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The Methodology of the Behavioral Analysis of Law

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This article examines the behavioral analysis of law, meaning the application of empirical behavioral evidence to legal analysis, which has become increasingly popular in legal scholarship in recent years. Following the introduction in Part I, this Article highlights four central propositions on the subject. First, Part II asserts that the efficacy of the law often depends on its accounting for relevant patterns of human behavior, most notably those studied by behavioral decision scientists. This Part therefore reviews important behavioral findings, illustrating their application and relevance to a broad range of legal questions. Second, Part III argues that the behavioral approach is empirically driven, engaging in both the theoretical application of extant empirical findings to the law and the generation of new, legally relevant, experimental and observational evidence. As this Part shows, moreover, each of these behavioral genres possesses different methodological strengths and weaknesses, and they therefore both

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substitute for and complement one another, in different respects. Third, Part IV explains that the behavioral approach encounters a series of "gaps" between the type of empirical evidence provided by behavioral decision researchers and the data required to resolve legal questions. Legal scholars should therefore be aware of these gaps, which may limit the usefulness of extant behavioral evidence for legal analysis. This Part also addresses what legal scholars may do to overcome such gaps and distinguish real gaps from imaginary ones. Fourth and finally, Part V argues that the behavioral analysis of law is simultaneously normatively neutral and normatively relevant. It is normatively neutral because the behavioral analysis of law is not committed to any specific legal goal or value system. This fundamental neutrality, in turn, makes the behavioral approach a versatile instrument, which can help generate important normative conclusions in the service of scholars evaluating the law based on any normative criteria – from justice to welfare and more. Part VI concludes.

I. Accounting for Human Behavior. II. The Behavioral Analysis of Law: A. Judgment: The Formation of Beliefs: 1. Attribute Substitution Heuristics and Biases; 2. Information-Processing Biases; 3. Motivated and Egocentric Judgments. B. Choice: The Construction of Preferences: 1. Context Dependence; 2. Framing Effects, Reference Points, and Loss Aversion; 3. The Status Quo Bias and the Endowment Effect; 4. Social Preferences. **III. Empirical Foundations**: A. Boundaries. B. Two Genres: 1. Theoretical Applications; 2. Direct Empirical Tests; 3. Complements or Substitutes? **IV. Basic Research Gaps**: A. Shrinking Gaps: Boundary Conditions and Debiasing; B. Second-Order Gaps: A Multiplicity of Phenomena; C. Institutional Gaps: Content and Context Effects. **V. Normative Neutrality and Normative Relevance**: A. Normative Neutrality; B. Normative Relevance. **VI. Conclusion.**

I. Accounting for Human Behavior

One of the main functions of the law is the guidance of human behavior.[1] Yet traditional legal scholarship, jurisprudence, and policy making typically rely on mere intuitions about human behavior to guide their decisions, rules, and proposals. Consequently, the

1. See, *e.g.*, Joseph Raz, *The Authority of Law: Essays on Law and Morality* (1979) p. 163 (discussing the functions of law). See also: Don Langevoort, "Behavioral Theories of

law contains numerous intuitive, often implicit, assumptions about the ways in which individuals process information and make judgments, form preferences and reach decisions, respond to incentives, and more.[2] This state of affairs is problematic, *inter alia*, for two reasons: first, the lack of a clear, explicit, behavioral model inevitably generates contradictions in the law.[3] Second, a wealth of psychological research reveals that intuition, though indispensable, often useful, and sometimes accurate, is also prone to systematic error.[4]

Partly in response to the first problem, legal scholars have developed approaches that make explicit the behavioral and other assumptions underlying their legal analyses. A prominent case in point is the economic analysis of law, which explicitly assumes individuals are strictly rational utility maximizers.[5] These rational actors

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Judgment and Decision Making in Legal Scholarship: A Literature Review", 51 *Vand. L. Rev.* (1998) 1499, p. 1499 ("Nearly all interesting legal issues require accurate predictions about human behavior to be resolved satisfactorily"); Robert A. Prentice, "Chicago Man, K-T Man, and the Future of Behavioral Law and Economics", 56 *Vand. L. Rev.* (2003) 1663, p. 1664 ("Most law is aimed at shaping human behavior, encouraging that which is good for society and discouraging that which is bad.")

2. See, *e.g.,* Prentice, *id.*, p. 1665 ("for most of the history of our legal system, laws were passed, cases were decided, and academics pontificated about the law based on nothing more than common sense assumptions about how people make decisions.") *Cf.* also the description of the traditional legal approach in Hans Zeisel, "Reflections on Experimental Techniques in the Law", 2 *J. Leg. Stud.* (1973) 107, p. 107 ("Much of the law's reasoning turns on the effect of the rules it creates or enforces. Normally these effects are alleged or implied, but rarely proven.").
3. Of course, there are many other causes for contradictions in the law, as the legal realists and later critical legal scholars and others have long made clear. Some illustrative examples include Karl N. Llewellyn, "Some Realism about Realism – Responding to Dean Pound", 44 *Harv. L. Rev.* (1931) 1222, p. 1239 ("But the line of inquiry via rationalization has come close to demonstrating that in any case doubtful enough to make litigation respectable the available authoritative premises ... are at least two, and that the two are mutually contradictory as applied to the case in hand"); Duncan Kennedy, "Form and Substance in Private Law Adjudication", 89 *Harv. L. Rev.* (1976) 1685, p. 1685 ("…substantive and formal conflict in private law ... reflect[s] a deeper level of contradiction").
4. See supra Part II.
5. See, *e.g.*, Richard Posner, *Economic Analysis of Law* (6th ed. 2003) p. 3 ("The task of economics ... is to explore the implications of assuming that man is rational maximizer of his ends in life ...") (footnotes omitted); Steven Shavell, *Foundations of Economic Analysis of Law* (2004) p. 1-2 (discussing the role of the rationality assumption in descriptive analysis and noting that "the view taken will generally be that actors are "rational" ...

possess stable preferences that are revealed in their choices, obtain optimal amounts of information, and make unbiased judgments under uncertainty.[6] Moreover, according to the economic convention the strictly rational legal actor typically is assumed self-interested, his utility a function solely of his personal well-being.[7]

Relying on the rational-actor model, the economic approach has been able to reevaluate systematically one legal domain after another. It has generated an immense body of scholarship, fundamentally changing the nature of legal reasoning and impacting many specific legal rules and institutions.[8] The simple and explicit assumption of rational action enjoys the great benefits of predictability and tractability: one can predict how a rational actor will react to any given legal rule, institution or incentive, and his simple utility function makes mathematical modeling more tractable.[9]

The powerful rational actor model, however, also suffers from significant limitations. Most notably, the efficacy of any model depends on its explanatory power,[10] which is unlikely to be great when its underlying assumptions are systematically biased. A large

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forward looking and behave[ing] so as to maximize their expected utility"). For a more detailed review of various formulations of rational action within legal scholarship see, *e.g*., Russell B. Korobkin and Thomas S. Ulen, "Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics", 88 *Cal. L. Rev.* (2000) 1053, pp. 1060-1066.

6. *E.g*., Gary S. Becker, *The Economic Approach to Human Behavior* (1976) p. 14.
7. See, *e.g*., Posner (supra note 5); Matthew Rabin, "Incorporating Fairness into Game Theory and Economics", 83 *Am. Econ. Rev.* (1993) 1281, p. 1281 ("Most current economic models assume that people pursue only their own material self-interest and do not care about "social" goals").
8. By now, the law and economics literature is immense. Basic works include Posner (supra note 5); Shavell (supra note 5). See also: *Handbook of Law and Economics*, Vols 1 & 2 (A. Mitchell Polinsky and Steven Shavell- eds., 2007).
9. *E.g.,* Posner (supra note 5) p. 17. Nevertheless, additional assumptions must be made even when analyzing the behavior of strictly rational legal actors, regarding their risk attitudes, the information available to them, and more.
10. See: Milton Friedman, "The Methodology of Positive Economics", *Essays in Positive Economics* (1953) pp. 3, 21-22; Allan Gibbard and Hal Varian, "Economic Models", 75 *J. Phil*. (1978) 664, pp. 669-673 (discussing the concepts of approximation and fit in microeconomic models that are based on false assumptions). But see the somewhat different emphasis in George J. Stigler, "The Development of Utility Theory. II", 58 *J. Pol. Econ*. (1950) 373, pp. 392-396 (citing generality, manageability, and congruence with reality as three criteria used to evaluate economic theories).

body of empirical research nevertheless reveals that the strict rationality assumption is not only descriptively inaccurate, but also systematically wrong. Individuals' judgments and choices exhibit behavioral regularities that deviate, predictably, from the patterns expected of hypothetical rational actors.[11] And while the rationality assumption sometimes may provide a sufficiently realistic approximation, in many legal domains a more realistic view of human behavior is an important precondition for effective legal analysis.[12]

The behavioral analysis of law,[13] which has become increasingly popular in legal scholarship in recent years,[14] responds to this need. It provides an explicit model

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11. See *infra* Part II.

12. See: Christine Jolls, Cass R. Sunstein and Richard H. Thaler, "A Behaviroal Approach to Law and Economics", 50 *Stan. L. Rev.* (1998) 1471, pp. 1474-1475 (arguing for the superiority of a behaviorally-informed over a traditional law and economics analysis).

13. Notably, there is some disagreement among scholars on the appropriate name for this approach, although the emphasis on the "behavioral" focus of the analysis is most common. When examining the various proposed definitions it is important to note that not all are in conflict with one another. For example, "Behavioral Law and Economics" may be viewed as a combination of the behavioral analysis of law with the normative foundations of law and economics. For some definitions see: Jon D. Hanson and Douglas A. Kysar, "Taking Behavioralism Seriously: The Problem of Market Manipulation", 74 *N.Y.U. L. Rev.* (1999) 630 (Law and behavioralism); Joll, Sunstein and Thaler, *id.* (A Behavioral Approach to Law and Economics); Cass R. Sunstein, "Behavioral Law and Economics: A Progress Report", 1 *Am. L. and Econ. Rev.* (1999) 115 (Behavioral Law and Economics)*;* Gregory Mitchell, "Taking Behavioralism Too Seriously? The Unwarranted Pessimism of the New Behavioral Analysis of Law", 43 *Wm. and Mary L. Rev.* (2002) 1907, p. 1915 n. 12 (Legal decision theory); Prentice (supra note 1) p. 1667 (describing "a movement, variously called Behavioral Law and Economics (BLE), Behavioral Decision Theory (BDT), and Legal Decision Theory (LDT), that seeks to provide a more descriptively and predictively accurate account of human behavior"); Jeffrey J. Rachlinski, "The "New" Law and Psychology: A Reply to Critics, Skeptics, and Cautious Supporters", 85 *Cornell L. Rev.* (2000) 739 (offering the title of "New" law and psychology and explaining why names that include a "behavioral" component may be misleading). See also: Christoph Engel, "Behavioral Law and Economics: Comment", *Behavioral Economics and its Applications* (Peter Diamond and Hannu Veriainen- ed., 2007) 148, pp. 149-153 (distinguishing behavioral law and ecnomics from law and psychology).

14. *E.g.*, Mitchell*, id.*, p. 1909-1910 and n. 5-6; Sunstein, *id.*, p. 115 (describing a "flood" of behaviorally-oriented legal research already in 1999). For some additional reviews and broad applications of behavioral findings to the law see, *e.g.*, Jolls, Sunstein and Thaler (supra note 12); Korobkin and Ulen (supra note 5); Langevoort (supra note 1) (showing the

of legally relevant behavior, based on empirical research instead of intuition or theory alone. Drawing on the extensive findings of behavioral decision research, the psychology of judgment and decision making (JDM), and related fields,[15] the behavioral approach thus provides an empirically-based middle ground between the theoretical abstractions of the rational-actor model and the implicit, intuitive, and unstructured view of human behavior of traditional legal scholarship.

Specifically, behavioral decision research emphasizes that humans possess limited cognitive resources and are affected by motivation and emotion – that is, they are "boundedly rational."[16] At times they engage in formal, effortful, and time-consuming judgment and decision making.[17] More commonly, however, to survive and function in a complex world individuals use mental and emotional heuristics when making judgments under uncertainty; they also rely extensively on situational cues to guide their choices. Yet while highly adaptive and often useful,[18] heuristic judgment and cue-

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broad range of behavioral applications in the legal literature as of decade ago, even before this approach has become widely popular in the legal literature).

15. See, *e.g.*, Robyn M. Dawes, "Behavioral Decision Making and Judgment", *The Handbook of Social Psychology* (Daniel T. Gilbert, Susan T. Fiske and Gardner Lindzey- eds., 1998) 497 (hereinafter "Dawes, *Handbook*"). For one useful summary description of the field and its development see: William M. Goldstein and Robin M. Hogarth, "Judgment and Decision Research: Some Historical Context", *Research on Judgment and Decision Making: Currents, Connections, and Controversies* (William M. Goldstein and Robin M. Hogarth – eds., 1997).

16. The concept of bounded rationality was originally developed by Herbert A. Simon. See: Herbert A. Simon, "A Behavioral Model of Rational Choice", 69 *Q. J. Econ.* (1956) 99; Herbert A. Simon, "Rational Choice and the Structure of the Environment", 63 *Psychol. Rev.* (1958) 129. In Simon's terminology, however, bounded rationality denoted only the cognitive limitations of the human mind, while the present usage is broader, referring to the various inherent limitations of human judgment and decision making, See: Avishalom Tor, "The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy", 101 *Mich. L. Rev.* (2002) 482, p. 485 and n. 4 (explaining this broader usage of the term). See also: Douglas MacLean, "Some Morals of a Theory of Nonrational Choice", Judgment, Decisions and Public Policy (Rajeev Gowda and Jeffrey C. Fox – eds., 2002) 46, p. 48 (arguing that psychological evidence on nonrational judgment and decision behavior present a qualitatively deeper challenge to the rationality assumption than the one posed by Simon's early bounded rationality view).

17. See infra Part IV.A. (discussing the boundary between intuitive and formal judgment and decision making).

18. See, *e.g.*, *Bounded Rationality: The Adaptive Toolbox* (Gerd Gigerenzer and Reinhard Selten – eds., 2001), John W. Payne, James R. Bettman and Eric J. Johnson, *The Adaptive*

dependent choice also lead decision makers systematically and predictably to deviate from the normative standards of strictly rational behavior.[19]

The behavioral approach seeks to infuse the law with this more realistic view of legally relevant behavior.[20] One may therefore define the behavioral analysis of law as the application of empirical behavioral evidence to the analysis of legal rules and institutions. The proposed definition captures four central aspects of the approach that this Article examines in some detail. First, the behavioral analysis of law asserts that the efficacy of the law depends on its accounting for relevant patterns of human behavior, identified by behavioral decision scientists and other researchers. Second, this approach is empirically driven, engaging in both the theoretical application of extant empirical findings and the generation of new experimental evidence of legal relevance. Third, the behavioral analysis of law faces a series of challenges, or "application gaps," between basic research findings and applied legal questions. Until these gaps are bridged, the utility and explanatory power of the behavioral approach in many legal domains may remain limited. Fourth, the behavioral analysis of law is an instrumental, normatively neutral, approach, which seeks to provide better understanding of the myriad interactions between law and behavior without a commitment to any particular value system.[21] Behavioral insights may therefore enrich any argument that implicates legally relevant behavior, but cannot generate normative conclusions without drawing on the analyst's other value commitments.[22]

Based on these four propositions regarding the main methodological characteristics of the behavioral analysis of law, the remainder of the Article delineates the approach, then evaluates its accomplishments, potential, challenges, and limitations. Part II

Decision Maker (1993) 2. (developing the thesis that the use of heuristics and varying decision strategies "is an adaptive response of a limited-capacity information processor to the demands of complex decision tasks").

19. See infra Parts II.A. and II.B. (reviewing findings on judgment and choice, respectively).

20. The behavioral seeks to account for the behavior of all legally-relevant actors, within and without the legal system. Note, moreover, that one could also apply behavioral insights to the study of legal scholars and legal scholarship itself. See, e.g, Matthew D. Adler, "Bounded Rationality and Legal Sscholarship" (University of Pennsylvania Institute for Law and Economics Research Paper No. 08-03, February 2008) (available at [http: //ssrn.com/abstract=1095874]) (arguing that boundedly rational legal scholars would be unable fully to implement any normative analysis that includes social welfare as one of its criteria).

21. Except possibly insofar as the belief in the legal importance of accounting for human behavior is concerned. For a further discussion see infra Part V.

22. See infra Part V.

summarizes some basic JDM findings and illustrates their legal application, while Part III examines the main methodologies employed by behaviorally oriented legal scholars. Part IV considers some of the most significant challenges, or application gaps, facing the behavioral analysis of law at present. Part V follows with an analysis of the normative dimension of the behavioral approach; Part VI concludes.

II. The Behavioral Analysis of Law

The first theme developed in this Article is that the efficacy of the law depends on its accounting for relevant patterns of human behavior, notably those identified by behavioral decision researchers, judgment and decision making psychologists, and others. This research usefully may be classified into two general domains of *judgment* and *decision making* (or "choice"),[23] also known in economic parlance as *beliefs* and *preferences*, respectively.[24] The study of judgment is concerned with intuitive judgments, namely mental processes that are neither completely automatic nor elaborate and controlled. [25] When considering a complex logical problem that is printed on a sheet of paper, for instance, such judgments occupy the middle ground between the automatic visual perception of the problem printed on the sheet and the conscious, formal, reasoning process required to solve it. In this example, intuitive judgments may concern matters such as rough estimates of the answer to the problem, a quick prediction of the time needed to solve it, or an immediate evaluation of the apparent difficulty of the problem. Moreover, the study of intuitive judgment is characterized by a focus on how people make judgments – which are all essentially probabilistic[26] – to

23. For a similar distinction see, *e.g.*, Dawes (supra note 15) pp. 497-499 (choice), 530-533 (judgment). See also: Mitchell (supra note 13) n. 20 (making a similar distinction based on the conventions of behavioral decision research and discussing it at length).

24. *E.g.*, Nicholas Barberis and Richard H. Thaler, "A Survey of Behavioral Finance", *2 Advances in Behavioral Finance* (Richard H. Thaler- ed., 2005) 1, pp.12-22 (dividing relevant psychological findings among the domains of beliefs and preferences); Colin F. Camerer, "Individual Decision Making", *Handbook of Experimental Economics* (John H. Kagel and Alvin E. Roth – eds., 1995) 587 (same).

25. See, *e.g.*, Daniel Kahneman and Shane Frederick, "Representativeness Revisited: Attribute Substitution in Intuitive Judgment", *Heuristics and Biases: The Psychology of Intuitive Judgment* (Thomas Gilovich, Dale Griffin, and Daniel Kahneman- eds., 2002) 49, p. 50 (hereinafter "*Heuristics and Biases*"). See also: Richard Nisbett and Lee Ross, *Human Inference: Strategies and Shortcomings of Social Judgment* (1980) (comparing intuitive inferences with the requirements of formal reasoning).

26. Since judgments about outcomes also may be recast as probabilistic judgments. For

form their beliefs about the world. The study of decision making, on the other hand, examines how individuals choose among the alternatives available to them, choices that economists consider the expression of preferences.[27]

Parts II.A. and II.B. therefore examine the main psychological findings in these two domains, respectively, also illustrating their relevance for the law through a series of applications in a variety of legal areas.[28]

A. Judgment: The Formation of Beliefs

Individuals make daily a multitude of legally relevant judgments of future, past, and present events under conditions of uncertainty. They predict the future outcomes of an election or the performance of a business venture; make determinations regarding past events – such as whether a defendant who injured a plaintiff likely has behaved negligently; and judge how likely a particular tract of land presently is to be sitting over an oil reservoir. Such judgments require individuals – at least implicitly – to assess the probability of different outcomes, a task for which they use a variety of heuristic tools.

1. Attribute Substitution Heuristics and Biases

In the domain of judgment, boundedly rational decision makers often use *attribute substitution* – that is, when confronted with a difficult question they may answer instead an easier one whose answer comes more readily to mind. For instance, a person who is asked "How dangerous is the intersection near your home?" may answer as if she were asked how many accidents or near-accidents at that intersection she can readily recall.[29] The substitution of a proxy for a sought-after attribute facilitates and simplifies judgment and thus serves a crucial function for the boundedly rational decision maker; such proxies, however, are inevitably inaccurate,

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example, judgments of outcomes such as the time required for or the difficulty of solving a problem may be recast as judgments of the likelihood that the solution will taken certain amounts of time or of the probability of reaching the correct solution.

27. See, *e.g.*, Mark Blaug, *The Methodology of Economics – Or How Economists Explain* (2d ed. 1992) pp. 142-144 (providing a short, non-technical overview of revealed preferences theory). See also: infra note 83 and the accompanying text.

28. The reader should treat the examples that follow as no more than illustrations meant to highlight the potential of behavioral evidence to contribute to legal scholarship, rather than a complete analysis of the various topics used in these illustrations. In many cases, however, the sources referenced in the relevant footnotes will provide a more extensive analysis of specific topics for interested readers.

