either unchanged or slightly higher with the mandate and that their probability of being employed was either unchanged or slightly lower. In sum, "[t]he findings consistently suggest shifting of the costs of the mandates on the order of 100 percent, with little effect on net labor input."[39] These findings are not easy to reconcile with the conventional account, which predicts a fall in wages less than the cost of the benefit. (If the wage were going to adjust by the full cost of the benefit, then some substantial fraction of employers should have offered the benefit even prior to the mandate.)

Behavioral Analysis. Departures from the assumptions of expected utility maximization by unboundedly rational agents suggest a different account of the effects of imposing mandatory contract terms, one that is consistent with the empirical findings just described. As noted above, the endowment effect implies that people are often less willing to sell entitlements that are given to them than to buy entitlements that they do not already possess; if given a mug, they will not sell it for three dollars, but if not given a mug, they will not buy one for that price. Thus, the fact that an employee (say) chooses not to purchase a particular workplace benefit if he is not granted an entitlement to it does not imply that he would want to sell the entitlement (if he could) once it has been granted. The corollary of this observation is that imposing a mandatory term may have different effects than the standard analysis predicts. In supply-and-demand terms, imagine a labor supply curve prior to the imposition of the mandate, reflecting willingness to work at different wage levels given provision of the benefit; the consequence of the endowment effect may be that this curve is shifted to the right once the mandate is imposed, and this move may more than compensate for the backward shift in the employer's labor demand curve as a result of the mandate. If this occurs, then the wages of the affected worker will fall by as much as or more than the cost of the benefit. This is precisely what the Gruber study of mandated childbirth coverage finds.

Three caveats are important here. First, while the endowment effect is consistent with complete or more than complete adjustment of the wage or price, it is also possible to have less than complete adjustment of the wage or price in the presence of the endowment effect. Perhaps workers are not any more willing to supply labor in exchange for a given wage plus the benefit in question once they have an entitlement to the benefit; it may be just that they would be even less willing to supply labor in the absence of the benefit. It is also possible that conventional economic analysis, by incorporating a market failure such as adverse selection (a possibility generally ignored by the above-mentioned critics of mandatory contract terms), can explain the empirical findings discussed above.[40] Our point is just the modest one that the behavioral account can predict an instance of observed behavior that is inconsistent with the standard law and economics account of mandatory terms. Future empirical work could attempt to address the adverse selection possibility by examining the effects of mandatory contract terms in a setting in which (in contrast to the health insurance context) adverse selection is unlikely to be a significant force.

The second qualification is that the endowment effect may not operate in contexts in which the beneficiaries of a mandatory term must give up a preexisting level of income, since they may be highly averse to such a loss. This qualification applies only to situations in which there is a financial loss relative to some preexisting expectation; thus it would not apply to, for example, a consumer's purchase of a durable good at a higher price due to the inclusion of a warranty. The final qualification here is that our analysis in this section is purely positive, concerned with the effects of imposing a mandatory contract term. The endowment effect does not necessarily imply that, from a normative perspective, mandatory terms are desirable; they may be efficient, in the sense that they would not be undone (if they could be) once imposed, but the situation without such terms is also efficient, for the same reasons given by the standard account, and there is no obvious means by which the two situations can be compared. Unlike several of the scenarios discussed in the last section, in which we think there is often a relatively strong argument for choosing one normative benchmark over another (say because people are likely to underestimate certain objective probabilities based on some form of judgment error), here there does not seem to be a clear basis for such a decision.

Our emphasis, then, is the positive question of the effects of imposing mandatory contract terms. The primary point is that there is a substantial research agenda to test various hypotheses; what we wish to suggest is that the conventional view cannot be accepted a priori and that there is reason to think that behavioral law and economics points in helpful directions.

The Content of Law

In this section we argue that law and economics explanations of the content of law need to be modified by incorporating the ideas of bounded self-interest (in the form of fairness norms) and bounded rationality developed above. As we will try to show, many laws on the books appear to be difficult to justify on efficiency grounds (for example, those that prohibit mutually beneficial exchanges without obvious externalities) and seem to benefit groups that do not have much lobbying power (such as the poor or middle class). We argue that the explanation for the "anomalous" laws is typically a quite simple one: most people think the result is fair. We also suggest that some laws we observe reflect neither efficiency nor conventional rent seeking but, instead, aspects of bounded rationality.

The mechanisms underlying our behavioral economic account of the content of law are simple and conventional. With the existing analysis, we assume (for present purposes, and insofar as statutory rather than judge-made law is concerned) that legislators are maximizers interested in their own reelection. Legislators interested in their own reelection will be responsive to the preferences and judgments of their constituents and those of powerful interest groups. If constituents believe that a certain practice is unfair or dangerous, and should be banned or regulated, self-interested legislators will respond, even if they do not share these views. We suspect that a full account of the content of law would have to incorporate legislators' independent judgments about fairness or risk, which play an occasional role; but we do not discuss that point here because for the examples we consider, public and interest-group perceptions seem to provide a good (and the most parsimonious) account of the laws we observe.

Bans on Market Transactions

This section discusses the demand for the law insofar as that demand is affected by people's bounded self-interest and in particular by their taste for fairness as they understand it. We do not mean to defend the laws that we describe; we suggest more modestly that people's commitment to fairness is part of the causal mechanism that establishes those laws. Fairness norms interact with other forces to produce some of the seemingly anomalous laws we observe. "Fairness entrepreneurs" may play a role, mobilizing public judgments to serve their (selfish or nonselfish) interests.

Bans on Economic Transactions.

Puzzle. A pervasive feature of law is that mutually desired trades are blocked. Perhaps most puzzling amid this landscape – which includes bans on baby selling and vote trading, discussed below – are bans on conventional "economic" transactions, such as usurious lending, price gouging, and ticket scalping. Usury, or charging an interest rate above a certain level, is prohibited by many states in consumer lending transactions. Price gouging, or the charging of "grossly excessive" or "unconscionable" prices, is prohibited during "states of emergency" (as after a flood or other natural disaster) in many states that have had recent experience with such events. Finally, ticket scalping, or the resale of tickets at prices well above face prices (in excess of a modest margin to cover ticket brokers' costs), is prohibited by roughly half of all states, including New York (with its heavy theater population).

Not surprisingly, economists and economically oriented lawyers often view these laws as inefficient and anomalous.[41] The laws also do not generally seem well explained in terms of conventional rent seeking by a politically powerful faction. One might argue that ticket-scalping laws are an exception to this last point, on the ground that ticket sellers (who may be politically powerful) might lobby in favor of the laws because moderate prices are necessary to create demand, which in turn certifies quality and makes the product more desirable.[42] (Thus, for example, the argument would be that restaurant owners do not raise prices when waits develop for tables, and if a secondary market in restaurant reservations were to develop with very high prices for tables, restaurateurs might wish to outlaw it.) The difficulty with this form of argument as applied here is that it cannot explain the application of ticket-scalping laws to perennially popular events whose quality is known from TV and whose attractiveness to the public would not decrease significantly even with some diminution in demand – a category that includes many professional sporting events. Our point here is actually a more general one: Although it may be possible to offer efficiency or conventional rent-seeking explanations for certain sorts of laws banning economic transactions, there does not seem to be a general theory or set of theories that can explain all or even most of these laws on traditional grounds.

Behavioral account. By contrast, laws banning usurious lending, price gouging, and ticket scalping when such activities are prevalent are a straightforward prediction of the theory of perceived fairness developed above. (We assume here that self-interested legislators are responsive to citizens' or other actors' demand for the content of law.) In the case of each of these bans, the transaction in question is a significant departure from the usual terms of trade in the market for the good in question – that is, a significant departure from the "reference transaction." Behavioral analysis predicts that if trades are occurring frequently in a given jurisdiction at terms far from those of the reference transaction, there will be strong pressure for a law banning such

trades. Note that the prediction is not that all high prices (ones that make it difficult or impossible for some people to afford things they might want) will be banned; what we predict will be banned are transactions at terms far from the terms on which those transactions *generally occur in the marketplace.*

Consider this example:

> A store has been sold out of the popular Cabbage Patch dolls for a month. A week before Christmas a single doll is discovered in a store room. The managers know that many customers would like to buy the doll. They announce over the store's public address system that the doll will be sold by auction to the customer who offers to pay the most.[43]

Nearly three-quarters of the respondents judged this action to be either somewhat unfair or very unfair, though, of course, an economic analysis would judge the auction the most efficient method of assuring that the doll goes to the person who values it most. Although the auction is efficient, it represents a departure from the "reference transaction," under which the doll is sold at its usual price. (Of course, there would be no need for a law banning such behavior, since it does not appear to be prevalent.) As in the doll example, if money is loaned to individuals at a rate of interest significantly greater than the rate at which similarly sized loans are made to other customers, then the lender's behavior may be viewed as unfair. Since lumber generally tends to sell for a particular price, sales at far higher prices in the wake of (say) a hurricane, which drives demand sky high, are thought unfair. Tickets to sporting events or the theater often sell for around the face price of the ticket, so large markups over that amount are judged unfair. Consistent with this last suggestion, subjects asked whether a team should allocate its few remaining tickets to a key football game through an auction thought that this approach would be unfair; allocation based on who waited in line longest was the preferred solution.[44] Of course, waiting in line for tickets is precisely what happens with laws against ticket scalping. Thus, pervasive fairness norms appear to shape attitudes (and hence possibly law) on usury, price gouging, and ticket scalping.

Private Behavior. It is interesting to note that these transaction-banning laws often mimic, rather than constrain, the behavior of the firms they regulate. Consider first usury: It is a well-known puzzle of lending markets that lenders often refuse to loan money to risky borrowers even at above-market interest rates; rather, someone either qualifies for a loan at the offered rate or does not qualify for a loan at all.[45] This is true even when a modest increase in the interest rate would not violate usury laws. (Adverse selection considerations may also explain this behavior, but they cannot easily explain the existence of laws against such behavior.) Price gouging and ticket scalping are similar in terms of private actors' behavior. Thus, when Hurricane Andrew hit Florida and the demand for lumber and other building supplies

skyrocketed, Home Depot, a major national chain, continued to sell these goods at its usual prices, despite the fact that the stock could have been sold at an enormous (short-term) profit, and despite the fact that no law banned price increases. More generally, economists have often remarked on the failure of firms to increase prices in response to temporary increases in demand.[46] Likewise, an interesting feature of ticket-scalping laws is that they will keep prices down only to the extent that firms choose to sell tickets at reasonable prices in the first place; but in fact firms routinely do this. For example, during the 1997 NBA playoffs, the Chicago Bulls sold some tickets to the general public at prices that were somewhat higher than regular season games but a fraction of the price the tickets commanded on the (legal in Illinois) ticket broker open market. As the head of a major theater company explained, "there's a strong public relations argument" against raising prices for tickets for very popular shows (and presumably sporting events as well) – despite excess demand for seats at the going prices – because the public already believes "that Broadway ticket prices are too high."[47] Consistent with the foregoing analysis, recent evidence of price stickiness shows that firms' behavior seems to be affected greatly by their customers' perceptions of unfair price increases.[48] Note that this is not a standard reputation story; fairness considerations are the reason that raising prices harms the firm's reputation.

Why then are the laws necessary? Some of the relevant actors will not be constrained by fairness norms in the absence of a law. Noninstitutional lenders may be willing to lend at exorbitant rates; suppliers selling lumber out of the back of pickup trucks will often charge whatever the market will bear (as occurred after Hurricane Andrew); ticket scalpers, who are typically anonymous actors engaged in one-time transactions, have no reason to keep prices down. It is these actors who are regulated by the law. The more powerful mainstream firms will tend to support, or at least not oppose, rules banning unfair transactions. (Note, though, that their support would not be predicted by the standard account.)

Other Bans. Laws banning economic transactions are just a species of a broader form of regulation of transactions. Many deals are blocked, across a wide range of contexts. People may not buy and sell body parts. They cannot sell their votes. In some states, commercial surrogacy is prohibited, and baby selling is banned in all states. People may not contract around bans on race and sex discrimination, as for example through written agreements. Blocked trades can be found in every American jurisdiction.

Bans of this variety raise serious normative questions; those questions have been well ventilated. Doubtless reasonable distinctions can be drawn between bans in different areas; sometimes externalities are readily apparent. We make a simple positive point here: Behavioral analysis suggests that pervasive judgments about fairness may account for many such bans on

voluntary deals. Whether or not those judgments make sense, they seem to be widespread, and they help to explain the persistence of legislation that is often difficult to explain by reference to an efficiency or rent-seeking account. In banning certain deals, legislators may be responding to community sentiments about what kinds of things are properly subject to market arrangements. The reference transaction in these areas is generally "no transaction"; just as the norm or benchmark is the usual or face price of the ticket, or an equal division of the amount to be divided in the ultimatum game, the norm or benchmark here is "no market exchange." Departures from that norm are viewed as unfair and are prohibited.

Prior Restraints on Speech

Another instance in which fairness-related norms, and in addition bounded rationality, may affect law involves one of the enduring puzzles in First Amendment law: the special judicial hostility to "prior restraints" on speech, most notably injunctions.[49] A court may well refuse to issue an injunction against speech even if it would allow subsequent punishment of that same speech. The puzzle is that a prior restraint involves subsequent punishment too; what an injunction means is that a violator will be subject to (subsequent) sanctions. Why is a criminal statute any less problematic than an injunction whose violation produces criminal penalties?

Conventional economic analysis provides no satisfying answer to this question. True, the injunction might be thought to create the prospect of a greater total punishment for the speech, but no one has suggested that the First Amendment imposes limits on the severity of punishment for speech that the government is entitled to criminalize. In any case, many criminal statutes impose greater punishments than many injunctions, and the latter are nonetheless more troublesome than the former.

Can behavioral analysis explain the law's special treatment of prior restraints? As noted earlier in this chapter, court-ordered remedies are likely to create special forms of attachment for their beneficiaries; individuals will typically be reluctant to forego rights granted by such remedies, due to the perceived unfairness of that outcome and the type of attachment created by the endowment effect. This is apt to be as true for prosecutors as for everyone else. A prosecutor who has sought an injunction may be particularly insistent on ensuring that punishment occurs. A criminal statute, standing by itself and unaccompanied by an injunction, is likely to produce a different response on the part of the prosecutor. Reasonable defendants know the difference. Hence it is especially important for a court to ensure that any injunction imposed on speech is not issued *in advance of an accurate judgment that the speech involved is unprotected by the First Amendment.*

As it happens, this account matches the most sophisticated defenses of the special barrier to prior restraints.[50] Those defenses urge that the real purpose

of the prior restraint doctrine is to ensure that no regulation is imposed without a reliable judgment that the First Amendment does not protect the speech at risk. The doctrine is difficult to explain on conventional economic principles but is a natural inference from behavioral ones.