29. *E.g.*, Kahneman and Frederick (supra note 25) p. 51.

leading to predictable errors.[30] The following sections thus review and apply three general-purpose heuristics: the representativeness heuristic, the availability heuristic, and the affect heuristic.

a) The Representativeness Heuristic

Legally relevant judgments often require an assessment of the likelihood that an instance or an event[31] belongs to a certain class or has originated from or caused another event. One may be asked to determine, for instance, whether a criminal defendant is guilty of the crime with which he is charged. Decision makers typically answer such questions based on the degree to which the judged instance – in this case, defendant – resembles the class of offenders. This judgmental process, known as the representativeness heuristic, substitutes the degree to which an event resembles a class for the actual likelihood that it belongs to that class.[32]

Judgment based on similarity or representativeness is relatively easy, and is usually correlated with the actual probability of the judged event. The common reliance on this proxy, however, also leads to systematic errors because various factors affect probability but not similarity, and vice versa. For instance, the base-rate frequency of the judged outcomes affects probability, but not similarity.[33] To illustrate, where the base-rate frequency of lawyers among one hundred participants in a personality-test study is 30%, with engineers comprising the other 70%, any random personality test from the study is more likely to belong to an engineer than to a lawyer. Because similarity is not affected by base rates, however, people would judge a brief description of a test-taking individual that more closely resembles the stereotype of a lawyer

30. *Id.,* p. 53. See also: Rachlinski (supra note 13) p. 17 (also noting decision makers typically are unaware of their use of heuristics).
31. In probability theory, "event" means any state of the world to which one can assign a probability including, for instance, a physical object, a person, or behavior. See, *e.g.*, Robin Hogarth, *Judgment and Choice* (2d ed., 1987) p. 237.
32. Amos Tversky and Daniel Kahneman, "Subjective Probability: A Judgment of Representativeness", *Judgment Under Uncertainty: Heuristics and Biases* (Daniel Kahneman, Paul Slovic and Amos Tversky – eds., 1982) 32, pp. 39-40. (herinafter "*Judgment Under Uncertainty*"). See also Amos Tversky and Daniel Kahneman, "Judgments of and by Representativeness", *Judgment Under Uncertainty*; *id.,* 84, pp. 85-88 (elaborating on the representativeness relation).
33. Tversky and Kahneman, *Subjective Probability*, *id*. (also describing various additional variables that impact probability but not representativeness, including sample size, predictability, and more).

than that of an engineer as highly likely to belong to a lawyer, regardless of the two professions' base rate in the study.[34]

In the law, the neglect of base-rate information in the face of other, anecdotal but highly representative, evidence thus suggests that courts may under-incorporate "hard," scientific, base-rate facts provided by expert witnesses.[35] This effect of representativeness can also help explain the rule that "character evidence" is generally inadmissible in a trial to prove the truth of the matter asserted.[36] Because of the character-evidence rule, for example, a prosecutor may not introduce evidence that a criminal defendant charged with murder has a previous record of conviction for armed robbery.[37] The conventional explanation for the rule – that a defendant should not be convicted because he is an unsavory person, nor because of past misdeeds – is somewhat puzzling. Logically, character evidence is relevant, since violent felons are more likely than the average person to commit murder. Character evidence, however, may increase a defendant's representativeness – making the former armed robber look more like a stereotypical murderer. In addition, this evidence may also lead the court to ignore the base-rate fact that armed robbers mostly are *not* murderers, thereby causing an unjustified increase in the likelihood of conviction.[38]

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34. See: Daniel Kahneman and Amos Tversky, "On the Psychology of Prediction", *Judgment Under Uncertainty* (supra note 32) 48, pp. 53-54.
35. Michael J. Saks and Robert F. Kidd, "Human Information Processing and Adjudciation: Trial by Heuristics", 15 *L. & Soc. Rev.* (1980) 123, pp. 148-149. Ironically, however, uninformed of the behavioral findings, courts and commentators historically have expressed precisely the opposite concern – that mathematical and statistical evidence may be unduly persuasive. See, *e.g.*, the famous case of *People v. Collins*, 68 Cal. 2d 319, 320, 438 P.2d 33 (1968) ("[m]athematics, a veritable sorcerer in our computerized society, while assisting the trier of fact in the search for truth, must not [be allowed to] cast a spell over him."); Laurence Tribe, "Trial by Mathematics: Precision and Ritual in the Legal Process", 84 *Harv. L. Rev.* (1971) 1329, p. 1334 (asserting that mathematical arguments may be given "a credence they may not deserve and a weight they cannot logically claim"). Of course, some types of statistical evidence may be over-weighted by courts in certain circumstances. Representativeness, however, likely leads more frequently to an under-incorporation effect.
36. *Fed. R. Evid.* 404 (1998).
37. See: Korobkin and Ulen (supra note 5) pp. 1086-1087 (discussing this application in more detail).
38. *Id.*

b) The Availability Heuristic

Availability is another attribute-substitution heuristic of general relevance, often used in assessments of the frequency of a class or the probability of events. Judgment by availability relies on people's better and faster recall of instances of large classes than of less common classes; on their finding it easier to imagine likely occurrences than unlikely ones; and on the reinforcement of associative mental connections when two events frequently co-occur. When judging by availability, therefore, individuals substitute the ease of mental retrieval, construction, or association for a direct estimation of the actual numerosity of a class, the likelihood of an event, or frequency at which events co-occur.[39]

Like other attribute substitution heuristics, availability-based judgments are rapid and effortless; decision makers are therefore usually unaware of the processes they use to reach these judgments. Judgments by availability also generate predictable errors, because some variables impact availability, but not probability and frequency, while other variables affect the latter but not availability. For example, factors that make instances easier to retrieve without changing their true probability lead to a systematic overestimation in availability-driven judgments.[40] Hence, people generally have reasonable estimates of the relative lethality of various potential causes of death (*e.g.* motor vehicle accidents, cancer, etc.). At the same time, they systematically misestimate the frequency of those death causes that tend to be under- or over-publicized. Accidents are overestimated, being judged to cause as many fatalities as diseases, while the latter in fact cause about 16 times more deaths. Similarly, the risk of homicide is dramatically overestimated, while the risk of death by stroke is underestimated. In general, overestimated causes of death tend to be more dramatic and sensational, and thus both heavily publicized by the media and easier to recall per se. Underestimated risks, on the other hand, tend to be unspectacular events, which claim one victim at a time, are common also in non-fatal form, and do not receive much publicity.[41]

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39. Amos Tversky and Daniel Kahneman, "Judgment Under Uncertainty: Heuristics and Biases", *Judgment Under Uncertainty* (supra note 32) 3, p. 11-14. See also: Amos Tversky and Daniel Kahneman, "Availability: A Heuristic for Judging Frequency and Probability", *Judgment Under Uncertainty* (supra note 32) 163 (exploring different types of judgments by availability). See also: Norbert Schwarz and Leigh Ann Vaughn, "The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information", *Heuristics and Biases* (supra note 25) 103, p. 118 (disentangling two potential mechanisms underlying the effects of availability and concluding that ease of recall is the mechanism of more general relevance).

40. *E.g.*, Tversky and Kahneman, *Availability*, *id.*

41. See: Paul Slovic, Baruch Fischhoff and Sarah Lichtenstein, "Facts Versus Fears: Understanding Perceived Risk, *Judgment Under Uncertainty* (supra note 32) 463, pp. 465-472.

The legal importance of accounting for availability-driven biases is apparent. Such biases lead the public to overestimate some risks, occasionally creating excessive demands for regulation.[42] Availability biases are also important in other legal domains. For instance, the economic analysis of law assumes criminal deterrence can be equally achieved by increasing the magnitude or the probability of the sanction.[43] Moreover, since increasing enforcement efforts tends to be more costly than increasing the severity of sanctions, the latter is generally assumed a more efficient deterrence strategy.[44] If criminals exhibit availability biases, however, these conclusions may change. For one, an increased frequency of enforcement may be more available to criminals than an increased severity of punishment, say, because criminals observe heightened police activity but are not privy to the distribution of sanctions. If this were the case, increased enforcement might provide more, instead of less, efficient deterrence than the increased severity of punishment.[45]

c) The Affect Heuristic

People often make judgments based on affective reactions. In these situations, they substitute affective "tags" associated with the targets of judgment for the direct evaluation of these targets.[46] This affect heuristic simplifies judgmental processes by consulting readily available affective impressions, utilizing affective shortcuts much like the cognitive shortcuts used by representativeness and availability.[47]

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42. Typical examples occur in the area of anecdote-driven environmental regulation that follows highly publicized events, such as the cases of Agent Orange or asbestos in schools. See, *e.g.*, Jolls, Sunstein and Thaler (supra note 12) pp. 1518-1522 (providing more detail). See also: W. Kip Viscusi and Jane T. Hamilton, "Are Risk Regulators Rational? Evidence from Hazardous Waste Cleanup Decisions", 89 *Am. Econ. Rev.* (1999) 1010 (examining empirical evidence for the impact of behavioral biases, *inter alia*, on environmental regulators' decisions).
43. See, *e.g.*, Gary S. Becker, "Crime and Punishment: An Economic Approach", 76 *J. Pol. Econ.* (1967) 169; Steven Shavell, "Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent", 85 *Colum. L. Rev.* (1985) 1232, p. 1235.
44. *E.g.*, Shavell (supra note 5) p. 484 ("One of the basic insights that applies to optimal law enforcement ... is that a low probability – high magnitude sanction policy is socially advantages").
45. See: Korobkin and Ulen (supra note 5) pp. 1088-1089 (examining the implications of availability biases for the optimal deterrence model in some detail).
46. Kahneman and Frederick (supra note 25) pp. 56-57 (noting that "[*a*]*ffective valence* is a natural assessment, and therefore a candidate for substitution in the numerous situations in which an affectively loaded response is required").
47. See: Melissa L. Finucane, Ali Alhakami, Paul Slovic and Stephen M. Johnson, "The Affect

In these cases, decision makers' evaluations of outcome are largely dependent on whether the outcomes are tagged as affectively "positive" or "negative." For instance, studies suggest that when judgments are based on affective reactions variations in the probability of different outcomes matter relatively little.[48] Hence, affect-rich outcomes yield a significant overweighting of small probabilities.[49] Much as in the case of the availability heuristic, this impact of affect can lead to excessive public demand for the regulation of risks that have very low probabilities but generate strong negative affect.[50] Typical examples may include demands for regulation of environmental hazards that generate a strongly negative affective reaction.[51]

The affect heuristic may well play a role in the courtroom as well. For instance, the likelihood of a decision favoring a given party may increase or decrease depending on the affective reaction the party generates in court.[52] Researchers have also shown that punitive damage awards reflect juries' outrage – that is, their affective reaction to the facts of the case.[53] Litigators and legal policy makers in the tort area should therefore take into account the likely disregard by juries of some legally significant factors, such as the ex-ante probabilities of harm, detection, or compensation in the face of affect-laden evidence.[54]

People also rely on the affect heuristic when assessing the risks and benefits of different activities, such as nuclear power or cigarette smoking. Judgments of the risks and benefits of hazards therefore are often negatively correlated, such that people deem

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Heuristic in Judgments of Risks and Benefits", 13 *J. Behav. Dec. Making* (2000) 1; Paul Slovic, Melissa Finucane, Ellen Peters and Donald G. MacGregor, "The Affect Heuristic", *Heuristics and Biases* (supra note 25) 397.

48. See, *e.g.*, Yuval Rottenstreich and Christopher K. Hsee, "Money, Kisses, and Electric Shocks: On the Affective Psychology of Risk", 12 *Psychol. Sci.* (2001) 185, p. 188. See also: George F. Loewenstein, Elke U. Weber and Christopher K. Hsee, "Risk as Feelings", 127 *Psychol. Bull* (2001) 267.
49. Rottenstreich and Hsee, *id.*
50. See: Cass R. Sunstein, "Probability Neglect: Emotions, Worst Cases, and Law", 112 *Yale L. J.* (2002) 61, pp. 87-91 [hereinafter "Probability Neglect"] (also noting that affect-driven judgments may contribute to inconsistencies in the administrative regulation of different risks).
51. See, *e.g.*, Sunstein, *Probability Neglect, id.,* p. 69 (discussing how excess public demand due to affective over-reaction can drive regulation).
52. Jeffrey J. Rachlinski, "Bottom-Up versus Top-Down Lawmaking", 73 *U. Chi. L. Rev.* (2006) 933, pp. 942-943 and the evidence cited there.
53. Daniel Kahneman, David Schkade and Cass R. Sunstein, "Shared Outrage and Erratic Awards: The Psychology of Punitive Damages", 16 *J. Risk & Uncertain* (1998) 49.
54. See: Sunstein, *Probability Neglect* (supra note 50) p. 101.

low-risk those activities they consider beneficial, such as vaccinations, and high-risk those activities they believe are not beneficial.[55] Consequently, some scholars have argued for imposing increased liability or otherwise regulating manufacturers that use advertising to increase the positive affect associated with harmful products, such as cigarettes, and thereby reduce consumers' perceptions of the risks of these products.[56]

2. Information-Processing Biases

Boundedly rational actors also exhibit systematic biases beyond attribute substitution heuristics. These additional biases result from certain characteristics of common cognitive information-processing mechanisms. Two typical examples, which are reviewed in the following sections, are anchoring and adjustment and the hindsight bias.

a) Anchoring and Adjustment

In many situations decision makers make estimates by starting from an initial value, based on information provided by the environment or a partial computation, then adjust the estimate to reach their final answer. Studies reveal, however, that these adjustments typically are insufficient, so that different starting points lead to different estimates that are biased toward the initial value, or "anchor."[57] Importantly, insufficient adjustment occurs even for anchors that are obviously irrelevant, patently wrong or extreme.[58] In a famous early illustration of this effect, researchers showed two groups of participants the results of spinning a roulette wheel, and asked two consecutive questions. The first asked whether the percentage of African countries in the UN was higher (for the first group, which observed the number "10" on the wheel) or lower (for the second group, which observed the number "65" on the wheel) than the supposedly randomly generated number on the wheel. The second question, which followed immediately, then asked participants to give their best estimates of the percentage of African countries in the UN. Revealing a significant anchoring effect for this patently irrelevant and randomly generated anchor, the mean estimates of the two groups were 25% and 45% for the low and high anchors respectively.

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55. Finucane, Alhakami, Slovic and Johnson (supra note 47).
56. Jon D. Hanson and Douglas A. Kysar, "Taking Behavioralism Seriously: Some Evidence of Market Manipulation", 112 *Harv. L. Rev.* (1999) 1420, pp. 1467-1565.
57. See, *e.g.*, Paul Slovic and Sarah Lichtenstein, "Comparison of Bayesian and Regression Approaches in the Study of Information Processing in Judgment", 6 *Org. Behav. & Hum. Perform* (1971) 649; Tversky and Kahneman, *Judgment Under Uncertianty* (supra note 32) pp. 14-18.
58. Tversky and Kahneman, *id.*, p. 14.

For anchoring to occur, moreover, decision makers must note the anchor, but need not be aware they are anchoring on it.[59] In fact, recent research has shown anchoring effects even for clearly incidental environmental anchors, which resulted in biased estimates of athletes' performance due to the numbers on their clothing; estimates of the proportion of sales in the domestic market were influenced by a product's model number; and even participants' estimates of how much they would spend at a restaurant were influenced by whether the restaurant was named "Studio 17" or "Studio 97."[60] Anchoring has even been shown to affect professional decision makers in their domain of expertise,[61] and to bias not only numerical and quantitative judgments, but also other evaluations in social settings.[62]

Anchoring and adjustment can produce significant biases in the legal domain. Studies show, for example, how plaintiff's damages demand can anchor jury judgments.[63] Similarly, telling jurors to consider verdicts in an order that begins with the harshest and proceeds to the most lenient – a standard murder trial practice – leads to harsher average verdicts than when they are told to consider verdicts in the opposite order.[64] Damage caps – which are supposed to limit excessive awards but not impact other awards – have also been shown to produce anchoring effects, on both jury awards

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59. For one review of anchoring conditions see: Gretchen B. Chapman and Eric J. Johnson, "Incorporating the Irrelevant: Anchors in judgments of Belief and Value", *Heuristics and Biases* (supra note 25) 120, pp. 123-26 See also: Nicholas Epley and Thomas Gilovich, "Putting the Adjustment Back in the Anchoring and Adjustment Heuristic", 12 *Psych. Sci.* (2001) 391, pp. 391-392.
60. Clayton R. Critcher and Thomas Gilovich, Incidental Environmental Anchors, J. Behav. Dec. Making (forthcoming 2008) (available online at http://www3.interscience.wiley.com /journal/90511323/issue).
61. See, *e.g.*, Joyce and Biddle, "Anchoring and Adjustment in Probabilistic Inference in Auditing", 19 *J. Account Res.* (1981) 120 (accountants); Gregory Northcraft and Margaret Neale, "Experts, Amateurs, and Real Estate: An Anchoring and Adjustment Perspective on Property Pricing Decisions", 39 *Org. Behav. & Hum. Dec. Process*. (1987) 84 (real estate brokers). See also: Critcher and Gilovich, *id.* (finding in Study 1 that anchoring effects were not qualified by participants' expertise in the relevant domain).
62. See: Ziva Kunda, *Social Cognition: Making Sense of People* (1999) pp. 103-105 (discussing anchoring and social judgment).
63. See: Edie Greene and Brian H. Bornstein, *Determining Damages: The Psychology of Jury Awards* (2003) pp. 152-154 (effect of plaintiff's demand).
64. Jeff Greenberg, Kipling D. Williams and Mary K. O'Brien, "Considering the Harshest Verdict First: Biasing Effects on Mock Juror Verdicts", 12 *Person & Soc. Psych. Bull.* (1986) 41.

and settlements.[65] Importantly, moreover, a recent meta-analysis found that anchoring even exerts a powerful effect on negotiated outcomes, which commonly occur in legal settings, also revealing that neither the availability of relevant information nor the negotiating decision makers' expertise did much to diminish the anchoring effect.[66]

b) Hindsight Bias

Another much-studied bias that results from information-processing mechanisms is the hindsight bias. With hindsight, people overestimate the predictability of past events – both overstating their ability to have predicted past events and believing others should have been able to predict these events.[67] Research suggests that this bias results from the automatic updating of beliefs following the processing of new information. All estimates thereafter, including those of past predictability, are based on the updated beliefs. Past predictability, which should have been judged on the basis of the more limited, pre-update, information, is therefore systematically overestimated.[68]

The hindsight bias has clear implications for the law. For one, because of the bias decision makers may be held liable for outcomes they could not have predicted.[69]

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65. *E.g.*, Jennifer K. Robbennolt and Christina A. Studebaker, "Anchoring in the Courtroom: The Effects of Caps on Punitive Damages", 23 *Law & Hum Behav.* (1999) 353, pp. 357-367 (finding upward or downward bias compared to a no-cap control, depending on cap magnitude).

66. Dan Orr and Chris Guthrie, "Anchoring, Information, Expertise, and Negotiation: New Insights from Meta-Analysis", 21 *Ohio St. J. on Disp. Resol.* (2006) 597, p. 597.

67. For the first description of the effect see: Baruch Fischhoff, "Hindsight Does Not Equal Foresight: The Effect of Outcome Knowledge on Judgment under Uncertainty", 1 *J. Exp. Psych* (1975) 288. For a thorough review of the literature on this bias at the time see: Jeffrey J. Rachlinski, "A Positive Psychological Theory of Judging in Hindsight", 65 *U. Chi. L. Rev.* (1998) 571, pp. 576-586 (hereinafter "Hindsight Bias"). See also: Rebecca L. Guilbault, Fred B. Bryant, Jennifer Howard Brockway and Emil J. Posavac, "A Meta-Analysis of Research on Hindsight Bias", 26 *Basic and App. Soc. Psych* (2004) 103 (providing a meta-analytic review of 95 hindsight bias studies containing 252 independent effect sizes).

68. See *e.g.,* Ulrich Hoffrage, Ralph Hertwig and Gred Gigerenzer, "Hindsight Bias: A By-Product of Knowledge Updating?", 26 *J. Experim. Psych.: Learn., Mem., & Cog.* (2000) 566, pp. 577-579 (also noting the adaptive nature of knowledge updating in memory and the extreme demands involved in remembering one's continually changing past beliefs).

69. *E.g.,* Kim A. Kamin and Jeffrey J. Rachlinski, "Ex Post [not =] Ex Ante: Determining Liability in Hindsight", 19 *L. & Hum. Behav.* (1995) 89, p. 101; Susan J. LaBine and Gary LaBine, "Determinations of Negligence and the Hindsight Bias", 20 *L. & Hum. Behav.* (1996) 501 (both examining the effect of the bias on liability determinations).

This potential effect of the hindsight bias may sometimes lead people to take a costly, excessive level of care, to avoid negligence liability.[70] Ironically, however, the widespread and robust effects of the bias suggest that the various actors in the legal system may consider biased outcomes fair, while interventions aimed at reducing the effects of the bias on legal decisions may appear to be favoring tort defendants.[71] More generally, the legal system may have partly adapted to the bias in some domains.[72] One can find, for instance, adaptations of certain substantive law rules that take into account the ex-ante, pre-update, state of affairs, or even limit the imposition of liability in hindsight altogether.[73] In other legal domains, however, courts apparently have failed to adapt to the effects of the bias, applying rules and doctrines that lead to the excessive imposition of liability in hindsight.[74]

3. Motivated and Egocentric judgments

Decision makers' judgments are also systematically affected by motivation and emotion, even beyond their reliance on affective tags as an attribute substitution heuristic.[75] Individuals' beliefs are colored by their preferences, and they are often overoptimistic, overestimating their own positive traits, abilities, and skills, as well as the likelihood of their experiencing positive events.[76] At the same time, people also

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70. For a discussion of the implications of the bias for the economic analysis of tort liability see: Rachlinski, *Hindsight Bias* (supra note 67) pp. 596-600 (discussing the conditions under which the bias may lead to inefficient levels of care).

71. *Id.,* pp. 600-602. See also: Christine Jolls and Cass R. Sunstein, "Debiasing through Law", 35 *J. Leg. Stud.* (2006) 199 (discussing possible debiasing mechanisms and their limitations). See also: infra Part IV.A. (examining the question of debiasing more generally).

72. But the general procedures the law typically relies on to avoid biased judgments are unlikely to be effective in battling the hindsight bias. See: Rachlinski, *Hindsight Bias* (supra note 67) pp. 602-607.

73. *Id.,* 607-18. See also: Mitu Gulati Jeffrey J. Rachlinski and Donald C. Langevoort, "Fraud by Hindsight", 98 *Nw. U. L. Rev.* (2004) 773 (arguing that judges rely on the bias to justify a securities law doctrine disfavoring plaintiffs, which in fact provide judges' with greater leeway to manage complex securities cases).