Anecdote-Driven Environmental Legislation

Judgment errors by boundedly rational individuals also play a significant role in predicting and explaining the content of law. In particular, people seek law in areas such as environmental protection on the basis of their judgments about the probabilities associated with certain harmful activities. Their judgments about probabilities will often be affected by how "available" other instances of the harm in question are, that is, by how easily such instances come to mind.[51]

Here is a familiar example of availability: Individuals asked how many seven-letter words in a two-thousand-word section of a novel end in "ing" give much larger estimates than individuals asked how many words in such a section have "n" as the second-to-last letter, despite the fact that objectively there are more words that satisfy the latter criterion than the former.[52] Reliance on how "available" instances of the event in question are is a form of judgment error, but the error is fully rational – in the sense of reflecting optimizing behavior – for people with limited information. Still, it can lead to systematic errors in probability assessment. In the context of environmental legislation, it encourages the well-known "pollutant of the month" syndrome, where regulation is driven by recent and memorable instances of harm. When beliefs and preferences are produced by a set of probability judgments, made inaccurate by the availability heuristic, legislation will predictably become anecdote-driven. Many illustrations come to mind; consider the outcry over Agent Orange and Times Beach,[53] or the strict regulation of asbestos in schools after a large amount of media attention.[54] The same phenomenon may occur in other areas of regulatory law; an example here is the move toward heavy regulation of school bus safety in the wake of media coverage of school bus accidents in which children were killed.[55]

What determines how available a particular environmental hazard is? Two factors are particularly important: the observed frequency of the hazard and its salience. Thus, if a particular hazard has materialized recently, people are likely to attach a higher probability to its occurring in the future. And this is particularly true if the hazard has a high degree of salience – as, for instance, with the discovery of asbestos in schools, where many children are present. Apart from the nature of the event, salience is heavily influenced by the way the event is packaged by the media, organized interest groups, and politicians.

Interested actors in the private and public sectors can be expected to exploit the availability heuristic for their own purposes. These actors are

amateur behavioralists, operating strategically to promote their selfish or nonselfish goals. "Availability entrepreneurs" will thus focus attention on a specific event in order to ensure that this event will be salient and available to many members of the public (see Chapter 15).

The availability heuristic can lead to under- as well as overregulation. People sometimes (although not always) underestimate the likelihood of low-probability or low-salience events because these threats simply do not make it onto people's "radar screens"; many health and environmental risks (such as the health threats from poor diet and exercise) may fit this description with some parts of the population. But when a particular threat, even an unlikely one, becomes available, as when, for example, asbestos is discovered in schools, then regulation will be demanded. The behavioral account thus predicts a patchwork of environmental laws characterized by both over- and underregulation, with overregulation when a particular risk has recently materialized, particularly if the harm in question is highly salient.

Prescriptions

In this section we shift our focus from the positive to the prescriptive. Our claim in each context that we consider is that attention to behavioral insights can improve the law's ability to move society toward desired outcomes.

Negligence Determinations and Other Determinations of Fact or Law

Background. Frequently juries are called upon to determine the probability of an event that ended up occurring; a prominent example is the negligence standard, which (in the formulation favored by the economic analysis of law) requires jurors to assess the costs and benefits of the defendant's course of action from an ex ante perspective, and thus to determine the probability that harm would end up coming of that action. These determinations are made with the "benefit" of hindsight; jurors know at the time they make their decision that the event in question did in fact occur. Jurors' determinations are thus likely to be afflicted by "hindsight bias" – the tendency of decision makers to attach an excessively high probability to an event simply because it ended up occurring.[56]

Hindsight bias will lead juries making negligence determinations to find defendants liable more frequently than if cost-benefit analysis were done correctly – that is, on an ex ante basis. Thus, plaintiffs will win cases they deserve to lose. Hindsight bias has been observed in a wide range of contexts across many studies and is likely to be present whenever juries make negligence determinations.

A threshold issue raised by the hindsight-bias account of negligence determinations is whether hindsight bias is simply a countervailing weight to a

tendency on the part of defendants to underestimate the likelihood of being sanctioned. A common feature of human behavior is overoptimism: People tend to think that bad events are far less likely to happen to them than to others. Thus, most people think that their probability of a bad outcome is far less than others' probability, although of course this cannot be true for more than half the population.[57] If defendants exhibit such overoptimism, then they will be underdeterred by a correct application of the negligence standard; overestimation of the probability of harm based on hindsight bias might then be a desirable countervailing factor. We think that defendant overoptimism is likely to be a much smaller factor for firms than for individual defendants, since firms that make systematic errors in judgment will be at a competitive disadvantage. And for individuals, the role of overoptimism is likely to vary significantly with context. In a case in which the threat of being found liable is highly salient, individuals may tend to overestimate the likelihood of being sanctioned, for reasons discussed in connection with our account of Superfund above. Hindsight bias, in contrast, seems to be an across-the-board phenomenon; it has been observed in a wide range of contexts across many studies and is likely to be present whenever a jury makes a negligence determination.

In fact, the law in areas such as patent law already takes clear steps to address the problems caused by hindsight bias. Thus, as Jeffrey Rachlinski has recently pointed out, patent courts are required to guard against hindsight bias in determining whether an invention was "nonobvious" at the time of invention – despite its now (perhaps) seeming obvious – by looking to such "secondary considerations" as "commercial success, long felt but unsolved need, [and] failure of others";[58] this is in effect a limited form of debiasing of the decision maker. (Thus, the law seems to acknowledge that *judges*, like juries, may exhibit hindsight bias – although there is evidence that the bias is less for judges than juries.)[59] But in the area of tort law the existing responses are partial and incomplete at best. Hindsight bias seems to be so deeply ingrained in the tort system that even when it is called to a court's attention, it may be difficult for the court (never mind a juror) to recognize or address it. How might the law respond to hindsight bias in tort cases?

An obvious response is the use of jury instructions that inform jurors of the bias and tell them to focus on the ex ante situation. Unfortunately, such debiasing techniques appear either to have no effect on decisions or to reduce hindsight bias by only a limited degree, leaving a significant gap between ex post and ex ante decision making.[60] The findings on the limited effect of debiasing techniques suggest that attempts by lawyers to employ such techniques may also be of limited effectiveness, although there is room here for future research on the role of lawyers. Because of the apparent limits on debiasing, we propose two alternative prescriptions – one simple and clear-cut, but limited to certain sorts of cases, and the other general and giving rise to important avenues for future research.

Prescriptions.

First prescription: Manipulate the information given to jurors. One means of responding to the problem of hindsight bias in tort cases involves manipulating the set of information given to jurors. Suppose that a food-processing company is claimed to have decided in a negligent fashion to use a particular chemical in its production process; imagine that the chemical ended up causing cancer in a small number of residents who live near the company's plant. The company claims that *not* using the cancer-causing (as it turned out) chemical would have carried significant risks to residents in terms of bacterial contamination. Imagine that jurors are not told that the company decided to use the chemical; rather they are told only about the ex ante decision facing the company (whether to use the chemical). They learn about the benefits and costs of that strategy and must determine whether either pursuing it or failing to pursue it would have been negligent. In this scenario the jurors would be transformed into ex ante decision makers. Their probability estimates for each type of harm – and their resulting assessment of whether either decision by the company would have been negligent – would be untouched by hindsight bias.

In some cases, it might not be possible to keep the defendant's choice from the jury; the fact of the suit will make clear what that choice was. For example, in the well-known case of *Petition of Kinsman Transit Co.*,[61] in which a bridge operator failed to lift the bridge in time to prevent an accident, apparently because he was at a tavern, the fact of a suit may provide a strong indication that the bridge was not lifted. In this sort of setting, a possible prescription (offered previously in the literature) involves bifurcation of trials, so that jurors deciding on liability do not learn any of the details of what happened until an initial determination of liability is made.[62] Although we think this is a sensible prescription in such settings, we note that it will not eliminate the effects of hindsight bias, since (as proponents of bifurcated trials recognize) "the jury will undoubtedly *know* that they are not being asked simply to engage in an academic exercise,"[63] and that (because a trial is being held) "a bad outcome must have occurred."[64] In contrast, in cases in which jurors need not know (because they cannot infer from the fact of a lawsuit) what choice the defendant made, it may be possible to eliminate the hindsight bias completely. And there are many such situations: cases in which either of two options facing a physician could have caused harm or death to a patient; cases in which either the use or the failure to use a new technology could have led to harm; cases in which either revealing or failing to reveal suicide threats by a psychiatric patient could have resulted in suicide.

Second prescription: Alter the evidentiary standard. The result of hindsight bias, as described above, is that jurors will overestimate the probability that harm will occur (since harm did, in fact, occur). The determination of the probability of harm would conventionally be made under a "preponderance of the evidence" standard: If jurors think it more likely than not, based on the evidence, that the probability of harm was above the threshold level required for liability, they are to find the defendant liable. One might imagine counteracting the effects of hindsight bias by raising the evidentiary standard (as an alternative, not in addition, to the previous proposal; the two together would produce overcorrection and, thus, underdeterrence). Thus, for example, if the jurors were to find the defendant liable only if the evidence suggested at least a 75 percent likelihood – rather than merely a 51 percent likelihood – that the critical harm probability threshold was met, then they might well reach the correct conclusion about liability: They would overestimate the likelihood attached to the critical threshold, but the overestimate might well be below the new required level.

The highest evidentiary threshold known to our legal system – the "beyond a reasonable doubt" standard – is used only in criminal cases. However, in civil cases an intermediate standard (higher than the preponderance standard, but less demanding than the "beyond a reasonable doubt" standard) is the "clear and convincing evidence" standard. This, of course, would be likely to be a second-best solution; in some situations defendants might be found not liable when, under a perfectly functioning system with no hindsight bias and no heightened evidentiary standard, they would be found liable. This need not be the case, however, and even if it is, we might well tolerate a crude measure that produced some errors so long as it represented an improvement over the current system. Most importantly, there is much room for research focused on determining whether altering the evidentiary threshold would represent a desirable response on balance – either across the board or in particular categories of cases. Our goal is to suggest the value of research on this issue, rather than to urge an immediate change in policy based on what we now know.

Other Applications. The discussion to this point has focused on tort cases decided under the negligence standard, but similar issues may arise in other areas of law in which juries (or judges) must determine whether an ex ante standard was met while armed with the knowledge that a negative event in fact materialized. One example is securities fraud litigation, whose perceived excesses prompted Congress to enact the Private Securities Litigation Reform Act of 1995.[65] In a typical securities fraud case, decision makers are confronted with a company whose stock price experienced a dramatic fall, and they are required to assess whether a particular issue or problem facing the company, whose disclosure prompted the fall, should have been disclosed at an earlier stage (typically before it had become an issue or problem). Decision makers in such a case are required to make an after-the-fact determination of whether a reasonable ex ante decision maker would have thought the prospective issue or problem "material" to the average shareholder based on the information available at the time.[66] The problem is that

this determination must be made against the backdrop of knowledge that the issue or problem in fact materialized, and produced a large drop in the company's stock price. In this situation, a decision maker will likely find it difficult to see how a reasonable ex ante decision maker might have thought the prospective issue or problem other than material. Consistent with this analysis, the main predictor of whether a securities fraud action is brought seems to be whether there has been a large change in the company's stock market value, not whether the company's behavior was reasonable from an ex ante perspective.[67]

Another example here involves damage suits for violations of the Fourth Amendment. A risk in such suits is that if the allegedly illegal search did in fact produce damaging evidence (say, drugs or other contraband), then decision makers are likely to conclude that the law enforcement agency's behavior was reasonable. This will be true even if, from an ex ante perspective (without knowing the eventual outcome), this behavior would not have been found reasonable.

Information Disclosure and Government Advertising

Background. Suppose it is agreed that individuals lack adequate information on a given subject – for example, workplace safety, appliance energy efficiency, or the effects of drug use. In some such instances the government may seek to foster comparison shopping and informed decision making (as in the federal truth-in-lending law, which requires lenders to announce interest rates, measured the same way);[68] in other instances the government may have a specific policy goal (reducing drug use, encouraging the use of energy-efficient refrigerators). Conventional economics acknowledges the possible desirability of each of these goals (the second in the case of phenomena such as externalities), and it often advocates, as a means of achieving them, providing additional information to citizens, either through a mandate to the relevant private actors (for instance, employers), or through provision of information by the government itself.[69]

The prescription to "provide more information" is striking in its spareness. Behavioral analysis suggests that this prescription is far *too* spare. "Provide more information" says nothing about the *way* in which the information will be provided, and yet we know that this will matter a great deal.

That presentation matters has several implications. One is "antiprescriptive": Prescriptions directed toward fostering comparison shopping – the first government goal mentioned above – will often be incomplete and may even be paralyzing, since there is often no "neutral" way to present information. The second implication is that effective prescriptive strategies for achieving the second goal mentioned above – discouraging particular types of behavior – must take behavioral factors into account. It is not enough simply to "provide information." We discuss several examples of this below.

Antiprescription. Consider the following example of a government attempt to foster informed decision making. In the case of defined contribution plans such as 401(K)'s, the Labor Department, the relevant government authority, has ruled that employers must give employees investment alternatives and must provide information about those alternatives (such as risk and returns); but firms are not allowed to offer "advice" as to how to invest. We think that such spare guidelines place employers in a very difficult position. The reason is that the way firms decide to describe and display information on investment alternatives will have a powerful impact on the choices employees make.

Consider in this connection a recent study of the division of retirement savings by university staff employees between two different funds, a safe one (bonds) and a risky one (stocks).[70] All the employees were shown actual historical data on the returns of the two funds, but this information was displayed in two different ways; one group was given the distribution of one-year rates of return, while the other was given a simulated distribution of thirty-year rates of return. Those shown the thirty-year returns elected to invest nearly all their savings in stocks, while those shown the one-year returns invested a majority of their funds in bonds. Our point is not that one of these outcomes is better. Our point is simply that in the real world, she who provides information ends up giving advice.

This is an example in which the prescription to "provide more information" may be paralyzing; in other instances it may simply be incomplete. Thus, suppose that the prescription is that certain private actors be required to provide "information"; what does this mean? If it means that those who expose people to a dangerous substance or product in the workplace (say benzene) must provide them with accurate information about the danger, this leaves open a tremendous range of possibilities. The actors subject to the mandate will often have an interest in providing the least scary, most pallid version of the information possible (for example, "benzene has been associated with a statistical increase in risk"), while regulators might want the most scary, salient message available (say, "exposure to benzene will increase your risk of getting CANCER and other FATAL diseases"). Of course, the best message in this case, if the goal is accurate knowledge, may well be somewhere in between. An important goal of the analyst's task in making prescriptions in this area is to say *how* the information should be provided – not just *that* it should be provided.