74. See, *e.g.,* Jeffrey J. Rachlinski, "Heuristics and Biases in the Courts: Ignorance or Adaptation?", 79 *Or. L. Rev.* (2000) 61, pp. 70-81 (providing examples of both adaptations to the bias and a lack thereof).

75. Supra notes 16-17 and the accompanying text. For a general introductory discussion of these processes see: Kunda (supra note 62) pp. 211-263 (1999).

76. See *e.g.,* Shelley E. Taylor and Jonathon D. Brown, "Illusion and Well-Being: A Social Psychological Perspective on Mental Health", 103 *Psychol Bull.* (1988) 193; Shelley E.

underestimate the degree to which they are vulnerable to various risks.[77] As a result of such overoptimism, for instance, individuals may not take sufficient precautions when engaging in risky activities, like driving.

In addition to overoptimism, decision makers exhibit egocentric or motivated reasoning: for instance, they invest ambiguous information with the meaning or implications they would prefer it to have,[78] and display judgments of fairness that are biased towards their own self interest. Such egocentric biases have obvious ramifications for the analysis of litigation and settlement. For example, both field data

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Taylor and Jonathon D. Brown, "Positive Illusions and Well-Being Revisited: Separating Fact from Fiction", 116 *Psychol Bull*. (1994) 21, pp. 22-23 (reviewing and discussing findings on individuals' mildly distorted positive perceptions); Neil D. Weinstein, "Unrealistic Optimism About Future Life Events"*,* 39 *J. Personality and Soc. Psychol*. (1980) 806.

77. *E.g*., Weinstein *id.*; Neil D. Weinstein and William M. Klein, "Unrealistic Optimism: Present and Future"*,* 15 *J. Soc. & Clinical Psychol*. (1996) 1, pp. 1-6 (both articles discussing findings showing, *inter alia*, that people think themselves invulnerable to certain risks). For some pertinent recent findings, see: Valerie A. Clarke, Hildegarde Lovegrove, Amanda Williams and Michelle Machperson, "Unrealistic Optimism and the Health Belief Model", 23 *J. Behav. Med*. (2000) 367, pp. 372-374 (healthy subjects exhibit optimistic bias, including in judgments of the expected risk and severity of cancer).

78. See: Scott T. Allison, David M. Messick and George R. Goethals, "On Being Better But Not Smarter than Others: The Muhammad Ali Effect"*,* 7 *Soc. Cognition* (1989) 275 (especially studies 2 and 3); David Dunning, Marianne Perie and Amber L. Story, "Self-Serving Prototypes of Social Categories", 61 *J. Personality & Soc. Psychol*. (1991) 957 (showing how people judge positive traits to be overwhelmingly more characteristic of themselves than negative attributes; define personal attributes in idiosyncratic ways that emphasize their perceived strengths; and exhibit a great bias when they can choose the dimension on which to focus their judgment); Marsha T. Gabriel, Joseph W. Critelli and Jullana S. Ee, "Narcissistic Illusions in Self-Evaluations of Intelligence and Attractiveness", 62 *J. Personality* (1994) 143 (finding a medium correlation between participants' self-rated intelligence and their performance on objective measures and no correlation at all between self-rated and other measures of attractiveness,); Leigh Thompson and George Loewenstein, Egocentric Interpretations of Fairness and Interpersonal Conflict, 51 *Organizational Behav. & Hum. Decision Processes* (1992) 176, pp.184-196 (especially Experiment 2); Judith Weiner Regan, Holly Gosselink and Janet Hubsch, "Do People Have Inflated Views of Their Own Ability?*",* 31 *J. Personality & Soc. Psychol*. (1975) 295, p. 295 ("Self-esteem needs must be aroused in a situation in which distortion of one's ability level is possible"). For a more in-depth discussion of the role of ambiguity in overoptimism and related phenomena see: Tor (supra note 16) pp. 524-528.

and experimental studies show how decision makers' interpretations of legal evidence are biased by their designation as plaintiffs or defendants. Importantly, moreover, these biases are found not only in judgments of the "correct" legal outcomes of the case, but also in predictions of the judgment an impartial judge would make, as well as in what constitutes a "fair" settlement offer by the other party in litigation. Not surprisingly, these biases have also been linked to bargaining impasse, even where both parties possess the same information about the case at hand – a condition under which rational actors are expected to settle.[79]

Other egocentric biases bear implications for legal analysis as well. A number of phenomena, for example, indicate that decision makers tend to align their expectations about the outcomes of events with their preferences about these outcomes.[80] This is clearly true in situations where people have a measure of control over outcomes, as in the case of marriage. But the evidence also reveals that preferences bias expectations even in settings where decision makers have no control over outcomes. In this type of situations people tend to overestimate the likelihood and degree of success of the

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79. For example, participants in a recent study who where designated either "plaintiffs" or "defendants," exhibited systematically biased expectations of the decision an objective judge would arrive at in a tort case, each group in accordance with its designation, although their roles were merely ad hoc designations and they had no opportunity to address the judge. George Loewenstein, Samuel Issacharoff, Colin Camerer and Linda Babcock, "Self-Serving Assessments of Fairness and Pretrial Bargaining", 22 *J. Legal Stud.* (1993) 135, p. 151, tbl.2; see also: Linda Babcock, George Loewenstein, Samuel Issacharoff and Colin Camerer, "Biased Judgments of Fairness in Bargaining", 85 *Am. Econ. Rev.* (1995) 1337.

80. See, *e.g.,* Elisha Babad, "Wishful Thinking and Objectivity Among Sports Fans", 2 *Soc. Behav.* (1987) 231; Elisha Babad and Yosi Katz, "Wishful Thinking – Against All Odds", 21 *J. Applied Soc. Psychol.* (1991) 1921; David V. Budescu and Meira Bruderman, "The Relationship Between the Illusion of Control and the Desirability Bias", 8 *J. Behav. Decision Making* (1995) 109; Donald Granberg and Edward Brent, "When Prohecy Bends: The Preference-Expectation Link in U.S. Presidential Elections, 1952-1980", 45 *J. Person-ality & Soc. Psychol.* (1983) 477, pp. 477-479, tbl.1; Robert A. Olsen, "Desirability Bias Among Professional Investment Managers: Some Evidence from Experts", 10 *J. Behav. Decision Making* (1997) 65, pp. 66-70; Roy M. Poses and Michele Anthony, "Availability, Wishful Thinking, and Physicians Diagnostic Judgments for Patients with Suspected Bacteremia", 11 *Med. Decision Making* (1991) 159; George Wright and Peter Ayton, "Subjective Confidence in Forecasts: A Response to Fischhoff and McGregor", 5 *J. Forecasting* (1986) 117 (all reporting biases in predictions and estimates, under a variety of names, in the direction of participants' preferences, in both laboratory studies and observational data).

candidate or party they favor in an election, the team they like better in a sports' match, or the company in which they have invested.[81] Such egocentric biases, in turn, may both explain the pervasive empirical evidence of excess entry into various industries, and suggest that this entry may be less effective in limiting the exercise of market power by incumbent firms than is commonly thought.[82]

B. Choice: The Construction of Preferences

Decision makers constantly make legally relevant choices, most often under *uncertainty*. Contracting parties, for instance, must choose among different terms concerning future events whose probability is uncertain. Similarly, a tort plaintiff must often choose between trial, whose outcomes are uncertain, and settlement. Occasionally, legally relevant choices are also made under *risk* – that is, when the probability distribution of the possible outcomes is known. Anyone who gambles on the outcome of an unbiased coin toss, for example, knows the probability of its landing heads (or tails) is 50%, but he still needs to decide where to put his money. Yet legal choices are sometimes made under *certainty*. For instance, a consumer seeking to buy a given type of product must still choose among the available alternatives, even when the attributes of the different products are all known to him. This consumer needs to evaluate and weigh up different product attributes – such as price, quality, functionality, and more – to determine which product's attribute mix to choose.[83]

For the hypothetical rational actor choice is a straightforward matter, an act that merely reveals his preexisting, well ordered, preferences,[84] serving to maximize

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81. *E.g.,* Badad, *id.*; Badad and Katz, *id.*; Granberg and Brent, *id.*

82. See: Tor (supra note 16) pp. 503-514 (explaining excess entry), 548-552 (evaluating the impact of entry on market power).

83. For the distinction between uncertainty, risk, and certainty in a classical text see, for instance, R. Duncan Luce and Howard Raiffa, *Games and Decisions* (Reprint. 1989) 13 (introducing these concepts in the context of choice as follows:

    We shall say that we are in the realm of decision making under:

    (a) *Certainty* if each action is know to lead invariably to a specific outcome ...

    (b) *Risk* if each action leads to one of a set of possible specific outcomes, each outcome occurring with a known probability ...

    (c) *Uncertainty* if either action or both has as it consequence a set of possible specific outcomes, but where the probabilities of these outcomes are completely unknown or are not even meaningful.)

84. The notion that choices "reveal" people's preferences originated with Paul A. Samuelson, "A Note on the Theory of Consumer's Behavior", 5 *Economica* 61; and Paul A. Samuelson, "A Note on the Theory of Consumer's Behavior: An Addendum", 5 *Economica* 353,

his subjective expected utility (SEU).[85] However, much like in the case of belief formation, a wealth of psychological evidence reveals that real decision makers systematically and predictably deviate from the theoretical model of rational choice. Moreover, individuals frequently exhibit social preferences – that is, preferences about the outcomes of other people – that similarly lead to systematic deviations from the choices anticipated by models of self-interested rational action. The following sections therefore outline briefly some illustrative violations of rational choice with significant legal implications.

1. Context Dependence

One basic requirement for rational action is context independence – namely, that the relative attractiveness of options within a given set should not vary with the addition or deletion of other options.[86] A decision maker who prefers apples to oranges, for instance, should not change this relative preference when a third option, say a banana, is offered as well.[87] Yet despite the intuitive appeal of context independence, researchers have revealed many circumstances that lead individuals to violate it.[88]

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and received much attention and development since. For one short and highly readable discussion of the concept and its appeal see: Amatya Sen, "Behaviour and the Concept of Preference", 40 *Economica* (1973) 241, pp. 241-244.

85. *E.g.,* Blaug (supra note 27) pp. 229-230 (stating that "…some regard the most characteristic feature of neoclassical economics ... its insistence on methodological individualism: the attempt to derive all economic behavior from the action of individuals seeking to maximize their utility, subject to the constraints of technology and endowments. This is the so-called *rationality postulate*, which figures as a minor premise in every neoclassical argument…" an explaining the concept further). The aximoatization of SEU was formalized by John Von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (1947) pp. 617-628 (an appendix to the book); and Leonard L. Savage, *The Foundations of Statistics* (1954) (developing the notion of personal – i.e. subjective – probability and tying it with expected utility). For a more detailed discussion of rational choice theory in law specifically see: Korobkin and Ulen (*supra* note 5) pp. 1060-1066.

86. Assuming these additional options convey no additional information regarding the original set of options, the rational choice condition known as "regularity" states they should not affect the relative preferences regarding the original sense. For a clear summary exposition of this and other rational choice axioms (as well as illustrations of their violation) see: Dawes (supra note 15) pp. 504-512.

87. Of course, context independence does not preclude the possibility that one may rationally prefer bananas to both apples and oranges.

88. See generally: Dawes (supra note 15) pp. 504-512.

"Compromise effects" – that is, the finding that an option appears more attractive when presented as intermediate rather than extreme – are one illustrative source of context-independence violations.[89] These effects are frequently exploited by marketers, who provide product varieties that are either very minimal or very elaborate – and thus rarely purchased – to encourage consumers to buy intermediate, "compromise," versions of their products. Similarly, in legal settings, if courts find compromise verdicts more attractive, advocates – such as prosecutors in criminal cases – could exploit this effect by presenting a given charge as a compromise rather than an extreme option.[90]

In fact, scholars have shown experimentally how compromise effects can impact legal decisions.[91] In one such study, participants were provided with a short summary of a case in which a woman poisoned her husband. The relevant facts were conceded by the defense and the prosecution, and the only remaining decision concerned the crime of which the defendant should be convicted – manslaughter, murder, or special circumstances murder. Importantly, the choice between manslaughter and murder (of any sort) should have turned on the participants' belief regarding the defendant's mental state when committing the crime. If she were under the influence of extreme emotional disturbance, she should have been convicted of manslaughter; otherwise, she should have been convicted of murder. In one group of participants, who were only given the choice between manslaughter and "standard" murder, 47% chose the former and 53% the latter. In a second group, however, which was also offered the verdict option of special circumstances murder (which may well have existed in this case), only 19% opted for manslaughter, with 81% choosing one of the two murder categories (39% and 42% choosing the murder and special circumstances murder, respectively).[92] Hence, although the proportion of participants choosing manslaughter over murder should have been independent of the context – namely, the availability of a second murder category – the results revealed a dramatic compromise effect.[93]

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89. *Id.,* pp. 505-507.
90. Sunstein (supra note 13) p. 2648 (discussing this and similar possibilities).
91. Mark Kelman, Yuval Rottenstreich and Amos Tversky, "Context-Dependence in Legal Decision Making", 25 *J. Leg. Stud.* (1996) 287 (reporting 5 experiments showing compromise and contrast effects in legal decision settings).
92. *Id.,* pp. 290-292.
93. Note, however, that in the scenario described in the text, the very presence of a special circumstances option may have communicated to participants information about the appropriateness of murder rather than manslaughter in this case – say, because the special circumstances enumerated focused participants' attention on factors such as the means and motive for the killing that made manslaughter appear less likely. For this reason, the

2. Framing Effects, Reference Points, and Loss Aversion

Rational choices among different options under risk or uncertainty depend on the value and probability of these options, as well as on one's risk attitude. A risk-neutral decision maker would simply choose the option with the highest expected value, preferring a 50% chance of getting $101, for instance, to getting $50 for sure. Rational decision makers, however, may also be risk averse or risk seeking, the former discounting the expected value of a risky prospect to account for the risk involved, while the latter finding such a prospect more attractive than its mere expected value.[94] Regardless of risk attitude, however, rational choice among risky (or uncertain) prospects should not depend on how these options are framed or described, a principle known as *invariance*.[95] This condition resembles the requirement of context independence, described above, but concerns different descriptions of the same set of options rather than the addition of options to a set or choices between different sets.[96]

As the following example illustrates, however, the description or "framing" of alternatives can exert a dramatic impact on choice among risky prospects in violation of the invariance requirement. In this experiment, which became known as the "Asian disease" problem, the first group of participants read:

> Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:
> If Program A is adopted, 200 people will be saved.
> If Program B is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved.
> Which of the two programs would you choose?

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researchers conducted another study that controlled for this explanation, *id,* pp. 292-95. See also their discussion of whether irrelevant alternatives conveyed information *id*., pp. 301-03.

94. See *e.g*., Neumann and Morgenstern (supra note 85) p. 629 (noting specifically their axoimatization of EU does not require a specific risk attitude). See also: Hogarth (supra note 31) pp. 89-90 (describing these different utility functions and their interpretation).

95. Daniel Kahneman and Amos Tversky, "Choices, Values, and Frames", 39 *Am. Psycholog*. (1984) 341.

96. *Cf.* Dawes (supra note 15) p. 512 (distinguishing choice inconsistencies arising from the presentation of alternatives – or framing – from other violation of rational choice conditions).

When faced with this question, 72% of the participants chose Program A, with the remaining 28% choosing Program B. Note that the actuarial value of the two programs is identical, although they differ markedly in the distribution of outcomes they offer. The majority's choice of Program A therefore represents a risk-averse preference, which appears to value the certain saving of 200 of lives over the risky alternative that may save more lives but is more likely to save none.

A second group of participants were asked the same question, but with a different description – that is, a different framing – of the prospects associated with the two programs:

> If Program C is adopted, 400 people will die.
> If Program D is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die.
> Which of the two programs would you choose?

Thus, the problem given to this second group involved identical prospects but a different frame from that in the question presented to the first group. In striking contrast to the choices made by the first group, however, 78% of the participants in this group chose the risky Program D – whose prospects are identical to those of unfavored Program B. Only 22% opted for the certain prospects of Program C, which is identical to Program A favored by the first group.[97]

Kahneman and Tversky famously used this and other studies to illustrate some common characteristics of human decision making under risk and uncertainty, which they combined in their descriptive "Prospect Theory":[98] first, choice is reference-dependent – that is, outcomes are evaluated as positive ("gains") or negative ("losses") changes from a reference point.[99] Such choice patterns, of course, stand in sharp

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97. Amos Tversky and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice", 211 *Science* (1981) 453, p. 453 [hereinafter "Framing of Decisions"].

98. Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk", 47 *Econometrica* (1979) 263 [hereinafter "Propect Theory"]. Note also that prospect theory is only the famous member of a large family of models that seek better descriptive fit by modifying some rational choice assumptions. See generally Chris Stramer, "Developments in Nonexpected–Utility Theory: The Hunt for a Descriptive Theory of Choice under Risk", *Advances in Behavioral Economics* (Colin F. Camerer, George Loewenstein and Matthew Rabin – eds., 2004) 104 (reviewing the development of such theories, how they fare in experimental tests, and how they can be used).

99. Kahneman and Tversky, *id*., pp. 277- 280. Similarly, people prefer buying products either at "regular" prices or with a "discount" for, say, paying in cash, to buying identical

contrast to the rational-actor model, where choices are made based on their effect on the decision maker's overall utility, or total asset position in the case of financial decisions, but different descriptions of the same overall outcomes clearly should not matter. Prospect theory therefore describes choice as based on "value," instead of utility.[100] Second, sensitivity to positive and negative changes is strongest near the reference point and diminishes with the distance from it.[101] The difference between a gain of $100 and a gain of $200 appears greater, for example, than the difference between a gain of $1100 and a gain of $1200. Consequently, the value function is concave in the "gains" domain and convex in the "loss" domain. Third, a loss of any given amount is psychologically more aversive than a gain of the same amount is attractive. Because of this "loss aversion" the theory's value function is significantly steeper for losses than for gains.

The failure of invariance as a result of framing is both pervasive and robust,[102] and has clear importance for the law. One legal area in which the effects of framing have been investigated in a number of studies is litigation and settlement.[103] In litigation, each party has to determine whether it prefers the sure compromise outcome of a settlement to the risky trial – with its potential for either a better or a worse

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products at identical prices, when those prices are described instead as a "regular" price for cash and a credit "surcharge." In this case, the "regular" price may serve as a natural reference point, compared to which the "discount" is perceived as an attractive gain, and the "surcharge" as an unpleasant loss. Note, moreover, that such framing effects may also impact behavior. See, *e.g.,* Nicholas Epley, Dennis Mak and Lorraine Chen Idson "Bonus or Rebate? The Impact of Income Framing on Spending and Saving", 19 *J. Behav. Dec. Making* (2006) 213.

100. Kahneman and Tversky (supra note 98).

101. *Id.,* p. 214. This a typical psychophysical function common to human (and animal) perception in many domains.

102. See generally: Amos Tversky and Daniel Kahneman, "Rational Choice and the Framing of Decisions", 59 *J. Buss. S.* (1986) 251 (reviewing and explaining some of this evidence).

103. See *e.g.,* Jeffrey J. Rachlinski," Gains, Loses, and the Psychology of Litigation", 70 *S. Cal. L. Rev.* (1996) 113 (providing a detailed account and experimental and observational evidence regarding the potential role of framing litigation and settlement) ["Psychology of Litigation"]. See also: Chris Guthrie, "Framing Frivolous Litigation: A Psychological Theory", 67 *U. Chi. L. Rev.* (2000) 163 (using some features of an advanced version of prospect theory to explain frivolous litigation behavior); Russell Korobkin and Chris Guthrie, "Psychology, Economics and Settlement: A New Look at the Role of the Lawyer", 76 *Tex. L. Rev.* (1997) 77 (using framing to explain evaluations of settlement options by lawyers and clients).

outcome.[104] Prospect theory suggests, however, a basic asymmetry between plaintiffs and defendants, with the former being more likely to view the trial v. settlement decision as a choice between two gains – one risky and one certain.[105] If this were the case, we would expect plaintiffs to be risk-averse. Defendants, on the other hand, may well view their choice as between two losses and therefore exhibit risk-seeking.[106]

This potential frame-induced, systematic, discrepancy between plaintiffs' and defendants' risk attitudes may contribute to the failure of some lawsuits to settle out of court even in circumstances where a settlement might be beneficial to both parties.[107] If shown to be sufficiently robust, moreover, such an effect would have various ramifications for policy making in the litigation area, including directing more settlement facilitation effort towards defendants, rather than plaintiffs, and providing some justification for more coercive measures of alternative dispute resolution in courts.[108]

More generally, the choice framing can also provide a policy tool to facilitate desirable behaviors or diminish the attractiveness of undesirable ones. For instance, efforts to educate the public about preventive health measures – such as breast cancer examinations – have been more successful when emphasizing the negative consequences of not taking these measures than when focusing on their health benefits.[109]

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104. See *e.g.,* George L. Priest and Benjamin Klein, "The Selection of Disputes for Litigation", 13 *J. Leg. Stud.* (1984) 1 (an economic model that predicts when settlement occurs in the shadow of trial); Steven Shavell, "Suit, Settlement, and Trial: A Theoretical Analysis under Alternative Methods for the Allocation of Legal Costs", 11 *J. Leg. Stud.* (1982) 55 (proposing an economic model of litigation, accounting for allocation of costs).
105. Putting aside, for simplicity, the significant issue of attorney fees, which also differ across legal systems.
106. *E.g.,* Rachlinski (supra note 103) pp. 128-129.
107. *Id.,* pp. 119-120.
108. Of course, to justify such measures a fuller analyses of the parties' judgments, choices, and incentives would be required. Note also that in reality risk attitudes may reverse or otherwise differ, depending on various factors concerning the parties and the case. See *e.g.,* Guthrie (supra note 103) (arguing that in low probability suites risk attitudes may reverse); Rachlinski (supra note 103) pp. 129-130 (conceding that risk attitudes also depend on factors beyond basic role as plaintiff or defendant).
109. Jolls, Sunstein and Thaler (supra note 12) pp. 1536-1537 (also discussing the possible benefits of "government advertising" more generally).

3. The Status Quo Bias and the Endowment Effect

The status quo bias (SQB) and the endowment effect are among the behavioral phenomena of greatest significance for legal analysis.[110] SQB refers to the general finding that individuals tend to prefer their present state to alternative states, all else being equal.[111] Hence, even in the absence of transaction costs, people are more likely to remain in their status quo position rather than make a choice that would have put them in the same position if it were not the status quo. In one typical illustration, experimental participants that were given a number of investment options and an existing allocation of investments tended to make choices that retained the existing allocation.[112] Similar findings appear in real-world settings, where employees who are offered a variety of investment options for their pension savings – a decision of great personal importance – tend to allocate their contributions equally among the set of options their institution happens to provide.[113]

The endowment effect, another common manifestation of SQB, means that decision makers tend to value more highly goods that they hold than those they do not hold.[114]

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110. See, *e.g.,* Christine Jolls, "Behavioral Law and Economics", *Yale Law School Research* Paper N. 130 (May 2007); Russell Korobkin, "The Endowment Effect and Legal Analysis", 97 *Nw. U. L. Rev.* (2003) 1227, p. 1229 ["Endowment Effect"] ("The endowment effect is undoubtedly the most significant single finding from behavioral economics for legal analysis to date"); Samuel Issacharoff, "Can There Be a Behavioral Law and Economics?", 51 *Vand. L. Rev.* (1998) 1729, p.1735 (calling the endowment effect "the most significant empirical observation from behavioral economics").

111. Korobkin, *id.,* p. 1228-1229.

112. William Samuelson and Richard Zeckhauser, "Status Quo Bias in Decision Making", 1 *J. Risk and Uncertain.* (1988) 7, pp. 12-19.

113. Shlomo Benartzi and Richard H. Thaler, "Naive Diversification Strategies in Defined Contribution Saving Plans", 91 *Am. Econ. Rev.* (2001) 79 (providing varied evidence for this 1/n naïve diversification rule, and discussing its underlying causes and economic implications).

114. The term was introduced by Richard H. Thaler, "Toward a Positive Theory of Consumer Choice", 1 *J. Econ. Behav. and Org.* (1980) 39. See also: Daniel Kahneman, Jack L. Knetsch and Richard H. Thaler, "Experimental Tests of the Endowment Effect and the Coase Theorem, 98 *J. Pol. Econ.* (1990) 1325 [hereinafter: "Experimental Tests"]; Daniel Kahneman, Jack L. Knetsch and Richard H. Thaler, "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias", 5 *J. Econ. Persp.* (1991) 193 (a variant with some extensions of the preceding article); Jack L. Knetsch, "The Endowment Effect and Evidence of Nonreversible Indifference Curves", *Choices, Values, and Frames* (Daniel Kahneman and Amos Tversky- eds., 2000) 171 [hereinafter "Choices, Values, and Frames"].

As a result, there is a systematic discrepancy between the lower price people are willing to pay (or "WTP") for a good they do not possess and the higher price they ask (or "WTA") for selling the same good when they do possess it.[115] Like SQB more generally, the endowment effect has proved robust and prevalent, in the laboratory and the real world alike.[116] In one common type of experiment, half the participants are endowed with an item – such as a lottery ticket, a university mug, or a fancy chocolate bar – and another half given a roughly equivalent amount of cash. Participants are then given the opportunity to trade the good for the money and vice versa. In the absence of an endowment effect, some participants will prefer the good and some the money, with the two groups exhibiting similar preferences. In the endowment condition, however, a significantly larger proportion of participants hold on to the good compared with their cash-equivalent counterparts.[117]

In the real world, there is evidence, for example, that people's choices of car insurance policies depend on the default adopted by their state. When a more extensive and thus a more expensive coverage is the default insurance, a far greater proportion of citizens adopt it; on the other hand, when a more limited and cheaper insurance policy is offered as the default, a far smaller percentage of citizens opt for the more extensive and expensive alternative.[118] Comparable findings appear for evaluations of environmental commodities, such as air quality, which strikingly depend on whether people are asked about the value of diminishing or increasing current quality, as well as in many other domains.[119]

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115. This discrepancy is also known as the "offer-asking" or WTA/WTP gap. See, *e.g.*, Eliazbeth Hoffman and Matthew L. Spitzer, "Willingness to Pay vs. Willingness to Accept: Legal and Economic Implications", 71 *Wash. U. L. Q.* (1993) 59 (reviewing the evidence on the WTP/WTA gap and discussing its implications); Jack L. Knetsch and J. A. Sinden, "Willingness to Pay and Compensation Demanded: Experimental Evidence of an Unexpected Disparity in Measures of Value", 99 *Q. J. Econ.* (1984) 507 (providing early evidence of the disparity); Jack L. Knetsch and J. A. Sinden, "The Persistence of Evaluation Disparities", 102 *Q. J. Econ.* (1987) 691 (discussion of additional evidence, including a critical analysis of one study showing disparity elimination after multiple trials).
116. See the studies collected in Korobkin (supra note 110) pp. 1232-1235.
117. Kahneman, Knetsch and Thaler (supra note 114) pp. 1339-1341.
118. Eric J. Johnson, John Hershey, Jacqueline Meszaros and Howard Kunreuther, "Framing, Probability Distortions, and Insurance Decisions", 7 *J. Risk & Uncert.* (1993) 35 reprinted in Choices, Values, and Frames (supra note 95) pp. 224, 238 (reporting such data from New Jersey and Pennsylvania).
119. See the studies collected in Korobkin (supra note 110) p. 1232.

The SQB and the endowment effect pose many challenges for legal analysis, especially for law and economics. These phenomena directly contradict the rational choice model that preferences are independent of the status quo.[120] They therefore challenge the Coase theorem - a cornerstone thesis of the economic analysis of law – which holds that, in the absence of transaction costs, the initial assignment of legal entitlements does not change their ultimate ownership since parties who value entitlements more highly will trade with their current owners. In reality, of course, transactions are rarely without costs, and scholars have therefore advocated assigning entitlements to the highest valuing parties, to reduce these transaction costs. Where the highest valuing party is unknown, moreover, the Coase theorem implies that entitlements should be assigned to those best positioned to trade them, so as to increase the likelihood of these entitlements finding their way to the highest valuing party. [121]

However, the offer-asking gap means that the initial allocation of an entitlement matters greatly since it may lead to inefficient outcomes. After all, the higher WTAs exhibited by some entitlement holders (who would have assigned a lower WTP to the entitlement were they not holding it) may prevent a beneficial trade with other parties with higher initial WTPs. Hence, a mistake in the initial assignment of legal rights may determine their ultimate, potentially inefficient, possession even in the absence of transaction costs or wealth effects.

It may also be difficult to determine in fact who the highest valuing party for a given entitlement is. Different parties may endow their entitlements differently, such that one party could exhibit the highest WTP – the traditional measure of value in economics – while another would exhibit the highest WTA.[122] The answer to this valuation dilemma would depend on whether the endowment effect reflects a "real" increase in the value of the entitlement to its holder or merely a psychological artifact, a reluctance to part with possessions.[123]

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120. Kahneman, Knetsch and Thaler, *Experimental Tests* (supra note 114) p. 1326. This is especially true in circumstances such as those studied in the experiments, which involved immediate endowments, in the absence of wealth effects, without changes in preferences over time or other factors that may explain preference changes following endowment. For a somewhat extreme view on the stability and commonality of tastes see: George J. Stigler and Gary S. Becker, "De Gustibus Non Est Disputandum", 67 *Am. Econ. Rev.* (1977) 76, p. 76 (asserting that "tastes neither change capriciously nor differ importantly between people").
121. Ronald H. Coase, "The Problem of Social Cost", 3 *J. L. and Econ.* (1960) 1, p. 14. See also: Hoffman and Spitzer (supra note 115) p. 63.
122. See, *e.g.,* Korobkin, *Endowment Effect* (supra note 110) p. 1257.
123. While a thorough analysis of this important question is outside the scope of the present discussion, the answer requires a better understanding of the psychological mechanisms

Another general illustration of the significance of SQB for legal scholarship is in the area of legislation and regulation. All else being equal, because of the SQB the public is likely to prefer the legislative and regulatory status quo to an alternative set of rules. Moreover, because of SQB, beneficiaries of the status quo will struggle harder to maintain it than they originally would have fought to establish it. The opposite would hold for those preferring an alternative regime, however, making changes of the legal status quo even less likely and more difficult.[124] This effect also implies that the government would often find it easier to impose new laws or regulatory standards to obtain its goals – such as in the areas of environmental regulation or taxation – than to change already existing ones.[125]

Finally, SQB and the endowment effect teach important lessons for various substantive law areas. In contract law, for instance, these phenomena highlight the power of default rules to shape ultimate contractual outcomes. Traditionally, default rules – that is, rules of contract law that control the transaction only if the parties have not opted out of them by agreement – are deemed of limited significance. They are counted valuable when well designed to address the common needs of contracting parties, providing "off-the-rack" cost-saving alternatives to expensive negotiated terms.[126] When defaults do not match their needs, parties are assumed to negotiate a solution that reflects their preferences.[127] Yet the general evidence on SQB, as well

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underlying the endowment effect, which are not fully understood. Most likely, these phenomena have multiple psychological bases. One major contributing factor is loss aversion, discussed above, which may case SQB when individuals use the status quo as a reference state for decision making. Thus, relinquishing a good one owns is typically coded as a "loss," which is comparably more painful than the pleasure resulting from the "gain" involved in the acquisition of that same good by one who does not own it. Regret avoidance also likely contributes to this cluster of phenomena, since giving up an endowment may cause more regret. See, *e.g., id*., pp. 1242-1259 (reviewing potential causes for the endowment effect and discussing their implications for the debate on determining the correct valuation measure).

124. *E.g., id*., pp. 1266-1267.

125. *Id.,* p. 1267.

126. The literature on contractual defaults is voluminous. See, *e.g.,* Charles J. Goetz and Robert E. Scott, "The Mitigation Principle: Towards a General Theory of Contractual Obligation", 69 *Va. L. Rev.* (1983) 967, p. 971 (defaults should be designed to provide what most bargainers would have preferred); Posner (supra note 5) p. 96 (stating that courts should try to mimic what the parties would have done had they dealt with the particular contingency that materialized).

127. See, *e.g.,* Russell Korobkin, "The Status Quo Bias and Contract Default Rules", 83 *Cornell L. Rev.* (1998) 608, p. 611 [hereinafter "Status Quo Bias"] ("…contracts scholars

as a few studies that specifically examined the case of contractual defaults, suggests that defaults may impact the result of contract negotiations.[128] Parties who view default rules as the status quo would be more reluctant to adopt an alternative term and demand more in return for such a change when it is not to their benefit. Of course, when the benefits of opting out are sufficiently great, SQB is unlikely to prevent the adoption of an alternative term, but an inefficient default may well be retained if the effects of the bias outweigh the benefits of opting out.[129]

4. Social Preferences

Beyond documenting the construction of preference by context, frame, and more, behavioral research also shows how individuals exhibit preferences that are not purely self-interested. They care about the behavior and outcomes of others, and evaluate their own outcomes with respect to those obtained by others. There is much evidence, for example, that people care about both giving and receiving fair treatment, not only in personal contexts but in market settings as well. They will sometimes sacrifice payoffs to behave fairly, expect others to do the same, and even engage in costly retaliation against behavior they think unfair.

One illustrative and extensively studied case of such fairness-oriented behavior is the ultimatum game.[130] One player ("Proposer") is asked to allocate a given sum of money to himself and another player ("Responder"). The latter then must choose whether to accept the offered allocation. If Responder accepts, each party gets a share according to the offer; if Responder rejects the offer, both parties get nothing. The basic game is anonymous and without repetition, so considerations of reputation and future retaliation should be irrelevant.[131]

... uniformly bases their analyses upon a dubious assumption ... that the contracting parties' preferences ... remain the same regardless of the choice of default rules.")

128. See: Korobkin, *Status Quo Bias, id*. (reviewing the relevant literature and conducting additional experimental tests). For one recent study purporting to show defaults exert little impact on the choice of contractual remedies see: Randolph Sloof, Hessel Oosterbeek and Joep Sonnemans, "On the Importance of Default Breach Remedies", 163 *J. Inst. & Theo. Econ*. (2007) 5. But see Avishalom Tor, "On Contractual Defaults and Experimental Law and Economics", 163 *J. Inst. & Theo. Econ*. (2007) 26 [hereinafter "Experimental Law and Economics"] (showing Sloof et al.'s results have limited relevance for the analysis of contractual defaults).
129. *E.g.,* Korobkin, *Status Quo Bias* (supra note 127) pp. 664-666.
130. The experimental economics ultimatum game literature is enormous. A superb, readable but high quality summary is available in Colin F. Camerer, *Behavioral Game Theory: Experiments on Strategic Interaction* (2003) pp. 48-56.
131. *Id.,* pp. 62-63.

A rational Responder should accept any positive sum, since the alternative to acceptance is rejection without any payment. In reality, however, Responders tend to reject offers that are below 20-30% of the sum that stands for allocation, and Proposers usually offer an even greater proportion – 40-50% of the sum.[132] These findings hold, moreover, even when the game is conducted with very significant sums of money.[133] Responders' readiness to reject offers of positive, sometimes significant, sums of money reveals that they not only care about the fairness of the allocation, but are also willing to forgo financial gain to punish the unfair behavior of an anonymous party they will never encounter again.[134]

The ultimatum game and similar findings clearly illustrate the importance people assign to considerations of fairness, even at the expense of some financial benefit, and thus has clear implications for legal analysis. The common concern for fairness, for example, may explain a number of legal rules that would not have made sense in a world of strictly rational actors. Some jurisdictions ban market transactions that appear economically beneficial, such as "usurious" lending – that is, very high interest loans. Such bans may be a response to a public demand for the imposition of minimal standards of fairness on parties who might otherwise exploit a position of power in the market.[135] Another case in point is the common prohibition against price

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132. *Id*. and Table 2.2 therein.

133. *Id.,* pp. 60-62.

134. Note that the independent role of fairness-related concerns – as opposed to strategic considerations – in this allocation setting is further highlighted by ultimatum game variants that show Responders to reject comparatively inferior allocations even where their rejections have no impact on Proposers' payoff (*e.g*., Gary Bolton and Rami Zwick, "Anonymity versus Punishment in Ultimatum Bargaining", 10 *Games & Econ. Behav.* 95 (1995); Duncan K H Fong and Gary E Bolton, "Analyzing Ultimatum Bargaining: A Bayesian Approach to the Comparison of Two Potency Curves under Shape Constraint", 15 *J. Bus. & Econ. Stat*. (1997) 335). Accordingly, other studies directly reveal the role played by Responders' negative emotional reactions to comparatively unfair allocations (*e.g*., Armin Falk, Ernest Fehr and Urs Fischbacher, "On the Nature of Fair Behavior", 41 *Econ. Inquiry* (2003) 20; Madan M. Pillutla and J. Keith Murnighan, "Unfairness, Anger, and Spite: Emotional Rejections of Ultimatum Offers", 68 *Org. Behav. & Hum. Dec. Proc.* (1996) 208).

135. See: Jolls, Sunstein and Thaler (supra note 12) pp. 1510-1516 (discussing bans on market transactions). Note that such bans are less important in market settings where customers can discipline repeat-play sellers who thus have a reputation to protect (see, *e.g.,* the results of Daniel Kahneman Kack L. Knetsch and Richard Thaler, "Fairness as a Constraint on Profit Seeking: Entitlements in the Market", 76 *Am. Econ. Rev.* (1986) 728 on the willingness of customers to penalize sellers who exploit temporary demand shocks

discrimination in competition laws,[136] which is frequently criticized as inefficient but may well reflect fairness concerns.[137]

In addition to helping explain the content of law, an understanding of decision makers' fairness concern can also help in shaping legal rules. Experimental studies by this Author, colleagues, and others found, for example, that people are concerned with how they are treated compared to others even in situations that do not require the division of fixed sums, and may even forgo financial benefits because of such comparison concerns.[138] The aversion to disadvantageous comparisons was similarly manifested in a recent study of the willingness to accept plea bargain offers, which prosecutors extensively rely on to resolve criminal cases.[139] Defendants who accept

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and the anecdotal evidence on seller behavior that accords with customers' views). Such bans are more likely to appear, however, where sellers can enter, exploit temporary shocks, and exit; where payoffs to exploitation are relatively high; or where there is anonymity or otherwise no repeat play or reputation costs. Of course, factors other the fairness – such as the bounded rationality of certain borrowers – may also drive bans on usurious lending, either on paternalistic grounds or because of the negative externalities of high-interest loans.

136. This is especially true for "secondary line" price discrimination, where the concern is that the business that buys at a higher price will be at a competitive disadvantage. See generally: Einer Elhauge and Damien Geradin, *Global Competition Law and Economics* (2007) pp. 689-713 (discussing such price discrimination under US and EC law, and providing references to other jurisdictions as well).

137. This may very well be the case with the historical enactment of competition laws more generally, which where significantly fueled by populist concerns about fair competition and the consequences of concentrations of market power. See, *e.g.,* Phillip Areeda, Louis Kaplow and Aaron S. Edlin, *I Antitrust Law: An Analysis of Antitrust Principles and their Application* (rev. ed. 2006) 103 (discussing the intent of the US Sherman Act's framers).

138. See: Max H. Bazerman, George F. Loewenstein and Sally Blount White, "Reversals of Preference in Allocation Decisions: Judging an Alternative versus Choosing among Alternatives", 37 *Admin. Sci. Q.* (1992) 220; Stephen M. Garcia and Avishalom Tor, "Rankings, Standards, and Competition: Task vs. Scale Comparisons", 102 *Org. Behav. & Hum. Dec. Proc.* (2007) 95; Stephen M. Garcia, Avishalom Tor, Max H. Bazerman and Dale T. Miller, "Profit Maximization versus Disadvantageous Inequality: The Impact of Self-Categorization", 18 *J. Behav. Dec. Mak.* (2005) 187; Stephen M. Garcia, Avishalom Tor and Richard Gonzalez, "Ranks and Rivals: a Theory of Competition", 32 *Person. & Soc. Psych. Bull.* (2006) 970; George F. Loewenstein, Leigh Thompson and Max H. Bazerman, "Social Utility and Decision Making in Interpersonal Contexts", 57 *J. Person. & Soc. Psych.* (1989) 426.

139. See: Avishalom Tor, Oren Gazal-Ayal and Stephen M. Garcia, "Innocence, Fairness

a plea offer choose a certain conviction and a discounted sanction over the risky prospect of a trial, where they may be either acquitted or convicted and sanctioned more heavily.[140] A rational defendant would therefore find a comparison with the offers made to others absolutely irrelevant (other than for informational purposes), basing the plea decision solely on his risk attitudes regarding conviction and sanction.[141] Real defendants, however, may be affected by comparison concerns and therefore determine the attractiveness of a plea offer also based on whether it appears superior or inferior to comparable offers given to other, similarly situated, defendants.[142]

Interestingly, defendants' comparison concerns may help address some of the criticisms commonly leveled against plea bargaining practices. Scholars argue, for example, that plea bargains lead to excessive diversity in sentencing, because prosecutors have much room to manipulate offers. This prosecutorial leeway, in turn, results in the unequal treatment of similar cases.[143] However, if defendants are averse to comparatively unfair offers, an increase in the transparency of plea bargaining may curtail the diversity problem. For instance, if plea bargains were published, or if defense lawyers were to inform their clients about the common practices of prosecutors in similar cases, defendants would tend to reject comparatively harsh offers. As a result, prosecutors, who are interested in maintaining high guilty plea rates, would reduce disparity, arbitrariness and inequality in plea bargaining.[144]

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and the Willingness to Accept Plea Bargain Offers" (July 2007, manuscript on file with Author) [hereinafter, "Plea Offers"] (Studies 4-5).

140. Oren Bar-Gill and Oren Gazal-Ayal, "Plea Bargains Only for the Guilty", 49 *J. Law & Econ.* (2006) 353; Frank H. Easterbrook, "Criminal Procedure as a Market System", 12 *J. Leg. Stud.* 289, pp. 309–317 (1983); Frank H. Easterbrook, "Plea Bargaining as Compromise", 101 *Yale L. J.* (1992) 1969, p. 1975; William M. Landes, "An Economic Analysis of the Courts", 14 *J. Law & Econ.* (1971) 61; Robert E. Scott and William J. Stuntz, "Plea Bargaining as Contract", 101 *Yale L. J.* (1992) 1909. *Cf.* also supra notes 105, 106 and the accompanying text (discussing the shadow of trial model in the civil litigation setting).

141. *E.g.,* Scott and Stuntz, *id.*, p. 1926.

142. Tor, Gazal-Ayal and Garcia, *Plea Offers* (supra note 139) p. 20.

143. Albert W. Alschuler, "The Changing Plea Bargaining Debate", 69 *Cal. L. Rev.* (1981) 652; William J. Stuntz, "Plea Bargaining and Criminal Law's Disappearing Shadow", 117 Harv. L. Rev. (2004) 2548, pp. 2552, 2567.

144. Tor, Gazal-Ayal and Garcia, *Plea Offers* (supra note 139) p. 27. Of course, this conclusion is illustrative rather than conclusive, since an increase in the transparency of plea bargain outcome may generate some difficulties as well. For one, transparency may exacerbate the effects of egocentric biases, which are likely to impact comparative evaluations. In fact, some of the evidence from bargaining in civil disputes specifically records egocentric

All in all, therefore, research on the psychology of human judgment and decision making provides ample evidence for the systematic differences between rational-actor models and real human behavior. It also reveals human behavior to be highly adaptive, despite our inherent cognitive limitations, and reasonably predictable insofar as people commonly use certain judgmental heuristics and situational cues in their decision making. An acknowledgement of these behavioral patterns is important for legal analysis, since they can help the law make better predictions, and thus more effective prescriptions, when regulating behavior in society.