In still other contexts, such as ones in which the presentation of information will affect people's preferences rather than just their perceptions of risk, it is not clear in theory what is meant by ensuring "informed decision making." It is not even clear that there are steady or stable background preferences that might be "informed." The preferences can themselves be an artifact of the method of informing. For instance, one of the central features of Kahneman and Tversky's prospect theory is that people evaluate outcomes

based on the change they represent from an initial reference point, rather than based on the nature of the outcome itself; also, losses from the initial reference point are weighted much more heavily than gains.[71] This aspect of prospect theory (like its other features) is based on evidence about actual choice behavior.[72] The evaluation of outcomes in terms of gains and losses from an initial reference point, coupled with the special aversion to losses, means that it matters a great deal whether something is presented as a gain or a loss relative to the status quo; a perceived threat of a loss relative to the status quo weighs more heavily than a perceived threat of foregoing a gain. In such cases it is difficult to say which individual is "informed" – the one who is told of the perceived threat of a loss or the one who is told of the perceived threat of foregoing a gain. In this and other contexts, preferences are not preexisting but rather "constructive, context-dependent," analogous to the balls or strikes that do not predate the situation of choice and that "ain't nothing till" the umpire calls them.[73]

Prescriptions. Suppose now that the agreed-upon goal is not to foster "informed decision making," but to discourage particular types of behavior. Quite obviously, some ways of providing information are more effective than others.

First prescription: Exploit loss aversion. As just noted, individuals tend to weight losses far more heavily than gains. As a result, framing consequences in terms of losses rather than gains is likely to be far more effective in changing behavior. A well-known illustration of this sort of framing effect is a study involving breast self-examination; pamphlets describing the positive effects of breast self-examination (for example, women who undertake such examinations have a greater chance of finding a tumor at a treatable stage) are ineffective, but there are significant changes in behavior from pamphlets that stress the negative consequences of a refusal to undertake self-examinations (women who fail to perform such examinations have a decreased chance of finding a tumor at a treatable stage).[74] Note that this example illustrates how the provision of information may be a more natural tool than taxation or regulation for discouraging some forms of behavior (such as the failure to perform a self-examination).

Second prescription: Exploit salience. Effective prescriptive strategies need to take account of the fact that vivid and personal information will often be more effective than statistical evidence. This sort of information has a high degree of salience, and, as a result of the availability heuristic, people will tend to respond to it by attaching a higher probability to the event in question. Thus an antidrug advertisement, showing a frying egg with the announcer's voice claiming, "This is your brain on drugs," appeared to have a significant effect on behavior.[75] Availability suggests that the ad produced a higher perceived probability of negative effects than a flatter ad would have.

Third prescription: Avoid the pitfalls of overoptimism. As noted in the previous section, a common feature of human behavior is overoptimism. This behavior is not specific to the young, although it may be diminished as people move beyond middle to old age, as Richard Posner has suggested.[76] What does this feature of behavior imply about government provision of information? Consider the choice between a safe-driving campaign focused on drivers' own driving and the ingenuous campaign actually adopted by the government: "Drive defensively: Watch out for the other guy." The government's campaign, perhaps self-consciously, responded to the fact that most people tend to believe that they are unusually safe drivers. This is a model of the sort of prescriptive approach advocated by behavioral analysis.

Behavior of Criminals

Background. Our discussion of prescriptive analysis has thus far focused on bounded rationality. But bounded willpower may also play a role. Consider the question of deterring criminal behavior. Economic analysis of this question typically starts from the premise that potential offenders will be deterred from criminal acts if the expected costs of those acts exceed their expected benefits. Potential offenders are imagined to make at least a rough calculation of these costs and benefits in the process of making their decisions. Bounded rationality suggests that people may make systematic (as opposed to random) errors in computing these costs and benefits; for example, as described above, individuals tend to judge the likelihood of uncertain events (such as getting caught for a crime) by how available such instances are to the human mind, and this may depend on factors unrelated to the actual probability of the event. This analysis suggests the desirability, from a prescriptive standpoint, of making law enforcement highly visible, holding constant the actual probability that offenders will be caught; it suggests, for example, the good sense of the familiar method of parking-ticket enforcement – sticking a large, brightly colored ticket that reads "VIOLATION" in large letters on the drivers' side window, where it is particularly noticeable to drivers passing by – as opposed to a less costly approach (putting small, plain tickets under the windshield wiper on the curb side of the street, convenient for the parking officer to reach). Another example here is "community policing," now widely practiced across the country; by making more visible and memorable the presence of police (as, for example, by having them walk their beats rather than ride in patrol cars), authorities can, it is suggested, increase the deterrence of potential criminals without altering the actual probability of apprehension.

But even if one assumes that potential offenders can accurately compute the costs and benefits of crime, bounded willpower suggests that they will often behave in ways at odds with conventional economic analysis, due to problems of self-control. A central feature of much criminal behavior is

that the benefits are immediate, while the costs (if they are incurred at all) are spread out over time – often a very long time. Economic analysis assumes that such future costs are discounted to present value, and A. Mitchell Polinsky and Steven Shavell have recently suggested that potential criminal offenders may have unusually high discount rates, so that years in prison far in the future will be discounted very heavily.[77] Behavioral economic analysis carries this idea further by incorporating self-control issues often emphasized by criminologists.[78]

Prescriptions. As just noted, the existing economic analysis assumes a constant discount rate (although perhaps a high one); this means that the difference between the attractiveness or aversiveness of a reward or punishment today versus tomorrow is the same as the difference between a year from now and a year and one day from now. In contrast to this theory, there is considerable evidence that people display sharply declining discount rates.[79] This means that impatience is very strong for near rewards (and aversion very strong for near punishments), but that each of these declines over time – a pattern referred to as "hyperbolic discounting."[80]

What does hyperbolic discounting imply for effective deterrence of criminal behavior? With this sort of bounded willpower on the part of potential offenders, the difference between not getting caught and being imprisoned for, say, a year differs dramatically from the difference between being imprisoned for ten years and being imprisoned for eleven years (even apart from any fixed costs that may accompany the fact of conviction). While the standard theory says that these two things differ only insofar as the costs of imprisonment in year eleven must be discounted to present value in order to be compared with the loss of wages and personal freedom in year one, behavioral economic analysis (and basic common sense) tells us that this is not so. Short punishments will thus have much more effect than long punishments as a result of the "priority of the present"; adding years onto a sentence will produce little additional deterrence.[81]

Normative Analysis: Anti-Antipaternalism

In its normative orientation, conventional law and economics is often strongly antipaternalistic. The idea of "consumer sovereignty" plays a large role; citizens, assuming they have reasonable access to relevant information, are thought to be the best judges of what will promote their own welfare. Yet many of the instances of bounded rationality discussed above call this idea into question – and also, as we will emphasize below, call into question the idea that intervention by government actors, who themselves may face the same cognitive or motivational problems as everyone else, can improve matters. In this way bounded rationality pushes toward a sort of anti-antipaternalism – a skepticism about antipaternalism, but not an affirmative defense

of paternalism. We also note (although we do not explore this point here) that while bounded rationality may increase the need for law (if government's failings are less serious than citizens'), bounded self-interest may reduce it, by creating norms that solve collective action problems even without government intervention.[82]

Citizen Error

Many of the forms of bounded rationality discussed above call into question the idea of consumer sovereignty. For example, overoptimism leads most people to believe that their own risk of a negative outcome is far lower than the average person's. Similarly, the effect of salience may lead to substantial underestimation of certain risks encountered in everyday life (for example, the risks from poor diet), since these harms may not be very salient. When overoptimism is combined with salience, people may underestimate risks substantially. We emphasize that these problems are not ones of insufficient information per se; they are ones of insufficient ability to process accurately the information one possesses insofar as that information bears on one's own risks. Thus, for example, people may have reasonably adequate information about the risks of smoking,[83] but this does not at all imply that they have adequate perceptions of the risks of smoking that they themselves face.[84] Even if people can obtain accurate statistical knowledge, statistical knowledge may not be enough to inform actual choices.[85] It does not follow from this that information is useless; it is just that having information per se does not automatically imply optimal behavior.