III. Empirical Foundations

The second theme this Article develops concerns the empirical foundations of the behavioral approach. The present section draws on these foundations for two purposes: first, to delineate the behavioral analysis of law, clarifying which forms of legal scholarship lie within and without its boundaries. This demarcation, in turn, will allow for more coherent statements regarding the nature, potential, and limitations of the behavioral approach hereinafter. Second, to identify two distinct genres within the behavioral analysis of law – one theoretical and one experimental – that differently draw on its empirical foundations. The section will then show how each of these two genres possesses different strengths and weaknesses, how they may be used separately or in combination, and how they substitute for and complement one another.

A. Boundaries

The empirical foundations of the behavioral analysis of law delineate its scope. In the main, the behavioral approach draws on findings from behavioral decision research, an interdisciplinary field that examines judgment and decision making and its psychology.[145] Due to its interdisciplinary nature, this field draws researchers from a range of disciplines – psychology, economics, business, accounting, medicine, and more – who share an interest in studying human decision making, paying special

judgments in comparative evaluations (*e.g.* Babcock, Loewenstein, Issacharoff and Camerer (supra note 79)). If this were the case, defendants with egocentrically biased judgments who obtained comparison information thanks to transparency would tend to believe their offers are harsher than they truly are and reject offers that unbiased defendants would have accepted. A legal system wishing to avoid the choice between frequent biased rejections and a "race to the bottom" among prosecutors with increasingly discounted offers may therefore prefer to maintain the opacity of plea bargain outcomes notwithstanding its costs.

145. See supra note 15 and the accompanying text.

attention to discrepancies between normative models and actual human behavior.[146] Beyond drawing on behavioral decision research, however, behavioral analysts sometimes apply to the law other bodies of empirical evidence on human behavior, including additional social and cognitive psychological findings,[147] data collected by experimental economists,[148] and more.[149]

Ultimately, therefore, the behavioral analysis of law is best characterized by its commitment to a combination of (a) empirical behavioral findings and (b) a legal subject matter.[150] In other words, legal scholarship not drawing on empirical behavioral findings is not engaged in a behavioral analysis of law. This is the case for both scholarship that is interested in actual behavior but lacks an empirical foundation and legal analyses that are based on theory alone.

The first of these excluded categories is quite common. Traditional legal doctrine and scholarship are often concerned with human behavior and frequently assume that

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146. See, *e.g.*, Dawes, *Handbook* (supra note 15) pp. 529-530.

147. The examples are too numerous to review. A few illustrative examples include Jon Hanson and David Yosifon, "The Situation: An Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture", 152 *U. Pa. L. Rev.* (2003) 129 (using a broad range of social psychological findings to make a radical claim regarding the impact of the situation on behavior); Christine Jolls and Cass R. Sunstein, "The Law of Implicit Bias", 94 *Calif. L. Rev.* (2006) 969 (applying evidence from implicit bias tests); David Schkade, Cass R. Sunstein and Reid Hastie, "What Happened on Deliberation Day?", 95 *Calif. L. Rev.* (2007) 915 (applying findings – and conducting their own experiment – on the impact of psychological group processes on the outcomes of group deliberation).

148. *E.g.,* Jolls, Sunstein and Thaler (supra note 12) pp. 1489-1496 (applying ultimatum game findings); Daphna Lewinsohn-Zamir, "The Choice Between Property Rules and Liability Rules Revisited: Critical Observations from Behavioral Studies", 80 *Tex. L. Rev.* (2001) 219 (applying ultimatum and dictator game results); Robert E. Scott, "A Theory of Self-Enforcing Indefinite Agreements", 103 *Colum. L. Rev.* (2003) 1641 (applying experimental economics findings on preferences for reciprocal behavior).

149. *Cf.* Langevoort, *behavioral Theories* (supra note 1) p. 1503 (identifying the potentially relevant sources of behavioral evidence as most psychological research, but choosing to limit the definition to "the "new" cognitive psychology literature on decision making *biases*" for practical reasons) (emphasis in the original).

150. *Cf.* the similar approach taken with regard to behavioral economics by some of its leading scholars in Colin F. Camerer and George Loewenstein, "Behavioral Economics: Past, Present, and Future", *Advances in Behavioral Economics* (supra note 98) p. 3, 7-9 (noting that "behavioral economists are methodological eclectists. They define themselves not on the basis of the research methods that they employ but rather on [the basis of] their application of psychological insights to economics.")

specific legal rules or institutions will have some behavioral consequence.[151] To take a mundane example, those who respond to crime rate increases by calling for increased criminal sanctions to deter potential criminals assume a causal relationship between the magnitude of sanctions and deterrence. This assumption may be correct or mistaken, but insofar as the advocated legal change is based on intuition rather than empirical evidence, it is not a behavioral argument as the term is used here. Similarly, non-systematic observations, although illustrative and often compelling,[152] cannot alone form the basis for a behavioral analysis of legal questions. For example, a Freudian psychoanalytic interpretation of constitutional law texts[153] may prove insightful, but is outside the ambit of the behavioral approach in that the theory it applies lacks a systematic empirical basis.

The second, prevalent, category of scholarship that is outside the behavioral analysis of law consists of arguments based on normative theories of human behavior. A familiar example is the traditional economic analysis of law, which considers human behavior of paramount importance, but simply assumes it is synonymous with theoretical rational action.[154] The normative rational actor model describes the behavior of idealized agents rather than actual human decision makers,[155] and thus does not fit the proposed definition of the behavioral analysis of law.

B. Two Genres

A review of extant scholarship in the behavioral approach as defined here reveals two distinct, albeit closely related, methodological genres. The more common involves theoretical applications of behavioral evidence generated by non-legal, empirical, scholarship. Its rarer but important counterpart genre conducts direct empirical, mostly experimental, tests of legally relevant questions.[156]

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151. Supra note 2.
152. Even more compelling, in fact, than dry statistical evidence, due the effects of the availability heuristic. See supra notes 39-45 and the accompanying text.
153. *E.g.,* Davida A. Williams, "Punishing the Faithful: Freud, Religion, and the Law", 24 *Cardozo L. Rev.* (2003) 2181.
154. See supra notes 5-9 and the accompanying text.
155. While this characterization fits traditional law and economics, the new behavioral law and economics seeks to incorporate empirical behavioral foundations into law and economics, as described *infra* Part V and is therefore, of course, well within the present definition of the behavioral analysis of law.
156. *Cf.* the characterization of different "species" of empirical legal scholarship described by Shari Seidman Diamond, "Empirical Marine Life in Legal Waters: Clams, Dolphins, and Plankton", 2002 *U. Ill. L. Rev.* (2002) 803.

1. Theoretical Applications

The typical methodology of legal scholarship within the behavioral approach is the theoretical application of behavioral findings to the law. This methodology possesses some clear advantages and has been used to great effect in many legal domains,[157] but also suffers significant limitations that behaviorally oriented scholars should consider.

A legal analyst may approach a theoretical application in a number of different ways. At times the researcher may learn of an important behavioral regularity which has clear relevance to the law, then use this behavioral insight to inform the analysis of a specific doctrine or rule, a broader area of the law, or even multiple legal applications.

We have seen, for instance, that scholars may be able to account for a broad range of rules and doctrines – such as bans on otherwise efficient market transactions and practices – that would appear inexplicable if legal actors were strictly rational,[158] based on the large body of evidence that decision makers take considerations of fairness into account even in market settings. One can also find similarly broad legal applications of more specific, focused, behavioral phenomena, such as the endowment effect.[159]

Alternatively, a scholar grappling with a concrete legal problem may draw simultaneously on a variety of behavioral findings. Contract law scholars, for example, may consider multiple behavioral phenomena when examining the enforcement of liquidated damages clauses. Eisenberg, for one, has argued that overoptimism and the availability bias, as well as additional phenomena, may lead contracting parties to include deficient liquidated damages clauses in their agreements.[160]

Whether the target of application is broad or focused, however, the structure of theoretical behavioral analyses will appear familiar to the modern legal scholar, resembling theoretical applications of other extra-legal bodies of knowledge from or the methodologies of other sidciplines, such as philosophy or economics.[161] This

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157. See the sources cited supra note 14.

158. In the sense of being solely self-interested. See the text accompanying notes 137-139 supra.

159. See Korobkin (supra note 110). For another example of scholars applying a focused behavioral phenomenon to a range of legal issues see: Ehud Guttel and Alon Harel, "Matching Probabilities: The Behavioral Law and Economics of Repeated Behavior", 72 *U. Chi. L. Rev.* (2005) 1197.

160. Melvin Aron Eisenberg, "The Limits of Cognition and the Limits of Contract", 47 *Stan. L. Rev.* (1995) 211, pp. 225-236 (in an article applying various behavioral phenomena to a number of contract law doctrines as well as to different types of contracts). For a further analysis of liquidated damages from a behavioral perspective see the text accompanying notes 173-181 infra.

161. While the analogy to law and economics is straightforward, other law-and scholarship typically uses a similar approach as well, importing concepts or methodological tools from

superficial familiarity may have contributed in fact to the popularity of theoretical behavioral applications in recent years, when many scholars whose main expertise lies elsewhere within the law have developed behaviorally informed theses.[162]

However, the seeming familiarity of the theoretical behavioral application may sometimes obscure the limitations and challenges inherent in this genre of analysis. Most notably, decision research provides a rich array of concrete, empirical findings about human behavior, not abstract, uniform, theoretical constructs. Therefore, because behavioral findings are fundamentally empirical, their proper application should take into account the specific conditions under which they occur.[163] For instance, although overoptimism is pervasive it is neither manifested by the clinically depressed[164] nor by normal men with respect to their height.[165] Moreover, any theoretical application

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another discipline. See, *e.g*., Marc Galanter and Mark Alan Edwards, "The Path of the Law Ands", *Wis. L. Rev.* (1997) 375, pp. 375-76 (discussing the various interdisciplinary approaches to law and asserting that "[i]n spite of sharp differences among these schools, all concur that the legal world is not to be understood on its own terms, but requires the application of some method or substance provided by other disciplines.").

162. *Cf*. the somewhat extreme attack on such applications by Mitchell (supra note 13) p. 1911 (attaching "the facile way in which these scholars summarize and the incorporate psychological research findings into legal theory ignores important limitations on this research") and the response offered by Prentice, supra note 1 (showing at length that while Mitchell's claims have some merit, they are largely overstated and do not undermine the main insights of the behavioral approach).

163. *Cf*. Rachlinski (supra note 13) p. 743 (arguing that the focus of behavioral decision theory on context and the limitations of empirical evidence gives it an advantage compared to legal approaches that are based purely on a normative standard, such as freedom of contract or efficiency). See *aksi* Chris Swoyer, "Judgment and Decision Making: Extrapolations and Applications", *Judgment, Decisions, and Public Policy* (supra note 16) pp. 9, 18-21 (discussing the boundary conditions of some robust decision making phenomena and noting their importance for policy analysis since "[m]ost phenomena in psychology ... obtain only within a certain range of circumstances ...").

164. See the several studies cited in Taylor and Brown (supra note 76). Notice, moreover, that although Taylor and Brown's popular view on the connection between overoptimism and mental health also garnered some criticism, *e.g*., C. Randall Colvin and Jack Black, "Do Positive Illusions Foster Mental Health? An Examination of the Taylor and Brown Formulation", 116 *Psychol. Bull*. 3 (1994), there is agreement that the clinically depressed are not generally overoptimistic.

165. See supra notes 75-77 and the accompanying text. For an in-depth analysis of two variables that moderate overoptimism – ambiguity and preference intensity – see: Tor (supra note 16) pp. 520-531.

of empirical findings, behavioral or otherwise, must overcome the external validity challenge – namely, the question of the degree to which the findings generated in one setting or domain still hold in the context of their proposed application.[166]

Those behavioral phenomena most valuable for the legal analyst therefore are well-established, having proven robust over a wide range of circumstances.[167] Yet their empirical character dictates that even such phenomena will never exhibit universal uniformity and constancy; they will always be subject to boundary conditions, those circumstances under which they will diminish or disappear.[168] For this reason theoretical applications of behavioral evidence are fundamentally different from applications of theoretical, potentially universal, constructs developed by other disciplines.

The economic rational actor, for example, always exhibits perfect rationality in the pursuit of his utility maximizing goals.[169] At times, his pursuit will be impeded by the attendant circumstances, such as when information is limited, but the rational actor's preferences remain stable,[170] his determination unwavering, and his behavior, therefore, predictable once his circumstances are known. The real human actor, alas (though some may say fortunately), is not so constant and predictable. His behavior does exhibit important regularities and common characteristics, which decision making scholars carefully study. Yet these are necessarily only tendencies, with boundary conditions; they may be manifested by most people under many circumstances, but never exhibited by all people all the time.

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166. See, *e.g.,* Robert Rosenthal and Ralph Rosnow, *Essentials of Behavioral Research: Methods and Data Analysis* (2d ed. 1991) p. 64 (explaining that external validity refers to generalizability); See also the discussion of the specific external validity concerns involved in the use of experimental methods *infra* notes 181-183 and the accompanying text.
167. *E.g.,* Samuel Issacharoff, "Can There Be a Behavioral Law and Economics?", 51 *Vand. L. Rev.* (1998) 1729, p. 1734 (arguing that applied behavioral phenomena must be generalizable, robust, large, and capable of being translated into the actions of legal actors); Jolls, Sunstein and Thaler (supra note 12) p. 1481 (suggesting that only robust findings should be incorporated into legal analysis).
168. This is true, of course, of empirical findings in other sciences as well, but is especially pronounced in the case of human behavior, which is highly variable and adaptive. See also Gregory Mitchell, "Tendencies Versus Boundaries: Levels of Generality in Behavioral Law and Economics", 56 *Vand. L. Rev.* (2003) 1781, p. 1800 (lamenting the undiscriminating use of behavioral evidence by some legal scholars without attention to boundary conditions, contextual variables, and more). The importance of taking boundary conditions into account in behavioral applications is discussed in detail infra Part IV.A.
169. Becker (supra note 43) p. 5.
170. At least in the short term. See: Stigler and Becker (supra note 120).

The liquidated damages example, introduced above, may illustrate this point. The argument that the overoptimism of contracting parties sometimes will make liquidated damages clauses deficient has some appeal.[171] Overoptimistic parties will underestimate the likelihood of their breaching the contract in the future, and may therefore accept liquidated damages terms that a strictly rational actor would not have accepted. If this were the case, the tendency of the law to intervene in liquidated damages clauses more than in most other contractual terms could be understood as an adaptive response to the bounded rationality of contracting parties.[172]

But if overoptimism were truly universal and constant, one would have to explain why it plagues liquidated damages more than other contractual clauses. Otherwise, overoptimism would either be a common, unavoidable feature of all contractual clauses or deal a severe blow to the principle of holding people to their consensual bargains, putting into question one of the fundamental justifications of freedom of contract. The same reasoning would suggest, if overoptimism were uniform and constant, that all liquidated damages clauses should be equally suspect, regardless of the contracting parties' nature, their other mutual obligations or any additional contractual circumstances.

Not surprisingly, however, a closer look at the empirical evidence reveals that overoptimism, although pervasive, is by no means a universal constant.[173] For instance, overoptimism is pronounced when decision makers judge the likelihood of future negative events concerning outcomes of personal importance, especially outcomes that may partly depend on one's behavior.[174] These characteristics of overoptimism may in turn help explain why liquidated damages differ from most other contractual clauses: they concern the consequences of negative events, often far in the future; and they are relevant only in case of breach, which typically is a low probability event that may well depend on the parties' behavior. These characteristics of liquidated damages clauses are generally absent from basic performance terms – such as those concerning price, quantity, and the like – that may therefore be less susceptible to the biasing effect of overoptimism.[175] In addition, a fuller behavioral analysis of liquidated damages would

171. Eisenberg (supra note 160).

172. *Id*., p. 230; Rachlinski (supra note 13) pp. 747-748.

173. For a more detailed and nuanced review of some relevant findings in this area, as well as an illustration of their significance to legal analysis, see: Tor (supra note 16) pp. 520-531 (using evidence on two variables that moderate overoptimism and related phenomena to help explain systematic differences in performance between startups and diversifying entrants).

174. See, *.e.g.,* Tor (supra note 16) pp. 512-514 (reviewing findings on the illusion of control).

175. One may construct an alternative explanation for the stronger impact of overoptimism on liquidated damages clauses as compared to performance terms. According to this account,

seek to distinguish contracting situations where overoptimism will likely be more pronounced, because the factors facilitating it are present, from circumstances where these factors are absent and overoptimism should thus be of lesser legal concern.[176]

As in the case of overoptimism, recognition of the empirical contours of other behavioral phenomena is important for their effective legal application. For instance, Hillman relies on behavioral evidence to argue against intervention in liquidated damages clauses, *inter alia* based on findings on ambiguity aversion. According to this argument, individuals prefer risky situations (i.e. with known outcome probability distributions) to ambiguous (or uncertain) ones, and therefore use liquidated damages clauses to reduce the ambiguity associated with the future outcomes of a potential breach of contract.[177] However, closer examination of the empirical evidence reveals that ambiguity aversion is comparative, rather than absolute, and real-world decision makers therefore routinely operate under ambiguity. Ambiguity aversion does lead decision makers to prefer well defined risks to ambiguous ones when given both alternatives,[178] but is unlikely to be

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in the case of performance terms, the overoptimism of one party may be offset by that of his counterpart. An overoptimistic seller, for example, may accept a price that is too low, say because he underestimate the costs of production. At the time, however, an overoptimistic buyer also may be willing to accept a price that is too high, with ultimate contract price reflecting a more balanced outcome. This mutual offsetting effect of overoptimism is unlikely to occur in the LD case, however. In that context, mutual overoptimism may lead both parties to underestimate their own likelihood of breach and its severity, even while they may still be concerned about the other party's performance, with the result of both agreeing to paying accept excessive LDs. Nevertheless, this account does not explain, for instance, the differential susceptibility of different types of parties to including biased LD clauses, discussed below.

176. *Cf.* Eisenberg (supra note 160) p. 225 (arguing that "these limits of cognition bear with *special force* on certain classes of contract provisions ... and certain kinds of contracts...).

177. Robert A. Hillman, "Limits of Behavioral Decision Theory in Legal Analysis: The Case of Liquidated Damages", 85 *Cornell L. Rev.* (2000) 717, p. 732.

178. See, *e.g.,* Craig R. Fox and Amos Tversky, "Ambiguity Aversion and Comparative Ignorance", 110 *Q. J. Econ.* (1995) 585 (ambiguity aversion disappears or diminishes in the absence of comparative ignorance); Craig R. Fox and Martin Weber, "Ambiguity Aversion, Comparative Ignorance, and Decision Context", 88 *Org. Behav. & Hum. Dec. Proc.* (2002) 476 (extending the above results). But see: Clare Chua Choiw and Rakesh K. Sarin, "Comparative Ignorance and the Ellsberg Paradox", 22 *J. Risk & Uncertainty* (2001) 129 (showing that ambiguity aversion sometimes remains even in non-comparative settings, although it is significantly stronger in the comparative setting).

a significant driver of liquidated damages clauses, which simply determine the magnitude of damages in case of breach.[179]

In addition to necessitating close attention to the contours of specific behavioral phenomena, their concrete, empirical, nature also requires the analyst to consider the external validity problem. This problem concerns the "validity of inferences about whether the ... effect ... holds over variations in persons, settings, treatment variables, and measurement variables."[180] External validity issues arise because theoretical legal applications use evidence generated in non-legal settings, which may differ in important rs from legal ones. It may be, for example, that well-established experimental findings based on numerous studies of laypeople might not apply to legal professionals, such as judges.[181] One could thus argue that lawyers or judges will not exhibit, say, anchoring effects when making legal judgments, because they possess unique experience and expertise.[182]

In principle, the external validity of theoretical applications is an empirical question, which could be resolved by a direct empirical test of a given behavioral phenomenon in the legal setting of interest. In this case, the researcher would conduct specific tests of lawyers or judges in legal settings, to examine whether the anchoring findings from non-legal settings still hold. As the following section explains, however, such direct testing is often not a practical alternative or complement to theoretical applications. In these common cases the analyst must consider whether any characteristics of the legal context of the application suggest an external validity problem. Fortunately, there is evidence for the presence of many behavioral phenomena in real-world settings,

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179. See: Rachlinski (supra note 13) p. 762. This is not to say, however, that other reasons, behavioral and beyond, may not caution against intervention liquidated damages clauses.

180. William R. Shadish, Thomas D. Cook and Donald T. Campbell, *Experimental and Quasi-Experimental Designs for Generalized Causal Inference* (2002) p. 38.

181. *Cf., e.g.,* the various sources arguing that judges are less (or not) susceptible to various errors and biases that impact juries in Andrew J. Wistrich, Jeffrey J. Rachlinski and Chris Guthrie, "Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding", 153 *U. Pa. L. Rev.* (2005) 1251, pp. 1255-1256 and n. 21-25. But see, *e.g* Chris Guthrie, Jeffrey J. Rachlinski and Andrew J. Wistrich, "Inside the Judicial Mind", 86 *Cornell L. Rev.* (2001) 777, 782-783 (summarizing evidence on decision errors made by experienced professionals such as lawyers, judges, real estate brokers, securities analysts and brokers and more).

182. *E.g.,* Guthrie, Rachlinski and Wistrich, *id.*, pp. 790-794 (reporting a series of experimental studies using federal judges as participants and testing for a variety of established behavioral phenomena, including anchoring, in a legal setting of relevance for the judges).

with professional and experienced decision makers,[183] albeit usually not in the legal domain.[184] Whether a given instance of legal decision making is fundamentally different from a similar problem faced, say, in medical or business decision making will therefore ultimately depend on the specific circumstances at hand.

2. Direct Empirical Tests

The second genre in the behavioral analysis of law involves direct tests of behavioral phenomena in legal settings. Studies in this genre examine whether a given phenomenon is manifested in a legal context, usually following hypotheses based on evidence from non-legal domains. Direct tests take two general forms, involving either *observational* tests of legal real-world ("field") data or *experimental* studies in legal settings. Both methodologies avoid some of the problems inherent in theoretical applications of non-legal findings, but are also subject to their own set of limitations.

Observational tests of legal questions have become increasingly popular in recent decades, although still relatively uncommon compared to traditional legal scholarship.[185] Yet, these tests rarely seek to resolve *behavioral* questions. Typically, observational scholars study empirical regularities in data on legal institutions – such as courts and administrative agencies – or legal decision makers – such as judges or litigants. Only occasionally do such studies examine the impact of psychological variables on legally relevant decision making.[186]

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183. There is an extensive literature examining experts' decision processes, some of which is summarized by Guthrie, Rachlinski and Wistrich. *id*.

184. In this sense, the series of studies by Rachlinski, Guthrie, and Wistrich, reported supra note 183 are quite unusual and informative. For some additional studies using judges participants see the studies collected by Guthrie, Rachlinski and Wistrich *id.,* n. 21.

185. See, *e.g.,* Theodore Eisenberg, "Why Do Empirical Legal Scholarship?", 41 *San Diego L. Rev.* (2004) 1741 (citing an increase in law school programs that train in empirical methods); Robert C. Ellickson, "Trends in Legal Scholarship: A Statistical Study", 29 *J. Leg. Stud.* (2000) 517, pp. 528-530 (analyzing statistical evidence for the increased incorporation of empirical evidence); Richard H. McAdams and Thomas S. Ulen, "Symposium: Empirical and Experimental Methods of Law: Introduction", 2002 *U. Ill. L. Rev.* (2002) 789, p. 791 (noting that "there are signs that empirical and experimental methods are becoming more common in legal scholarship").

186. For instance, of about 100 empirical articles published in the Journal of Empirical Legal Studies – the only peer-reviewed outlet devoted solely to such research – since its inception in 2004 (through the March 2008 issue), only 4 articles concerned experimental tests of legally-relevant psychological processes (3 in 2006 and 1 in 2007).

Two factors that contribute to the rarity of behaviorally oriented observational tests are, first, the interests of empirical-observational legal scholars; and, second, the nature of behavioral phenomena. Legal scholars with observational interests have a variety of interdisciplinary backgrounds, but most have not been trained as psychologists.[187] These scholars are therefore interested in obtaining and analyzing observational data about legal rules and institutions, but less concerned about the specific psychological antecedents of legally-relevant behavior. Moreover, those psychological antecedents that are the focus of the behavioral approach are often difficult to study by observational methods, as the following example will illustrate.

A behavioral scholar may hypothesize that considerations of justice or fairness, which are typically ignored in the economic analysis of plea bargaining, will lead innocent criminal defendants to reject plea offers that culpable defendants with similar trial prospects will accept.[188] If established, such a phenomenon would have important ramifications for the legal regulation of plea bargaining.[189] The intuition underlying such a hypothesis may come from anecdotal observations of defendants' behavior[190] or perhaps from the researcher's familiarity with the extensive body of behavioral evidence on the impact of fairness considerations on decision making in other domains.[191]

In any event, to make policy recommendations in the plea bargaining context one would clearly prefer to adduce direct evidence on defendants' plea behavior. The problem is that to obtain such evidence the researcher would have to collect data on plea offer and acceptance terms that is not publicly available. Once collected, moreover, the data would have to be analyzed separately for innocent and culpable defendants to determine whether there are any systematic differences between the two groups. This, however, is an impossible task, since defendants' objective culpability – as opposed to their trial outcomes – is typically unknown.

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187. Some exceptions include Jeremy Blumenthal of Syracuse, Yuval Feldman of Bar Ilan University, Gregory Mitchell of Virginia, and Jeffrey Rachlinski of Cornell. Of course, there are many other legal scholars with psychological training which work predominantly within the "old" law and psychology paradigm (relevant journals are Law and Human Behavior, and Behavioral Sciences and the Law).

188. This example is based on Tor, Gazal-Ayal and Garcia, *Plea Offers* (supra note 139).

189. See, *id.,* pp. 25-26.

190. The researcher may be aware, for instance, of famous cases of seemingly irrational plea rejections by defendants, who consequently suffered server consequences but were later proven innocent. One illustrative case is Kelly Jarrett's, who rejected a plea bargain for time served on moral grounds, knowing that she was very likely to serve decades more in jail because of her refusal. See, *id.,* n. 5 (providing further details and references).

191. See supra Part II.A.3.

As a partial solution to this problem, the researcher may seek indirect empirical evidence of a relationship between plea behavior and culpability. Such evidence may be found, for example, in databases that collect exoneration cases – that is, cases where criminal defendants who were judged guilty were later proven innocent. If the fairness hypothesis is correct, there should be a systematic difference between the plea rates of the exonerated and the general defendant population.[192] Even such an important finding, however, would not directly address the behavioral hypothesis, because variables other than considerations of fairness or justice may cause systematic differences between the real-world plea behavior of the innocent and the culpable. For instance, real-world innocents may well be more reluctant to plea if they correctly believe their acquittal odds are higher than those of their culpable counterparts, based on private information they cannot convincingly convey to prosecutors. Alternatively, innocents' behavior may reflect overoptimism regarding their trial prospects rather than a taste for justice or fairness.[193]

As the plea bargaining example illustrates, observational tests of real-world data are extremely valuable, but often difficult to conduct.[194] Even where feasible, moreover, their results may be subject to multiple interpretations,[195] which frequently may lead

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192. For a discussion of the various issues raised by the suggested analysis of exoneration data for the present purposes see: Tor, Gazal-Ayal and Garcia, *Plea Offers* (supra note 139) pp. 5-6.

193. See, *id*., p. 7 (discussing alternative explanation for the striking difference between guilty plea rates among the exonerated and those of the general defendant population).

194. *E.g.,* Russell Korobkin, "Possibility and Plausibility in Law and Economics", 32 *Fla. St. U. L. Rev.* (2005) 781, p. 786:

> The most obvious is that careful empirical testing of law-relevant behavior in specifically defined settings is both time- and resource-intensive, and the list of topics that would benefit from such study is quite long compared to the list of scholars doing this work. Potentially even more troubling, however, is that the data required for such studies is often impossible (or virtually impossible) to obtain and, even when it can be obtained, the results themselves or the implications to be drawn from the results will often be contestable and ultimately indeterminate.

195. In empirical research parlance, this is a problem of internal validity See, *e.g.,* Rosenthal and Rosnow (supra note 166) pp. 209-212 ("[c]ausal inference ... depends (a) not only on operationalizing a reliable relationship between an event and its presumed cause ... as well as (b) providing some proof that the cause preceded the effect ... but also on (c) *ruling out plausible rival explanations (internal validity).*) (emphasis added), pp. 257-59 (discussing the problem of multiple confounding covariates in the experimental context). See also Korobkin (supra note 194) and n. 23.

to different legal policy recommendations.[196] To illustrate, rational plea rejections by innocents who possess private information may raise no policy concerns. On the other hand, overoptimistic rejections by innocents who would have accepted the plea offers had they correctly estimated their trial prospects may present a problem that plea bargain law should take into account.[197] All in all, therefore, observational tests of naturally occurring data may possess superior external validity, but are often not only difficult to conduct but also inconclusive, especially regarding the psychological antecedents of behavior. When these underlying causes are legally significant, as is frequently the case, behavioral scholars may need to turn to experimental methods.[198]

The basic logic of experiments is straightforward and not unique to behavioral decision research. In the most common type of study, the controlled randomized experiment,[199] the researcher randomly assigns the participants to two (or more) groups, to avoid a systematic difference between the participants in the two groups.[200]

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196. *Cf*. Colin F. Camerer and Eric Talley, "Experimental Law and Economics", 3 available *at* [http://www.hss.caltech.edu/~camerer/HLEDec282004.doc] (*forthcoming* in *2 Handbbok of Law and Economics* (A. Mitchell Polinsky and Steven Shavell- eds.,) ("Nevertheless, as we elaborate below, empirical approaches suffer from the fact that it is often difficult to stage (much less to observe by happenstance) a truly natural experiment in the real world that implies clear causal conclusions. Because laboratory approaches excel in just this respect, at the very least good experimental designs are likely to provide a complementary and confirmatory check on empirical methods.").

197. For a discussion of the normative implications of innocents' plea rejections see Tor et al., *Plea Offers* (supra note 139) pp. 25-28.

198. *Cf*. Camerer and Loewenstein (supra note 150) p. 7 ("Experiments played a large role in the initial phase of behavioral economics *because experimental control is exceptionally helpful for distinguishing behavioral explanations from standard ones*.") (emphasis added).

199. Note there are other kinds of experiments that are not discussed here. See: Rosenthal and Rosnow (supra note 166) p. 188. Field experiments that study decision making in the specific context of interest, for instance, seek to retain experimental control, while increasing the external validity of the subject pool. See, *e.g.,* Yuval Feldman, "The Behavioral Foundations of Trade Secrets: Tangibility, Authorship, and Legality", 3 *J. Emp. Leg. Stud.* (2006) 197 (using a non-random sample of silicon valley high-tech employees).

200. See, *e.g.,* Rosenthal and Rosnow (supra note 166) p. 70; George W. Snedecor and William G. Chocran, *Statistical Methods* (8th Ed. 1989) pp. 95-96 ("Randomization gives each treatment an equal chance of being allotted to any subject ... exactly as is assumed in the theory of probability ... A great virtue of randomization is that it protects against *unsuspected* sources of bias.") (emphasis in the original). See also Camerer and Talley

The treatment is then administered to one group (the experimental group) but not to the other (the control group). The data from both groups are then collected, and analyzed by statistical procedures to determine whether the treatment has had any effect on the outcomes of the experimental group as compared to the control group.[201]

The central characteristics of experiments are randomization and control, which allow the experimenter to draw conclusions about the causal effects of the experimental treatment.[202] The controlled randomized experiment therefore possesses some advantages over empirical observational studies of naturally occurring data, where randomization and control generally are not possible. Yet the experiment is inevitably removed from the natural legal environment in a number of important respects: not only do experimental participants often differ from those legal actors of interest, but the controlled experimental design must fall short of replicating the full richness of the real-world setting of legal interest.[203] These and related characteristics of experiments thus tend to limit their external validity.[204]

Over time, however, experimental researchers have developed various means to address external validity problems, by using different types of participants, infusing experimental designs with greater realism, and more.[205] By now there is also a significant body of evidence showing how even simulation or survey studies using, say, college and university students – as is often the case in psychology experiments – typically generate results resembling those of experiments using more realistic

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(supra note 196) p. 6 ("Random assignment is perhaps the most foundational element of a valuable experiment.")

201. For a detailed, non-technical, discussion of the logic and approach of controlled randomized experiments see: Rosenthal and Rosnow (supra note 166) pp. 69-91.

202. See also *id*., pp. 74-82 (providing further background).

203. Note that there is an inherent tension between the desire to replicate as closely as possible the real-world context within which relevant behaviors take place and the paramount need – that very justification of the experimental method – to control the experimental setting and eliminate potential confounds.

204. See, *e.g.,* Richard H. McAdams, "Experimental Law and Economics", *Encyclopedia of Law and Economics* (Boudewijn Bouckaert and Gerrit De Geest- eds., 1999) pp. 539, 540 ("A constant methodological concern, however, is an experiment's 'parallelism' or 'external validity' – the degree to which the results may be generalized to populations and behavior outside the experiment"). External validity was also discussed supra notes 181-183 and the accompanying text.

205. There are researchers who argue, however, that the value of laboratory experiments is specifically in testing theories and examining universal phenomena in controlled and more abstract environments. See*, e.g.,* Douglas G. Mook, "In Defense of External Invalidity", 38 *Am. Psychol*. (1983) 379.

participants and designs.[206] Similarly, the results of decision-making studies using monetary incentives for performance largely correspond with those of psychological experiments, which often do not rely on financial incentives.[207]

Behavioral scholars have already conducted experimental tests of some legal questions, although such tests are still uncommon.[208] Researchers have used

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206. See, *e.g.,* Craig A. Anderson, James J. Lindsay and Brad J. Bushman, "Research in the Psychological Laboratory: Truth or Triviality?", 8 *Current Directions in Psychological Science* (1999) 3 (comparing findings from the lab and the field across a range of psychological domains and finding considerable correspondence).

207. Colin F. Camerer and and Robyn M. Hogarth, "The Effects of Financial Incentives in Experiments: A Review and Capital–Labor–Production Framework", 19 *Journal of Risk and Uncertainty* (1999) 7. This is not to say that financial incentives do not matter (see, *e.g.,* Vernon L. Smith, "Method in Experiment: Rhetoric and Reality", 5 *Experim. Econ.* (2002) 91, pp. 101-102; Vernon L. Smith and James M. Walker, "Monetary Rewards and Decision Cost in Experimental Economics", 31 *Econ. Inq.* (1993) 245 (concluding based on a review of experimental economics studies that increased financial incentives reduce the variances in participants' performance and also tend to improve its quality)), but rather that commonly used levels of financial incentives generally do not change mean statistics, although they sometimes reduce variance in responses, and may even introduce confounds into the design by either framing the experiment as one concerning market behavior or because they interact with the experimental dependant variables. See also: Uri Gneezy and Aldo Rustichini, "Pay Enough or Don't Pay at All", 115 *Q. J. Econ.* (2000) 791 (providing evidence that low financial incentives lead to worse performance than no incentives, but high incentives improve performance); Ondrej Rydvak and Andreas Ortmann, "How Financial Incentives and Cognitive Abilities Affect Task Performance in Laboratory Settings: An Illustration", 85 *Econ. Letters* (2004) 315 (showing through a reanalysis of the data from Gneezy and Rustichini that differences in intelligence between participants are at least twice as important for performance compared to financial incentives); Dan N. Stone and David A. Ziebart, "A Model of Financial Incentive Effects in Decision Making", 61 *Org. Behav. And Hum. Dec. Proc.* (1995) 250 (providing evidence that financial incentives can both improve performance via increased motivation and diminish it by generating negative effect). *Cf., e.g.,* Tor, *Experimental Law and Economics* (supra note 128) pp. 27-28 (providing an example of how the use of monetary incentives in a given study may have contributed to the lack of an experimental effect).

208. See: Camerer and Talley (supra note 196) p. 2 ("Few methodological approaches to the study of law that have received more recent attention than experimental methods. While virtually absent from the pages of law reviews and law and economics journals just

experimental methods to examine the effects of framing on litigation behavior;[209] the impact of the self-serving bias on settlement;[210] the role of the status-quo bias and endowment effect in contractual choices[211] and legal remedies;[212] and how the structure and context of rules and procedures shapes legal decision making;[213] to name some examples. However, even such controlled randomized experiments, which directly study legal questions, must still consider external validity issues, since they necessarily remain removed from the natural legal settings. Of course, many differences between the experimental setting and the legal context of interest may have negligible impact on the phenomena of interest, but other differences may truly limit the relevance of specific experimental findings.[214]

Observational tests and experimental methods thus possess different strengths and weaknesses, and may in fact be complementary means of generating direct evidence regarding behavioral phenomena of legal interest. Sometimes, such complementarities may be brought to light in an integrated research program.[215] In the plea bargaining example, for instance, controlled randomized experiments supplemented the indicative, real-world, findings generated by observational methods, by identifying some of the psychological antecedents of the differential behavior of innocent and

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a decade ago, experimental studies (or articles purporting to be inspired by the results of such studies) have become a veritable staple consumption good for today's legal scholars.") Note that a careful reading of Camerer and Talley's upbeat message regarding the popularity of experimental studies also includes the proportionately dominant genre of theoretical applications ("inspired" by others' experimental results).

209. *E.g.,* Rachlinski (supra note 103).

210. *E.g.,* Babcock, Loewenstein, Issacharoff and Camerer (supra note 79).

211. *E.g.,* Korobkin, *Status Quo bias* (supra note 127); Korobkin, *Endowment Effect* (supra note 112).

212. *E.g.,* Lewinson-Zamir (supra note 148); Jeffrey J. Rachlinski and Forest Jourden, "Remedies and the Psychology of Ownership", 51 *Vand. L. Rev.* (1998) 1541.

213. Kelman, Rottenstreich and Tversky (supra note 91).

214. *E.g.,* Mook (supra note 205) p. 386 ("[o]bviously we must move beyond a simple count of differences and think through what the effect of each one is likely to be.").

215. Alternatively, research programs may similarly seek to complement laboratory experiments with other methodologies, such as field experiments. See supra note 198. Such combinations are becoming increasingly common in decision research. A quick perusal of the leading journal of experimental work in that field – Organizational Behavior and Human Decision Processes – reveals that every one of the last 5 volumes (Vols. 100-104) contained between 1 and 4 articles that focused on observational or field data or combined such data with traditional laboratory experiments.

culpable defendants. To do this, the experiments controlled for some confounding variables that may have contributed to the observational evidence, such as private information and expected sanctions. They also used hypothetical questionnaires and student participants, in a setting removed from the criminal justice system, showing that innocence still exerts a significant independent impact on plea acceptance even in such highly simplified and controlled settings.[216] Standing alone, the external validity of these experimental studies would have been severely constrained, but they were able to control for real-world confounds which plague the observational evidence, using hypothetical scenarios that earlier plea bargaining studies already shown to produce results similar to those of experiments using criminal convicts as participants.[217]

Beyond overcoming validity concerns, however, the observational and experimental methods of empirical research allow scholars to generate new, legally relevant data. New data generation, which is still uncommon in legal scholarship, is especially beneficial in circumstances where legal debates are based on limited evidence. For instance, the voluminous literature that debates the merits and proper boundaries of plea bargains includes complex arguments regarding the behavior of defendants, prosecutors, judges, and more, based on either scholarly intuitions or theoretical models, but typically not on empirical evidence. The introduction of relevant empirical evidence in these common cases where it is usually lacking may therefore inform the various positions in extant debates. It can also promote the further generation of empirical research by those who would like to challenge the conclusions of a given set of direct findings, thereby further enriching legal scholarship.

Despite the many benefits of direct empirical tests, however, their share in the growing mass of behavioral research in law is still limited. For one, empirical scholarship requires some training in observational or experimental methods, which most legal scholars do not possess. Moreover, for the reasons noted above, those legal scholars familiar with empirical observational research generally do not examine behavioral questions, while the few who do conduct experiments must also face an audience unfamiliar with, and therefore often suspicious of, experimental methods.

This latter communication barrier is also exacerbated by the current lack of an experimental legal methodology, adapted to the specific concerns and priorities of legal scholars. A similar process has occurred in the field of economics, where experimental methods were uncommon until a few decades ago. When economists became aware of the contribution experimental tests could make to their discipline, they first borrowed already well-established experimental psychology methods. Since then, *behavioral*

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216. Tor, Gazal-Ayal and Garcia, *Plea Offers* (supra note 139).

217. *Id.* For another example of a combining experimental and observational research in behavioral legal research see: Rachlinski (supra note 103).

economists, who are interested in the lessons of psychology for economics, have retained most of the methodological practices of experimental psychology.[218] Other researchers, known as *experimental* economists, however, have over time adapted the experimental psychological methodology, the better to examine non-psychological questions about economic behavior.[219]

Experimental economics thus differs from experimental psychology (and therefore, largely, from experiments in behavioral economics as well) in several important respects, which reflect its paramount focus on economic, rather than psychological, questions. For example, experimental economists emphasize the provision of monetary incentives for performance to participants; the measurement of overt behavior rather than verbal responses; the avoidance of deception at all costs; the use of numerous repeated trials; and the design of experiments with a high degree of abstraction.[220] These idiosyncratic experimental economics conventions illustrate how extant experimental methods may be adapted to suit new research priorities.

Importantly, some specific experimental economics conventions may be useful for legal scholarship, at least occasionally, although the practices of experimental psychology and behavioral economics typically will be better suited for the task.[221] Motivating participants with monetary incentives for performance may be beneficial, for instance, when studying legally relevant phenomena in economic settings.[222] Many other legal questions, however, including those that frequently concern behavioral scholars, address situations where non-monetary factors – such as social norms, fairness, or other social preferences – play a pivotal role. In these settings, extensive reliance on monetary performance incentives may create undesirable demand effects and bias experimental results.[223]

Similarly, the abstract designs favored by experimental economists may be preferable when testing general patterns of economic behavior, but not for the study

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218. Camerer and Loewenstein (supra note 150) p. 8 (noting, in addition, that after an initial period where experiments were the main source of data collection, behavioral economists started using observational and other methods to study their subject-matter of interest.)

219. *Id*. See also: Ralph hertwing and Andreas Ortmann, "Experimental Practices in Economics: A Methodological Challenge for Psychologists?", 24 *Behav. and Brain. Sci*. (2001) 383 (describing the experimental practices of experimental economists).

220. *E.g*. Camerer and Talley (supra note 196) p. 10-12.

221. See Tor, *Experimental Law and Economics* (supra note 128) p. 28.

222. However, because of researchers' resources constraints, the monetary incentives commonly given by experimenters are quite small, and may therefore not provide appropriate motivation.

223. See the evidence discussed supra note 209. See also infra note 252 and the accompanying text (discussing the effects of framing a task as market related on participants' behavior),

of behavior within legal and social institutions. In most situations that interest legal scholars, for instance, the law plays a pivotal role – explicitly or implicitly – in priming and constructing preferences, values, norms, and more. Although an experimental design that abstracts away from these institutional settings may provide interesting insights about economic behavior, it may be of limited relevance for legal analysis.[224]

Hence, while current experimental studies in law tend to apply the extant methodology of either experimental psychology or experimental economics, the future use of experimental legal methods may benefit from the development a new experimental variant, better suited to the interests of legal scholars.