Further questions about the idea of consumer sovereignty arise from the gap between "decision" and "experience" utility. The utility of actual experience may diverge from the anticipated utility as revealed by people's decisions.[86] The identity of decision and experience utility in conventional economics is often treated as an axiom, or at least as a proposition that could not be falsified. But behavioral research shows that people's judgments about their future experience at the time of decision can be mistaken, in the sense that people are sometimes unable (even apart from the sorts of informational issues recognized by conventional economics) to assess what the experience will actually be like. Thus, for example, people appear not to predict accurately the consequences of becoming seriously ill or disabled.[87] They tend to underestimate their ability to adapt to negative changes, a point that may bear on law and policy in such areas as global climate change.[88]

But this suggestion about adaptation raises a complex normative question: Is a person's measure of welfare after (for example) becoming ill the appropriate measure of value? Perhaps people, through coping mechanisms, are able to adapt to disease better than they anticipate in advance, but does this mean that disease is a less severe problem than prior attitudes would have suggested? On conventional utilitarian grounds, the answer is probably

affirmative; the subjective experience is what counts. But a well-established challenge to utilitarian analysis suggests the possibility of a negative answer, on the ground that subjective experience may not be all that counts.[89] What we mean to suggest here is a simple point: People sometimes do mispredict their utility at the time of decision, and on conventional grounds this phenomenon raises serious problems for the idea of consumer sovereignty.

Behavioral Bureaucrats

Any suggestion that the government should intervene in response to people's mistakes raises the question whether the government will be able to avoid such errors. The prospects for productive and useful intervention may be smallest in the case of populist government; the actions of such a government, based heavily on pressures coming from citizens, may tend to be subject to the very same biases and errors that afflict citizens. (Thus behavioral analysis complements existing accounts of the problems with populism.) Irregular perceptions of risk by ordinary people may tend to produce irregularities in regulation, as the cognitive errors that ordinary people make are replicated in statutory and administrative law.[90] The effects of social interaction may even make government action worse, and more dangerous, than individual errors. Our earlier discussion suggests a possible mechanism: Availability entrepreneurs in the private sector can heighten the demand for regulation, and public-sector availability entrepreneurs can take advantage of, and heighten, this effect, by advocating anecdote-driven policy. Thus public choice accounts of legislation can work productively with behavioral accounts; there is a good deal of synergy between behavioral mechanisms and interest group leaders, many of whom are amateur (or professional?) behavioral economists. The pollutant-of-the-month syndrome in environmental law is paralleled by many measures responding to the crisis-of-the-month. These difficulties with populist government also point to problems with the referendum process.

But populist government is not the only worry. Government will often be subject to cognitive and motivational problems even if it is not populist. (Bureaucrats may also lack appropriate incentives to make decisions in the public interest.)[91] Thus, for example, there is no necessary reason to think that government officials are, by virtue of their offices, able to avoid overoptimism or predict experience utility. On the other hand, a degree of insulation from populist pressures, combined with knowledge of behavioral economics, might produce some improvement. New institutions may play a role; consider Justice Breyer's plea for an insulated body of specialized civil servants, entrusted with the job of comparing risks and ensuring that resources are devoted to the most serious problems;[92] Howard Margolis's behaviorally informed suggestion that government should be required to ensure that all initiatives "do no harm";[93] even proposals for cost-benefit analysis, understood in a behavioral light as an attempt to overcome biases and confusions

in both perception and motivation.[94] We also emphasize that government intervention need not come in highly coercive forms; perhaps distortions in people's decision making can be overcome by information campaigns falling well short of coercion. For instance, in the contexts of risks such as smoking, might debiasing techniques work to link the statistical evidence with the personal reality?

All of the foregoing ideas raise many complexities; and we have not even touched upon the complicated philosophical literature on the legitimacy of paternalism. Application of these ideas to any specific topic in law would require a much fuller development of many issues than the space in this chapter permits. But we need not leave the ideas in purely abstract form; consider the following simple illustration of their application. Imagine that sunlamps are being sold in an unregulated market and that it is learned that many consumers fall asleep under the lamps, burning themselves badly. Consumers make this mistake in spite of warnings included on the package and in the instructions, perhaps because they fail to anticipate that lying in a warm place with one's eyes closed is likely to induce sleep. Let's call this an "unintended risk," meaning a risk that consumers fail to appreciate. The existence of this unintended risk leaves open the possibility of welfare-enhancing regulation. Suppose, for example, that an automatic timer can be added to the sunlamp at a cost of twenty-five cents, and that manufacturers have not included this feature because consumers do not anticipate that they will need it. We do not discuss here the issues raised by the possibility that a government mandate of the timer interferes with freedom, rightly conceived. Nor do we address possible distributive issues (all will pay more for sunlamps, although perhaps only some failed to appreciate the risks of falling asleep). All we suggest is that an important part of the analysis involves asking whether the cost of requiring this safety-promoting feature (twenty-five cents per customer) is less than the cost of the unanticipated burns.

A central point of this example is that from the perspective of behavioral law and economics, issues of paternalism are to a significant degree empirical questions, not questions to be answered on an a priori basis. No axiom demonstrates that people make choices that serve their best interests; this is a question to be answered based on evidence. Of course the case for intervention is weakened to the extent that public institutions are likely to make things worse rather than better. What we are suggesting is that facts, and assessment of costs and benefits, should replace assumptions that beg the underlying questions.

Conclusion

Traditional law and economics is largely based on the standard assumptions of neoclassical economics. These assumptions are sometimes useful

but often false. People display bounded rationality: They suffer from certain biases, such as overoptimism and self-serving conceptions of fairness; they follow heuristics, such as availability, that lead to mistakes; and they behave in accordance with prospect theory rather than expected utility theory. People also have bounded willpower; they can be tempted and are sometimes myopic. They take steps to overcome these limitations. Finally, people are (fortunately!) boundedly self-interested. They are concerned about the well-being of others, even strangers in some circumstances, and this concern and their self-conception can lead them in the direction of cooperation at the expense of their material self-interest (and sometimes spite, also at the expense of their material self-interest). Most of these bounds can be and have been made part of formal models.

In this chapter we have sketched some of the implications of enriching the traditional analysis by incorporating a more realistic conception of human behavior. We have insisted on the value and importance of using the three bounds in the economic analysis of law; more tentatively, we have explored a series of legal problems in which the bounds may be significant. Obviously there is a great deal of research to be done, and one of our principal goals has been to outline areas that could benefit from further work, both analytic and empirical.

We do not doubt that replacing the simple maximizing model of economics with a more complicated psychological treatment comes at some cost. Solving optimization problems is usually easier than describing actual behavior. It has been said (we believe by Herbert Simon) that economics makes things hard on agents, but easy on economists; behavioral economics, we suggest, does the opposite. We recapitulate here some of the reasons we think the enriched model is worth the trouble for those interested in the economic analysis of law.