3. Complements or Substitutes?

Much like the relationship between the empirical methodologies of observational and experimental studies, the two overarching behavioral genres – of theoretical applications and direct empirical tests – can clearly complement one another since they possess different strengths and weaknesses. The production and communication of theoretical applications are more natural to legal scholars. Such applications can also be based on robust findings developed outside law and may inform a broad range of legal analyses. At the same time, however, we have seen that effective theoretical applications require close familiarity with the details of extant behavioral findings and inevitably remain open to significant external validity challenges. Direct empirical tests, on the other hand, are necessarily focused and limited in scope. They also face higher production and communication barriers, limitations on the raw data available for study, and a current lack of a specific legal methodology.

Some problems, therefore, are better addressed by one genre or the other, but in many instances theoretical applications and direct empirical tests can be combined to offer a more compelling, behavioral analysis.[225] Korobkin's analysis of the impact of default rules of contract law on contractual outcomes illustrates this point.[226] To make his argument more convincing, Korobkin marshals the extensive body of behavioral research on the endowment effect and the status-quo bias, also showing how these

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224. See*:* Rachlinski (supra note 13) pp. 764-765; Tor, *Experimental Law and Economics* (supra note 128) p. 28.

225. Direct empirical tests also complement theoretical applications by providing new data that can lead to theory revisions and developments, as is commonly done in the sciences. *Cf*. Thomas S. Ulen, "A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in the Study of Law", 2002 *U. Ill. R. Rev.* (2002) 875 (discussing at length the scientific method, the use of empirical evidence to inform theory, and its increasing relevance for the law).

226. Korobkin, *Status Quo Bias* (supra note 127).

phenomena are robust and appear in relevant decision environments.[227] He concedes, however, that default rules may differ in important respects from the extra-legal context studied elsewhere, and therefore conducts a series of controlled experimental tests, showing that default rules can indeed impact contractual decisions.[228]

Despite their beneficial complementarities, however, there is also some tension between the two genres, at least from the perspective of the individual researcher. Given limited resources, one must always trade off the benefits of acquiring and employing new methodologies – like those used in direct empirical tests – against their costs. Moreover, because any given empirical test can generate only a limited amount of data, researchers who focus on the generation of new evidence may find it difficult to provide a sufficient basis for legal policy recommendations.[229] This difficulty can be partly overcome, though not completely mitigated, by combining the two empirical genres, as suggested above.[230]

IV. Basic Research Gaps

The definition of the behavioral approach as the application of empirical behavioral evidence to legal analysis also gives rise to the third claim made here – namely, that the behavioral approach faces a series of "gaps," between basic research findings and some of the empirical evidence needed for a fully effective legal analysis. Until these gaps are bridged the explanatory power of the behavioral approach may remain limited.

Most behavioral decision research is "basic," in that it is concerned with universal relationships among psychological variables and judgment and decision behavior.[231]

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227. Korobkin, *Status Quo Bias*, *id.,* pp. 625-633.

228. *Id.,* pp. 633-660. For another example of an integrated approach see Avishalom Tor and Dotan Oliar, "Incentives to Create under a "Lifetime-Plus-Years" Copyright Duration: Lessons from a Behavioral Economic Analysis for Eldred v. Ashcroft", 36 *Loyola of L.A. L. Rev.* (2002) 437 (combining a theoretical application of extant behavioral findings with simple experimental tests to analyze the likely impact of changes in the duration of copyright protection).

229. *Cf.* Robert J. MacCoun, "Comparing Legal Factfinders: Real and Mock, Amateur and Professional", 32 *Fla. St. U. L. Rev.* (2005) 511, p. 518 (stating that when making research choices, scholars should be aware of this tradeoff and sometimes prefer the development of a good theory that is useful for policy makers to conducting additional direct empirical tests of limited theoretical importance).

230. In time, moreover, the further development of behavioral scholarship may create a community of scholars who are able to build on each other's findings.

231. The distinction between "basic" and "applied" science is highly controversial, both in the sciences general and in psychology specifically. See, *e.g., Advances In Applied Socail*

The behavioral analysis of law, on the other hand, is fundamentally "applied," [232] insofar as it addresses legal questions based on behavioral insights. The behavioral approach, therefore, is largely dependent on decision research to generate basic findings on systematic behavioral patterns. Despite the extensive research that already exists in this area, however, many fundamental questions remain unresolved, often because researchers have yet to direct significant attention to them.[233]

Instead of attempting to compile a comprehensive list of all basic research gaps, the following sections focus on some gaps that are especially significant for legal scholarship. Those discussed here may be classified into the three general categories: shrinking gaps, second-order gaps, and institutional gaps, each of which is addressed in turn.

A. Shrinking Gaps: Boundary Conditions and Debiasing

Shrinking gaps are basic research gaps in areas that in the past, for various reasons, received less attention from decision making scholars, but that researchers increasingly study. Empirical evidence in these areas is therefore more limited than in many other decision making domains, but the legal analyst may still find valuable grist for his mill. While shrinking gaps exist in numerous areas of decision research,[234] this section

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Psychology (Michal J. Saks and Robert F. Kidd- eds., 1980) p. 1 (numerous authors addressing this controversy in the social psychological context). This controversy is not material for the present purposes, which simply use the terminology to highlight that the behavioral analysis of law uses empirical findings about general patterns of human behavior to address specific legal issues.

232. The application of basic decision research is widespread. See, *e.g., Judgment and Decision Making: An Interdisciplinary Reader* (Terry Connoly, Hal R. Arkes and Kenneth R. Hammond- eds., 2d ed., 2000) (containing applications to public policy, economics, medicine, and more).

233. Applied decision research may therefore also contribute to basic research by revealing its own lacunae and shortcomings. See, *e.g.*, Baruch Fischhoff, "The Real World: What Good is It?", 65 *Org. Beahv. And Hum. Dec. Proc.* (1996) 232, p. 232; Karl H. Teigen, "Decision-Making in Two Worlds", 65 *Org. Beahv. And Hum. Dec. Proc.* (1996) 249, p. 251 ("Real-world situations are not easily, and certainly never completely, captured by the vocabulary of the lab. On the other hand, these situations form a gold mine for extracting new questions (rather than new answers).").

234. A non-exhaustive list of additional significant shrinking-gap areas may include the role of individual differences in judgment and decision making (see, *e.g.,* Keith E. Stanovich and Richard F. West, "Individual Differences in Reasoning: Implications for the Rationality Debate", 23 *Behav. and Brain. Sci.* (2000) 645 (examining this issue in a target article followed by extensive peer commentary); the impact of affect on judgment and decision

illustrates their importance by examining extant research on boundary conditions and debiasing, an area that has broad relevance for legal analysis.

Legal applications of concrete empirical findings, as opposed to theoretical, universal, constructs, must account for boundary conditions, identifying the specific circumstances necessary for different phenomena to be manifested.[235] Beyond considering those natural boundary conditions, however, the legal analyst must go still farther and examine the potential of the legal system actively to debias decision makers and thereby eliminate or reduce decision errors.[236] Despite the limited past interest in the study of boundary conditions and debiasing among behavioral decision researchers, recent years have seen scholars increasingly examining these questions, experimentally and theoretically alike.[237]

The identification of boundary conditions is important for basic research, as well as for behavioral-legal applications, since understanding when phenomena come into existence and when they disappear can provide insight into the nature of these phenomena. In fact, the traditional focus of decision researchers – including the influential "heuristics and biases" research program – on studying errors and deviations from normative benchmarks already emphasizes the importance of boundary conditions research.[238] Moreover, one of the most important general insights of behavioral decision research is that human behavior is highly context-dependent – namely, that processes of judgment and choice depend on the environment within which people operate.[239]

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making (see, *e.g.,* Norbert Schwarz, "Emotion, Cognition, and Decision Making", 14 *Cog. And Emotion* (2000) 433 (describing the state of the art at the time and opening a special issue on the topic)); and the study of specific behavioral phenomena in strategic environments (see generally Camerer, *Behavioral Game Theory* (supra note 130) (a highly readable and thorough review of experimental results in this area).

235. See supra notes 165-172 and the accompanying text. *Cf.* Drew Fudenberg, "Advancing Beyond Advances in Behavioral Economics", 44 *J. Econ. Lit.* (2006) 694, p. 697 (asserting that behavioral findings reveal, for instance, many judgmental errors but do not specify their boundary conditions).

236. Christine Jolls and Cass R. Sunstein, "Debiasing through Law", 35 *J. Leg. Stud.* (2006) 199.

237. *E.g.,* Baruch Fischhoff, "Debiasing", *Judgment Under Uncertainty* (supra note 32) p. 422.

238. See, *e.g.,* Tversky and Kahneman, *Judgment Under Uncertainty* (supra note 32) p. 3 (justifying this focus by analogizing JDM research to the study of visual perception via optical illusions).

239. See, *e.g.,* Gigerenzer and Selten (supra note 18); Payne, Bettman and Johnson (supra note 18); Rachlinski, *"New" Law and Psychology* (supra note 13). See also *infra* notes 88-93 and the accompanying text (discussing the effect of context on decision processes).

The study of boundary conditions and debiasing concerns three related levels of analysis: first, researchers examine those *general boundaries* of intuitive judgment wherein people rely on heuristic processes of judgment and choice.[240] Second, the study of different phenomena also seeks to identify their *specific boundaries*.[241] Third and related, once systematic errors are found, researchers often examine whether and how it is possible to *debias* decision makers, in an attempt to overcome these errors.[242]

At the level of general boundaries, the experimental evidence suggests that decision processes are "dual-process" operations, which may be divided into two broad categories, sometimes known as *System 1* and *System 2*.[243] System 1 encompasses those intuitive processes of judgment and choice that are largely automatic and effortless,

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240. *E.g.,* Kahneman and Frederick (supra note 25); Shane Frederick, "Automated Choice Heuristics", *Heuristics and Biases* (supra note 25) p. 548; Keith E. Stanovich and Richard F. West, "Individual Differences in Reasoning: Implications for the Rationality Debate?", *Heuristics and Biases* (supra note 25) p. 421, 436 (note that this is a different version from the article cited supra note 236 despite the similar name).

241. See, *e.g.,* Gerd Gigerenzer and Ulrich Hoffrage, "How to Improve Bayesian Reasoning Without Instruction: Frequency Formats", 102 *Psychol. Rev.* (1995) 684 (showing that biases due to base rate neglect are reduced when information is presented in a frequency – instead of a probability – format); Nathan Novemsky and Daniel Kahenman, "The Boundaries of Loss Aversion", 42 *J. Market* (2005) 119 (exploring the boundary conditions of loss aversion).

242. Fischhoff (supra note 67); Neil D. Weinestein and William M. Klein, "Resistance of Personal Risk Perceptions to Debiasing Interventions", *Heuristics and Biases* (supra note 25) p. 313. See also: Jolls and Sunstein (supra note 71) (examining extant behavioral evidence is the law's debiasing function).

243. *E.g.,* Kahneman and Frederick (supra note 25); Steven A. Sloman, "Two Systems of Reasoning", *Heuristics and Biases* (supra note 25) p. 379; Paul Slovic, Melissa L. Finucane, Ellen Peters and Donald G. MacGregor, "Risk As Analysis and Risk As Feelings: Some Thoughts About Affect, Reason, Risk, and Rationality", 24 *Risk Anal.* (2004) 311 (distinguishing between an "analytical" and an "experiential" system). Dual-process theories in psychology come in many varieties. See generally: *Dual- Process Theories in Social Psychology* (Shelly Chaiken and Yaacov Trope- eds., 1999); Kenneth R. Hammond, *Human Judgment and Social Policy: Irreducible Uncertainty, Inevitable Error, Unavoidable Injustice* (1996) pp. 60, 84-93 (discussing the long-standing distinction between intuition and analysis and its manifestation in different approaches to the psychology of judgment). *Cf. also* Jerome Bruner, *Actual Minds, Possible Worlds* (1986) pp. 11-14 (more radically distinguishing between the paradigmatic and the narrative "modes of thought").

rely on heuristic operations that are not fully conscious, and produce rapid responses to problems as they arise. The intuitive operations of system 1 allow individuals to function effectively in a complex world despite their limitations, but also produce those myriad deviations from rational action, examined at length in Part II above.

System 2, on the other hand, uses controlled, deductive, and effortful processes, which are conscious and slower in producing their solutions, such as when people try to solve a mathematical problem based on mathematical rules. System 2 monitors the responses of system 1 for quality, and sometimes attempts to correct or override them.[244] Where this monitoring is successful, as it often is, the "side effects" of system 1 are not manifested, such as where instead of quickly estimating the answer to a problem, one is able to apply the formal operation and reach a precise and unbiased answer.

Hence, the behavioral analysis of law should examine the conditions that facilitate or inhibit system 2 operations, to determine where system 1's side-effects are likely to be of greater legal concern. For example, there is evidence that time pressure diminishes the ability of the slower system 2 to correct system 1.[245] Other features of both the task – such as the format in which information is presented – and the individual decision maker including statistical sophistication, intelligence, and more – similarly moderate system 2 corrections.[246] Consequently, the legal analyst should not necessarily expect routinely to observe system 1 biases in slow, deliberate, rule-based legal decisions, such as those made by judges or lawyers analyzing the applicability of a specific rule to a given set of facts. However, the same decision makers will be more prone to exhibiting system 1 errors when forced to make rapid judgments under pressure, such as when ruling on a motion during a trial hearing.[247]

Beyond the study of the general boundaries of intuitive judgment and decision making, the legal analyst should also take into account the growing body of research on the specific boundaries of decision-making phenomena. In the area of probabilistic

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244. See, *e.g.,* Kahneman and Frederick (supra note 25) pp. 51-52.

245. *E.g.,* Finucane, Alhakami, Slovic and Johnson (supra note 47) p. 8 (finding the affect heuristic impacted judgments of benefits and risks much more powerfully under time pressure).

246. See generally: Kahneman and Frederick (supra note 25) pp. 52, 57-59.

247. For a recent contribution that develops a general theory of judging based on the dual-process theory of decision making operations see: Chris Guthrie, Jeffrey J. Rachlinski and Andrew J. Wistrich, "Blinking on the Bench: How Judges Decide Cases", 93 *Cornell L. Rev.* (2007) 1. See also*:* Mitchell, *Unwarranted Pessimism* (supra note 13) fn. 232 and the accompanying text (suggesting that common presence of system 2 operations suggests the legal analysis should not take for granted that those social stereotypes employed by system 1 will routinely bias judgments).

judgments, for example, evidence exists that decision makers perform better when information is presented in a relative-frequency format (1 in 10) instead of a probabilistic format (10%).[248] A legal fact-finder may thus more rationally integrate frequency information, such as "the risk of death due to anesthesia is 1 in 5000," than comparable probabilistic information – namely, "the risk of death due to anesthesia is 0.02%."

The identification of specific boundary conditions is legally significant in the domain of choice as well. For instance, we have seen that loss aversion, where negative changes (losses) from a reference point loom larger than positive ones (gains), and related phenomena have numerous implications for law and policy, from legislation and regulation to litigation, negotiation, contract law, and more.[249] However, despite its robustness and generality, loss aversion is an empirical, psychological, effect, hence subject to boundary conditions. In fact, some early studies that provided evidence of loss aversion in experimental market settings already found that participants did not exhibit loss aversion when trading chips with fixed monetary value.[250] Explaining this result, researchers argued that there is no loss aversion in routine transactions,[251] which may also explain why real-world merchants, for instance, do not appear to exhibit loss aversion when trading their products.[252] Even consumers do not generally exhibit loss aversion for money allocated for purchases, except when the expense exceeds their perceived "spending budget."[253] In addition to this "exchange good" boundary

248. See, *e.g.*, Gigerenzer and Hoffrage (supra note 243).

249. See supra Part II.B.2.

250. Kahneman, Knetsch and Thaler, *Experimental Tests* (supra note 114) (Experiment 1, using induced value tokens).

251. Amos Tversky and Daniel Kahneman, "Loss Aversion in Riskless Choice: A Reference-Dependent Model", 106 *Q. J. Econ.* (1991) 1039. See also: the experimental evidence reported in Novemsky and Kahenman (supra note 243) p. 123.

252. But see: Ian Bateman, Alistair Munro, Bruce Rhodes and Chris Starmer, "A Test of the Theory of Reference-Dependent Preferences", 112 *Q. J. Econ.* (1997) 479 (finding some loss aversion for buyers using monetary payoffs as well); Ian Bateman, Daniel Kahneman, Alistair Munro, Chris Starmer and Robert Sugden, "Testing Competing Models of Loss Aversion: An Adversarial Collaboration", 89 *J. Pub. Econ.* (2005) 1561 (same); Novemsky and Kahenman (supra note 243) p. 120 (briefly discussing these and related findings).

253. Novemsky and Kahenman, *id.*, p. 125. See also: Richard H. Thaler, "Mental Accounting and Consumer Choice", 4 *Market. Sci.* (1985) 199; Richard H. Thaler, "Mental Accounting Matters", *Advances in Behavioral Economics* (supra note 98) p. 75 (reviewing evidence for the non-fungibility of money placed in different mental accounts, such as "savings" vs. "entertainment").

of loss aversion,[254] moreover, recent studies suggest that loss aversion attaches to the perceived benefits of the good rather than to its objective attributes. For this reason, goods with different characteristics (say, simple CD players of two different brands) can be exchanged without loss aversion if they provide similar psychological benefits.[255] More specifically, this feature also explains why loss version diminishes in exchanges that involve goods that are close substitutes for each other.[256]

The specific boundaries of loss aversion can also help explain some legally relevant phenomena, such as in the area of consumer protection. Marketers, for example, may employ trade-in offers partly to overcome loss aversion. To wit, loss aversion may make consumers reluctant to buy new durable goods if the "upgrade" requires them to give up a good they already possess and still perceive as valuable. A trade-in offer, on the other hand, may reduce loss aversion and increase consumers' willingness to buy new durable goods by leading them to view the old good both as a means for buying the new one and as belonging to the same psychological budget or account.[257] Of course, the policy implications of such a practice are not necessarily negative, since loss aversion and related phenomena may impede efficient trades.[258] Trade-in offers may also reduce transaction costs and provide consumers with other benefits. At the same time, however, sellers are likely to exploit these effects, which can promote the inefficient and frequent "upgrading" of consumer goods, or simply transfer wealth from consumers to sellers.[259]

Finally, at the third level of analysis, the growing body of experimental and theoretical research on debiasing has clear legal significance, which behaviorally oriented scholars have already begun exploring.[260] The attractiveness of debiasing from a legal perspective is clear: the elimination, even the reduction, of decision makers' systematic errors of judgment and choice is socially beneficial when these mistakes lead to suboptimal behavior.[261] However, the empirical literature on

254. Novemsky and Kahenman (supra note 243) p. 124 (proposing that "[g]oods that are exchanged as intended are not evaluated as losses").

255. *Id.,* pp. 123-124.

256. *E.g.,* Gretchen B. Chapman, "Similarity and Reluctance to Trade", 11 *J. Behav. Dec. Mak.* 47 (1998).

257. Novemsky and Kahenman (supra note 243) p. 126.

258. Rachlinski and Jourden (supra note 212).

259. Novemsky and Kahenman (supra note 243) p. 126. *Cf.* Hanson and Kysar, supra note 13.

260. See, *e.g.,* Jolls and Sunstein (supra note 71). See also*:* Amitai Aviram, "Bias Arbitrage", 64 *Wash and Lee L. Rev.* 789 (2007) (arguing that both government actors and private parties have an incentive to debias public risk perceptions when they can reap private benefits).

261. *E.g.* Richard A. Posner, "Rational Choice, Behavioral Economics, and the Law", 50 *Stan. L. Rev.* (1998) 1551, p. 1575 ("One might have thought the behavioral economics had at

debiasing paints a complex picture, showing that debiasing interventions may be more effective in some areas than in others. One would not be surprised to find, for instance, that some motivational biases can be reduced through the provision of appropriate performance incentives that produce a countervailing, anti-bias, motivation, while the debiasing of more purely cognitive biases, such as the hindsight bias and other biases that result from basic information-processing mechanisms, is far more challenging, as the following discussion illustrates. Even where successful debiasing is possible, moreover, it usually requires significant interventions.[262]

For example, the least intrusive form of debiasing – namely, alerting decision makers of the existence of biases – is largely unhelpful.[263] On the other hand, requiring experimental participants to question their own judgments by considering counterarguments appears to be effective in reducing some biases and eliminating others.[264] In the area of egocentric ("self-serving") biases, for example, experimental participants taking the roles of a plaintiff and a defendant in a tort case exhibited a significantly reduced bias when informed about the bias and instructed to consider the weaknesses of their own case.[265]

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least one clear normative implication: that efforts should be made ... to cure the cognitive quirks ... that prevent people from acting rationally with no offsetting gains").

262. For this reason, *inter alia*, both the adaptations of extant legal regimes to behavioral phenomena and scholarly reform proposals often take boundedly-rational behavior as given and only seek to minimize its negative effects on legal outcomes, a strategy of "insulation." See Jolls and Sunstein (supra note 71) p. 200 ("Boundedly rational behavior might be, and often is, taken to justify a strategy of insulation, attempting to protect legal outcomes from people's bounded rationality). Note also that one could attempt an alternative debiasing approach, which seeks to exploit those specific boundary conditions described above when designing the legal environment. *Cf.* Joshua Kleyman and Kaye Brown, "Debias the Environment Instead of the Judge: An Alternative Approach to Reducing Error in Diagnostic (and Other) Judgment", 49 *Cognition* (1993) p. 97 (suggesting that modifying the environment to fit cognitive processes to reduce bias can serve as a partial alternative to the traditional focus on modifying decision makers' cognitive processes to fit the tasks they face and providing evidence for the possiblity and limits of such debiasing).