1. Some of the predictions of the standard model are simply wrong. For example, people can be both more spiteful and more cooperative than traditional analysis predicts, and this matters a great deal to law. It is also important to know that even in a world without transaction costs and wealth effects, the assignment of property rights alters the ultimate allocation of those rights, and that this may be particularly true for certain forms of property-rights assignment (such as court orders). These features of the world matter greatly for making predictions and formulating policy.

2. In other cases economics makes no predictions (or incorrect predictions of no effect). Prominent in this category are the effects of presentation; since economic theory assumes that choices are invariant to the manner in which a problem is framed, it falsely predicts that the language of a media account or advertisement has no effect on behavior, holding the information content constant. In contrast, it is well established that people react differently to potential outcomes depending on whether they are perceived as foregone gains or out-of-pocket costs (losses), and that they are likely to think, mistakenly, that salient events are more common than equally prevalent but more subtle

ones. These points bear on the supply of and the demand for law, and on the behavior of agents in their interactions with the legal system.

3. Standard economic theories of the content of law are based on an unduly limited range of potential explanations, namely optimal (or second-best) rules set by judges and rent-seeking legislation determined by self-interested log rolling. Behavioral economics offers other sources of potential explanation – most prominently, perceptions of fairness. We have tried to show that many laws which are seemingly inefficient and do not benefit powerful interest groups may be explained on grounds of judgments about right and wrong.

4. A behavioral approach to law and economics offers a host of novel prescriptions regarding how to make the legal system work better. Some stem from the improved predictions mentioned in point 2 above. Cognitive difficulties and motivational distortions undermine or alter conventional economic prescriptions about the jury's role, most notably in the context of assessing negligence and making other determinations of fact or law. We have taken some preliminary steps in suggesting ways to reduce the costs of some of these problems.

5. A behavioral approach to law and economics produces new questions about possible mistakes by private and public actors. On the one hand, it raises serious doubts about the reflexive antipaternalism of some economic analyses of law. On the other hand, it raises equivalent questions about whether even well-motivated public officials will be able to offer appropriate responses to private mistakes and confusion.

We hope that this chapter will encourage others to continue the inquiry and research, both theoretical and empirical, that will be needed to flesh out the behavioral approach for which we have argued here. This approach will use traditional economic tools, enhanced by a better understanding of human behavior. Thirty years from now, we hope that there will be no such thing as behavioral economics. Instead we hope that economists and economically oriented lawyers will simply incorporate the useful findings of other social sciences, and in so doing, transform economics into behavioral economics, and economic analysis of law into one of its most important branches.

Appendix: Framework and Summary of Applications

This appendix summarizes our framework for behavioral law and economics. It also lists the law and economics issues we analyze within each category of the framework. The specific behavioral mechanisms we draw upon, which

are summarized here, do not constitute an exhaustive list of the mechanisms that might be relevant to law and economics; they simply reflect the mechanisms we have used here. For each mechanism, we provide a reference to the literature, as an overview of or entry to the existing research; we refer the interested reader to the text of the chapter for additional references on each topic.

Bounded Rationality

Judgment Errors

Self-serving Bias. Reference: Linda Babcock and George Loewenstein, Explaining Bargaining Impasse: The Role of Self-serving Biases, 11 *J. Econ. Persp.* 109 (winter 1997).

Our applications: bargaining around court orders; failed negotiations.

Availability Heuristic. Reference: Amos Tversky and Daniel Kahneman, Judgment Under Uncertainty: Heuristics and Biases, in *Judgment Under Uncertainty* 3 (Daniel Kahneman, Paul Slovic, and Amos Tversky eds., 1982).

Our applications: environmental legislation, government advertising, anti-antipaternalism.

Hindsight Bias. Reference: Baruch Fischhoff, Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty, 1 *J. Experi. Psychol. Hum. Perception & Performance* 288 (1975).

Our applications: negligence determinations; other determinations of fact or law.

Overoptimism. Reference: Neil D. Weinstein, Unrealistic Optimism About Future Life Events, 39 *J. Personality & Soc. Psychol.* 806 (1980).

Our applications: government advertising, anti-antipaternalism.

Inability to Predict Experience Utility. Reference: Daniel Kahneman, New Challenges to the Rationality Assumption, in *The Rational Foundations of Economic Behaviour* 203 (Kenneth J. Arrow, Enrico Colombatto, Mark Perlman, and Christian Schmidt eds., 1996).

Our applications: anti-antipaternalism.

Decision-Making Behavior

Loss Aversion. Reference: Daniel Kahneman and Amos Tversky, Prospect Theory: An Analysis of Decision Under Risk, 47 *Econometrica* 263 (1979).

Our applications: government advertising.

Endowment Effect (a Corollary of Loss Aversion). Reference: Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, Experimental Tests of the Endowment Effect and the Coase Theorem, 98 *J. Pol. Econ.* 1325, 1327 (1990).

Our applications: bargaining around court orders, mandatory contract terms, prior restraints on speech.

Bounded Willpower

"Hyperbolic" Discounting. Reference: David Laibson, Golden Eggs and Hyperbolic Discounting, 112 *Q.J. Econ.* 443 (1997).

Our applications: criminal behavior.

Bounded Self-interest

Fairness Behavior and Spitefulness. Reference: Colin Camerer and Richard H. Thaler, Anomalies: Ultimatums, Dictators, and Manners, 9 *J. Econ. Persp.* 209 (spring 1995).

Our applications: bargaining around court orders; bans on market transactions; prior restraints on speech.

Notes

1 Gary S. Becker, *The Economic Approach to Human Behavior* 14 (1976).

2 For a further elaboration of this view, see Richard H. Thaler, Doing Economics Without *Homo Economicus*, in *Foundations of Research in Economics: How Do Economists Do Economics?* 227, 230–5 (Steven G. Medema and Warren J. Samuels eds., 1996).

3 Herbert A. Simon, A Behavioral Model of Rational Choice, 69 *Q.J. Econ.* 99 (1955).

4 Amos Tversky and Daniel Kahneman, Judgment Under Uncertainty: Heuristics and Biases, in *Judgment Under Uncertainty* 3, 11 (Daniel Kahneman, Paul Slovic, and Amos Tversky eds., 1982).

5 See Colin Camerer, Individual Decision Making, in *Handbook of Experimental Economics* 587, 619–20, 622–4 (John H. Kagel and Alvin E. Roth eds., 1995) (describing the Allais paradox); Daniel Ellsberg, Risk, Ambiguity, and the Savage Axioms, 75 *Q.J. Econ.* 643 (1961).

6 Daniel Kahneman and Amos Tversky, Prospect Theory: An Analysis of Decision Under Risk, 47 *Econometrica* 263 (1979). For a survey of empirical tests of this and other models, see Camerer, supra note 5, at 626–43. John D. Hey and Chris Orme, Investigating Generalizations of Expected Utility Theory Using Experimental Data, 62 *Econometrica* 1291 (1994), conclude that expected utility theory performs fairly well, but they do not consider prospect theory as an alternative. An alternative to prospect theory for modifying expected utility theory is offered by Itzhak Gilboa and David Schmeidler, Case-Based Decision Theory, 110 *Q.J. Econ.* 605 (1995).

7 Richard A. Posner, *Economic Analysis of Law* 4 (5th ed. 1998).
8 Gary S. Becker, Irrational Behavior and Economic Theory, 70 *J. Pol. Econ.* 1, 4–6 (1962).
9 John H. Kagel, Raymond C. Battalio, and Leonard Green, *Economic Choice Theory: An Experimental Analysis of Animal Behavior* 8, 17–19, 24–5 (1995).
10 Posner, supra note 7, at 6, 7.
11 See Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, Experimental Tests of the Endowment Effect and the Coase Theorem, 98 *J. Pol. Econ.* 1325, 1327 tbl. 1 (1990) (summarizing studies).
12 See Robert Nozick, *The Nature of Rationality* 22 (1993).
13 Hal R. Arkes and Catherine Blumer, The Psychology of Sunk Cost, 35 *Org. Behav. & Hum. Decision Processes* 124, 127–8 (1985).
14 Posner, supra note 7, at 11.
15 R. H. Coase, The Problem of Social Cost, 3 *J.L. & Econ.* 1 (1960).
16 See, e.g., Steven Shavell, Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent, 85 *Colum. L. Rev.* 1232 (1985).
17 Amos Tversky, Rational Theory and Constructive Choice, in *The Rational Foundations of Economic Behavior* 185, 189–91 (Kenneth J. Arrow et al. eds., 1996).
18 See Werner Guth, Rolf Schmittberger, and Bernd Schwarze, An Experimental Analysis of Ultimatum Bargaining, 3 *J. Econ. Behav. & Org.* 367, 371–2, 375 tbls. 4–5 (1982); Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler, Fairness and the Assumptions of Economics, 59 *J. Bus.* S285, S291 tbl. 2 (1986).
19 See Guth et al., supra note 18, at 371–2, 375 tbls. 4–5; Kahneman et al., supra note 18, at S291 tbl. 2.
20 See Colin Camerer and Richard H. Thaler, Anomalies: Ultimatums, Dictators, and Manners, 9 *J. Econ. Persp.*, spring 1995, at 209, 210–11; Vesna Prasnikar and Alvin E. Roth, Considerations of Fairness and Strategy: Experimental Data from Sequential Games, 107 *Q.J. Econ.* 865, 873–5 (1992); Robert Slonim and Alvin E. Roth, Learning in High Stakes Ultimatum Games: An Experiment in the Slovak Republic, 66 *Econometrica* 569, 573 (1998). When repetition is combined with very high stakes, however, offers decrease somewhat, although they are still far above what the standard analysis would predict. See Slonim and Roth, supra, at 573, 588 fig. 3A.
21 This experiment is profitable for the experimenter if any offers are rejected by Responders (because the experimenter has collected $10 from each pair of bargainers, which the bargainers forfeit if the Proposer's offer is rejected). To solve this "problem," we conducted another experiment right after in which the winner of a game was awarded any profits earned by the experimenter in the first round.
22 See Elizabeth Hoffman, Kevin McCabe, and Vernon L. Smith, Social Distance and Other-Regarding Behavior in Dictator Games, 86 *Am. Econ. Rev.* 653, 653–4 and fig. 1 (1996) (finding that Proposers typically offered no more than 10 percent of the sum to be divided – and over 60 percent offered nothing – when (1) the Responder had no choice but to accept the Proposer's offer and (2) anonymity was guaranteed).
23 See Ernst Fehr, Georg Kirchsteiger, and Arno Riedl, Does Fairness Prevent Market Clearing: An Experimental Investigation, 108 *Q.J. Econ.* 437 (1993).
24 Richard H. Thaler and Robyn M. Dawes, Cooperation, in *The Winner's Curse: Paradoxes and Anomalies of Economic Life* 6, 19–20 (Richard Thaler ed., 1992).
25 Matthew Rabin, Incorporating Fairness into Game Theory and Economics, 83 *Am. Econ. Rev.* 1281 (1993).
26 Ibid. at 1282.

27 Robert Axelrod, *The Evolution of Cooperation* (1984); Axelrod, *The Complexity of Cooperation* (1997).
28 The concepts of revenge and retribution, which are related to spite, have been discussed by Posner. See Richard A. Posner, Retribution and Related Concepts of Punishment, 9 *J. Legal Stud.* 71 (1980).
29 Cf. Robert Gibbons and Leaf Van Boven, Multiple Selves in the Prisoner's Dilemma (Nov. 16, 1997) (unpublished manuscript, on file with the Stanford Law Review) (finding that subjects are more likely to engage in cooperative behavior in games when they have a positive impression of their opponent than when they have a negative impression).
30 See Daniel Kahneman, Jack L. Knetsch, and Richard Thaler, Fairness as a Constraint on Profit Seeking: Entitlements in the Market, 76 *Am. Econ. Rev.* 728, 729–30 (1986).
31 See Elizabeth Hoffman and Matthew L. Spitzer, Entitlements, Rights, and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice, 14 *J. Legal Stud.* 259, 261 (1985).
32 See Kahneman et al., supra note 30, at 729–30.
33 See Robert A. Kagan and Jerome H. Skolnick, Banning Smoking: Compliance Without Enforcement, in *Smoking Policy: Law, Politics, and Culture* 69 (Robert L. Rabin and Stephen D. Sugarman eds., 1993).
34 See Kahneman et al., supra note 11.
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71 See Kahneman and Tversky, supra note 6, at 277–9.
72 See ibid. at 273 (outcomes are viewed differently depending on whether they come in the form of gains or losses from a perceived status quo); ibid. at 279 (citing Eugene Galanter and Patricia Pliner, Cross-modality Matching of Money Against Other Continua, in *Sensation and Measurement* 65 [Howard R. Moskowitz, Bertram Scharf, and Joseph C. Stevens eds., 1974]) (losses are weighted more heavily than gains). Another feature of how outcomes are viewed, both empirically and under prospect theory, is that a given change produces less reaction the further a decision maker is from her reference point. Thus, for example, the value difference between $10 and $20 is greater than the value difference between $1,000 and $1,010, both for gains and for losses, assuming a reference point of $0. See ibid. at 278. In terms of the shape of the "value function" for decision makers (a function giving the value of each outcome; this is prospect theory's counterpart to the utility function), this suggests a function that is concave for gains and convex for losses; only with that shape are both gains and losses viewed as less significant the further the decision maker is from her reference point. See ibid. This shape of the value function is further supported by evidence of attitudes toward risk: People appear generally (though there are exceptions) to exhibit risk-averse attitudes toward gains but risk-seeking attitudes toward losses, and these attitudes imply concavity of the value function for gains and convexity for losses. See ibid. This pattern of concavity and convexity has received considerable empirical support. See ibid. at 268, 278; Peter C. Fishburn and Gary A. Kochenberger, Two-Piece Von Neumann–Morgenstern Utility Functions, 10 *Decision Sci.* 503, 509–10 (1979).
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80 See David Laibson, Golden Eggs and Hyperbolic Discounting, 112 *Q.J. Econ.* 443, 445–6 (1997).

81 Cf. Robert D. Cooter, Lapses, Conflict, and Akrasia in Torts and Crimes: Towards an Economic Theory of the Will, 11 *Int'l Rev. L. & Econ.* 149, 154 (1991) (concluding that short but highly probable sentences are optimal in a model in which potential offenders experience "lapses" in self-control).

82 A standard argument for law under the conventional economic approach is that self-interested people will create collective irrationality; if people are boundedly self-interested, however, this problem may tend to disappear.

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88 See George Loewenstein and Shane Frederick, Predicting Reactions to Environmental Change, in *Environment, Ethics, and Behavior: The Psychology of Environmental Valuation and Degradation* 52, 64–5 (Max H. Bazerman, David M. Messick, Ann E. Tenbrunsel, and Kimberly A. Wade-Benzoni eds., 1997).

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Part II

Heuristics and Biases: Shortcuts, Errors, and Legal Decisions