263. Linda Babcock, George Loewenstein and Samuel Issacharoff, "Creating Convergence: Debiasing Biased Litigants", 22 *L. and Soc. Inquiry* (1997) 913, p. 916 ("many researchers have tried, albeit unsuccessfully, to mitigate various biases by informing subjects about them").

264. For a brief review of the impact of this intervention on various biases see *id.,* p. 916.

265. *Id.,* pp. 918-920 (estimates of "plaintiffs" and "defendants" in the debiasing condition showing a smaller discrepancy, and negotiating pairs exhibiting a much smaller rate of bargaining impasse).

On the other hand, in the case of the hindsight bias, debiasing has proven more difficult. Not only simple instruction about the bias but even multiple trials with performance feedback do not appear to reduce this bias. More extreme interventions – such as asking participants if they would have been able to explain alternative outcomes, to make notes in advance and consult them before making their judgments, to provide reasons for their probability assessments, and more – have been able to reduce, but not eliminate this bias.[266]

From a legal perspective, debiasing can take various forms, each with its own advantages, disadvantages, and limitations. For instance, the law could attempt to debias egocentric litigants by instructing judges to use their discretion in pre-trial conferences, which are meant to facilitate settlement, to encourage litigants to examine the weaknesses of their respective cases.[267] Such debiasing through procedural law[268] may be attempted for other decision errors as well. However, the strong interventions needed for accomplishing a significant debiasing effect in most cases, such as those described for the hindsight bias, simply may not be practicable in a real litigation setting.[269]

Alternatively, the law may attempt to debias decision makers through its substantive rules in different legal areas.[270] For instance, legal scholars have recently advocated modifications of consumer safety law, such as mandating disclosures in the form of vivid, concrete, instances as opposed to abstract, general statements, to combat the

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266. For a review of the evidence on debiasing of the hindsight bias see Rachlinski, *Hindsight Bias* (supra note 67) pp. 586-587 (describing the state of the art as of the mid-1990s). See also*:* Lawrence J Sanna, Norbert Schwarz and Shevaun L. Stocker, "When debiasing backfires: Accessible content and accessibility experiences in debiasing hindsight", 28 *J. Experim Psychol*. (2002) 49 (revealing additional limitations of the more effective modes of hindsight debiasing). See generally: Rebecca L. Guilbault, Fred B. Bryant, Jennifer Howard Brockway and Emil J. Posavac, "A Meta-Analysis of Research on Hindsight Bias", 26 *Basic and App. Soc. Psych*. (2004) 103.

267. Babcock, Loewenstein, Issacharoff and Camerer (supra note 79) p. 922.

268. See*:* Jolls and Sunstein (supra note 71) pp. 201-202 (drawing a distinction between debiasing through procedural rules versus debiasing through substantive law).

269. *E.g.,* Rachlinski (supra note 67) p. 603 (arguing with respect to hindsight debiasing procedures that "[b]ecause they are so intrusive, these procedures may not be suitable for the courtroom. The debiasing procedures that psychologists have found to be partly successful surpass the traditional techniques that courts use to control jury decisionmaking"). See also: *infra* Part V (discussing some normative implications of debiasing through law).

270. Supra note 268.

underestimation of certain product risks due to overoptimism.[271] Similarly, protecting legal entitlements by a liability rule (under which entitlements may be taken with compensation), as opposed to a property rule (which prevents the taking of entitlements without the owner's consent),[272] may reduce owners' endowment effect with regard to these entitlements and facilitate efficient trades.[273] In fact, some substantive laws may already fulfill a debiasing function. For example, corporate law rules that provide ready-made default arrangements for the conduct of business activity within firms, in addition to reducing transaction costs, may also assist in debiasing business decision making. Placing management in the hands of professionals with a limited personal stake, for example, may diminish the impact of both the endowment effect and optimistic biases on corporate decisions compared to those made in an owner-manager's business.[274]

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271. See: Jolls and Sunstein (supra note 71) pp. 207-216. A similar approach was adopted a few years ago by the Canadian government with respect to warnings on tobacco products. On June 28, 2000, Canada enacted stringent tobacco product labeling and reporting regulations into law. These regulations required manufacturers to cover 50% of the exterior packaging of tobacco products with health warning messages, including graphic images (pictures of mouth cancer; the brain of someone who suffered a stroke; and a bedridden patient dying of lung cancer), accompanied by strong textual warnings (*e.g.*, "Cigarettes Hurt Babies," "Tobacco Use Can Make You Impotent"). Canada Gazette Vol. 134, No. 15 [CORRECT REF]

272. The important distinction between property and liability rules was originally made by Guido Calabresi and A. Douglas Melamed, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral", 85 *Harv. L. Rev.* (1972) 1089.

273. Rachlinski and Jourden (supra note 212) (presenting some tentative empirical evidence that liability – but not property – rule protection reduces the endowment effect). But see*:* Lewinson-Zamir (supra note 148) (arguing that experimental economics evidence suggests that property rules better facilitate efficient trades than liability rules). Note, however, that the question whether a reduction of endowment effects is legally desirable turns not only the facilitation of efficient trades, but also on the degree to which the effect reflects a real value and welfare increase for owners, as noted by Rachlinski and Jourden, *id.*, p. 1576.

274. See: Jolls and Sunstein (supra note 71) pp. 222-224 (endowment effect reduction). *Cf.* Tor (supra note 16) pp. 522-523 (suggesting such a difference may lead diversifying firms to exhibit more rational decisions regarding entry into new markets compared to startup entrants). Of course, a full behavioral analysis of the separation of management and control in large corporations would also have to account for additional important features of this institutional structure, which allows for management specialization but simultaneously creates a significant agency problem between the owner-principals and their manager-agents.

B. Second-Order Gaps: A Multiplicity of Phenomena

Second-order gaps, which concern the relationships of different decision processes, may also limit the efficacy of the behavioral analysis of law in some cases. Basic behavioral research efforts are directed largely at discovering specific decision phenomena and their underlying psychological processes. Once these basic phenomena are established and understood, however, second-order questions, such as what happens when different processes *co-occur* – whether they compete with, reinforce, contradict each other, or otherwise interact with one another – receive far less attention.[275]

The priorities of legal analysts, on the other hand, are almost the exact opposite of those exhibited by basic decision researchers. When basing legal analysis on behavioral insights, scholars are concerned predominantly with how decision makers actually operate in complex, legally relevant, real-world environments. Knowing, for instance, that people frequently rely on the availability heuristic to make frequency judgments under uncertainty is important, and understanding its boundary conditions is legally informative.[276] However, if decision makers may use another heuristic, such as representativeness, to make similar judgments the analyst faces a second-order challenge: he must determine the circumstances in which availability and representativeness may both be relevant; whether the two phenomena may lead to different judgments; whether and when decision makers are likely to use one rather than the other; and finally, whether the two heuristics may sometimes co-occur and what the consequences of such a co-occurrence may be.

Scholars evaluating the behavioral approach sometimes find second-order gaps daunting, lamenting the multiplicity of phenomena that could be applied in a given case and the difficulty of determining their ultimate behavioral effects.[277] Nevertheless, and despite the limited amount of direct second-order research, the extant literature already provides a number of important insights that may help the analyst divide, if not completely conquer, the second-order challenge.

First, a careful examination of the empirical evidence will often reveal an apparent second-order problem to be illusory, showing an allegedly conflicting phenomenon to be irrelevant in the particular case.[278] Second, in less extreme cases, potentially

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275. Note that second-order gaps are distinct from the boundary conditions, which concern the conditions for the manifestation of a single behavioral phenomenon.

276. Supra notes 237-240 and the accompanying text.

277. See, *e.g.*, Hillman (supra note 177) p. 729; Posner (supra note 261) 1558-1560.

278. Alternatively, different phenomena may point to a similar legal policy conclusion. Such multiply determined behavior may pose important questions for the theoretical behavioral scholar, but provide a reasonably firm footing for the applied legal analyst. *E.g.*, Tor (supra note 16) pp. 503—514 (showing how multiple related phenoemnea facilitiate excess entry).

conflicting phenomena may differ in magnitude or scope such that one may reasonably be expected to dominate the other. Third, at times the analysis will show the conflict to concern a legal policy application rather than the underlying decision processes.[279] Ultimately, however, there are circumstances where different phenomena, of a similar magnitude, may truly co-occur and generate conflicting effects. On such occasions theoretical applications may be insufficient and direct experimental tests may be necessary before sound policy recommendations can be made.

The case of liquidated damages (LD) for breach of contract illustrates both the apparent challenge of a second-order gap and how it can be bridged. Some contract law scholars in the United States have relied on evidence of overoptimism to counter the typical efficiency-based criticism of judicial intervention, ex-post, in LD clauses that lead to severe outcomes following breach.[280] According to this behaviorally informed view, LD clauses might merit close scrutiny by the courts since contracting parties who are overoptimistic about their performance prospects will underestimate the likelihood of breach and may therefore mistakenly agree, ex-ante, to excessive damages.[281]

Others have countered that a conflicting behavioral phenomenon of ambiguity aversion suggests the need for judicial deference to LD clauses rather than their close scrutiny.[282] They argue that decision makers, who tend to prefer well defined risks to ambiguous ones, may include LD clauses in their agreements to avoid the ambiguous consequences of unspecified expectation damages. These scholars assert that in the LD case two behavioral phenomena conflict, with overoptimism leading contracting parties to pay insufficient attention to LD on the one hand, and ambiguity aversion

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Note, however, that multiple determination may occasionally raise legal policy questions as well. For instance, both probability judgment errors and risk-seeking preferences may cause excessive risk taking. Nevertheless, the error-based account, but not the preference-based one, may justify intervention. See also the distinction between judgment errors and preferences as a basis for intervention *infra* Part V.

279. In many cases the behavioral analyst is not required to make precise predictions but to recommend to the law one course of action as the more plausible from among a number of concrete alternatives. In these cases it may be enough to eliminate certain options or point to the behavioral attractiveness of others. *Cf.* Korobkin (supra note 194) p. 791 (advocating a test of "plausibility," albeit with respect to the task of choosing which behavioral assumptions to employ for a given legal analysis).

280. For a recent statement of the efficiency-based critique see Alan Schwartz and Robert E. Scott, "Contract Theory and the Limits of Contract Law", 113 *Yale. L. J.* (2003) 541, pp. 615-616.

281. Supra notes 173-174 and the accompanying text.

282. Supra note 179 and the accompanying text.

directing them especially to focus on these clauses on the other.[283] If this were the case, the second-order conflict would require the legal analyst to weigh up the two effects, determining whether to counsel greater intervention in LD due to overoptimism or to support a contrary, deferential, judicial approach based on ambiguity aversion.[284]

However, a closer look reveals that this second-order conundrum may be largely illusory. Overoptimism is pervasive, if not universal.[285] In the contract formation context, moreover, where personal stakes are often significant and parties tend to focus on contract performance and success, overoptimism is likely to be strong, as well as reinforced by a number of related phenomena.[286] Ambiguity aversion, on the other hand, concerns individuals' preference for well defined risks over ambiguous ones, when both alternatives are available, but it is largely comparative, not preventing decision makers from routinely engaging in behavior with ambiguous consequences.[287] Furthremore, recent evidence suggests that the cooperative nature of the contract formation environment is likely further to diminish ambiguity aversion.[288] All in all, therefore, the application of extant first-order evidence to the LD context indicates that the concerns about a second-order conflict between overoptimism and ambiguity aversion are overstated.

The LD case also highlights another way in which careful attention to the empirical nature of behavioral findings may reveal an apparent second-order conflict as deceptive, this time in the case of the status-quo bias.[289] Many contracts do not contain LD provisions, suggesting that parties who include such clauses in their agreements have found them important. Otherwise, the status-quo bias likely would have made these parties retain the default contract law regime, which contains no LD provisions.[290] The status quo bias, therefore, seems to suggest that parties who include

283. Hillman (supra note 177) pp.731-732.

284. *Id.,* p. 733.

285. See supra notes 164, 175 and the accompanying text. See also: Rachlinski (supra note 13) p. 762.

286. Tor (supra note 16) pp. 504-516 (explaining this effect and describing a series of related phenomena, such as the planning fallacy, the inside view, and more the contribute to it).

287. Supra note 179.

288. Because it is a cooperative, rather than a competitive environment. See Fox and Weber (supra note 180) (Experiment 4); Anton Kuhberger and Josef Perner, "The Role of Competition and Knowledge in the Ellsberg Task", 16 *J. Behav. Dec. Mak.* (2003) 181.

289. See*, e.g.,* Korobkin, *Status Quo Bias* (supra note 127).

290. This will not always be the case, however. For instance, standard-form contracts may contain LD clauses that consumers accept as a default.

LD in their contracts are likely to do so consciously, after considering the possibility of breach, thereby providing another argument against ex-post judicial intervention in liquidated damages clauses.[291] However, the evidence on the processes underlying overoptimistic judgments suggests this conclusion may be premature. Overoptimism results from a combination of motivational and cognitive processes, the latter having only little do with the amount of effort invested by the parties.[292] Consequently, the increased motivation and effort of parties who overcome the status-quo bias and incorporate LD provisions in their contracts are unlikely to vitiate the cognitive (as opposed to the motivational) causes of their overoptimistic judgments.[293]

Finally, the LD debate also provides an example of an apparent second-order conflict between behavioral phenomena that, in fact, only concerns potentially contradictory legal applications. Critics of judicial intervention in LD provisions have suggested that judges overestimate the ability of parties to predict future damages, at the time of contracting, due to the hindsight bias. They argue that this overestimation of ex-ante predictability leads judges to undervalue the importance of LD for contracting parties, and therefore excessively to refuse their enforcement.[294] Judicial hindsight bias has thus been marshaled as a phenomenon that counters contracting parties' overoptimism. Here as well, however, the "conflicting" phenomena clearly operate on different legal actors, at different stages of the contract's life-cycle. In other words, a finding showing that judges refuse LD enforcement due to the hindsight bias might merit modification of LD doctrine, but it will not justify disregard of the biases that parties may exhibit at the time of contracting. Judicial hindsight bias and contracting parties' overoptimism may thus generate potentially conflicting policy prescriptions – a conflict that the design of appropriate legal rules can avoid – but leave no genuine behavioral ambiguity.

C. Institutional Gaps: Content and Context Effects

The third significant cluster of gaps between basic behavioral research and legal applications concerns the impact of social institutions on human judgment and

291. Hillman (supra note 177) p. 732.

292. *Cf,* the findings regarding the difficulty of debiasing related phenomena Babcock, Loewenstein, Issacharoff and Camerer (supra note 79) pp. 1339-1342 (finding that the most effective way of reducing egocentric bias was to assign plaintiff/defendant roles to participants only after they read the case materials, but that most other debiasing interventions were ineffective once roles were in place with their attendant cognitive processes); Weinstein and Klein (supra note 77) (finding strong resistance of optimistic risk perceptions to debiasing).

293. See: Rachlinski (supra note 13) p. 762.

294. Hillman (supra note 177) p. 732.

decision making. Traditionally, the great majority of empirical research focused on studying general patterns of behavior that are not limited to concrete institutional settings.[295] This approach is reflected, for instance, in the prevalence of studies that use tasks involving monetary gambles to study judgment and choice.[296] The legal scholar, on the other hand, predominantly examines behavior that takes place within various social institutions, including the law itself; social norms; markets; organizations; and more. Consequently, the scholar must consider whether these and other institutions exert any systematic effects on legal actors' decision processes that may lead to different behaviors from those otherwise predicted.[297]

Specifically, institutions may impact decision behavior by providing decision tasks with both *content* and *context*.[298] The following sections examine these two distinct types of influence, illustrating their effects through the notions of law as content and markets as context, respectively. These illustrations highlight the importance of content and context alike, showing that the extant empirical literature is informative, yet leaves significant gaps that merit further study of institutional effects.

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295. See. *e.g.*, Zur Shapira, "Introduction and Overview", *Organizational Decision Making* (Zur Shapira ed., 1997) pp. 3, 4 ("Behavioral decision theory ... deals primarily with judgmental and decisional processes of individuals, but not in an organizational *or any other particular context*.") (emphasis added).

296. See, *e.g.*, Daniel Kahneman, "Preface", *Choices, Values and Frames ix*, xi ("…choice between gambles is the fruit fly of decision theory"); Willem A. Wagenaar, Gideon Keren and Sarah Lichtenstein, "Islanders and Hostages: Deep and Surface Structures of Decision Problems", 67 *Acta Psychologica* (1988) 175, p. 175 ("Many theories of decision making assume that every decision problem can be represented as a choice among bets."). For a discussion of the role of the gamble metaphor in decision research see: David A. Rettinger and Reid Hastie, "Comprehension and Decision Making", *Emerging Perspectives on Judgment and Decision Research* (Sandra L. Schneider and James Shanteau- eds., 2003) pp. 165, 167-168 [hereinafter "*Emerging Perspectives*"].

297. Note that these questions differ from the study of the debiasing or insulating role played by specific legal rules and institutions, since the former consider instead whether institutions systematically impact legally-relevant behavior simply by providing the context within which it takes place. (Alternatively, one may construe the question of institutional-legal effects as one of external validity, *e.g.*, Gregory Mitchell, "Why Law and Economics' Perfect Rationality Should Not Be Traded for Behavioral Law and Economics' Equal Incompetence", 91 *Geo. L. J.* (2003) 67, p.76 (arguing that situational effects, inter alia, limit the generality of behavioral findings)).

298. For a different distinction between content, context, and other task variables see: Payne, Bettman and Johnson (supra note 18) pp. 3-4.

Social, economic, and legal institutions provide differential content to decision tasks with a similar "deep," underlying, logical structure.[299] For instance, people face the need to make similar choices under uncertainty in the social ("What should I wear for this party?"), economic ("When should I sell this stock?), and legal ("Should I contest this traffic ticket?") domains. Normatively, each of these choices similarly requires an assessment of the potential outcomes of different alternatives and their associated probabilities, followed by a choice among these alternatives based on one's preexisting preferences regarding the relative attractiveness of the respective outcome-by-probability combinations.[300]

Notwithstanding their normative comparability, evidence shows that the same decision makers sometimes employ different decision strategies, even exhibit different preferences, when faced with structurally similar tasks in different content domains.[301] This is clearly the case where the domain of choice impacts participants' social preferences, as revealed by studies showing that participants exhibit a significantly more competitive or cooperative behavior in the same game, depending on its labeling as the "Wall Street Game" or the "Community Game."[302]

Other studies show, moreover, that the content domain also can impact decision processes directly, beyond the effect it exerts by shaping preferences. For instance, one study that compared similar decisions in four different domains – legal, academic, financial, and a simple gamble – found that participants tended to rely on different

299. See: Wagenaar, Keren and Lichtenstein (supra note 297) pp. 175-176 (distinguishing between the "deep" and "surface" structures of decision tasks).

300. As is normatively appropriate according to SEU. See supra note 85 and the accompanying text.

301. But see, *e.g*., Elke U. Weber Ann-Renee Blais and Nancy E. Betz, "A Domain-Specific Risk-Attitude Scale: Measuring Risk Perceptions and Risk Behaviors", 15 *J. Behav. Dec. Mak.* (2002) 263 (finding that highly domain-specific risk-taking is associated with differences in the perceived benefits and risks of the activities rather than with fundamental differences in risk attitudes).

302. Varda Liberman, Steven M. Samuels and Lee Ross, "The Name of the Game: Predictive Power of Reputations versus Situational Labels in Determining Prisoner's Dilemma Game Moves", 30 *Person and Soc. Psych. Bull* (2004) 1175, pp. 1176-1179 (reporting other studies showing this effect when comparing fundamentally similar tasks that concern business dealings versus ethical dilemmas, and finding, inter alia, that labeling exerted a powerful effect on cooperation vs. defection in prisoner's dilemma games). See also: Wagenaar, Keren and Lichtenstein (supra note 297) (describing a series of studies showing the complex effects of surface structure on risk attitudes).

strategies altogether in the different domains.[303] Consequently, participants showed the greatest risk seeking, on average, in a scenario involving a small investment in stocks; approximate risk neutrality regarding both academic and traffic ticket decisions; and high risk aversion when faced with a casino-like gamble.[304] Further analyses revealed these differential risk attitudes existed despite participants' nearly identical valuations of the alternative outcomes in the different domains, and were related to their use of different strategies in these different domains. In the case of an academic grade decision, for example, they all relied on numerical considerations, but a morality-based strategy was the most popular in the legal domain.[305]

In fact, the notion that the legal institutional setting increases decision makers' attention to and use of morality-related considerations is not surprising, given the centrality of these considerations in the popular view of the law. A recent study highlights this point, finding that laypeople consider morality-based factors of primary importance when evaluating a breach of contract.[306] These participants found breach to be morally wrong even when the breaching party paid full damages; levied damages at a level higher than expectation value; indicated specific performance should be legally enforced; and imposed higher damages in profitable "efficient breach" cases than when a party breached to avoid a loss.[307] Furthermore, the increased role of moral considerations in legally related decision making extends well beyond contract law, with evidence on morality-driven judgments in tort law, criminal law, and other legal areas.[308]

Of course, the evidence of the effects of law as content on decision making is neither limited to the centrality of morality-related considerations nor universal, but it tells the legal scholar a cautionary tale. At the very least, when making behavioral-legal claims, one should not automatically assume that evidence from morally-neutral

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303. David A. Rettinger and Reid Hastie, "Content Effects on Decision Making", 85 *Org. Behav. and Hum. Dec. Proc.* (2001) 336.

304. *Id.,* p. 347.

305. *Id.,* p. 348-349.

306. Tess Wilkinson-Ryan and Jonathan Baron, "Moral Judgment and Moral Heuristics in Breach of Contract" (2006) (2nd Annual Conference on Empirical Legal Studies Paper Available at SSRN: http://ssrn.com/abstract=930144).

307. *Id.,* pp. 18-28 (basic survey and Experiments 1 and 2).

308. See, e.g, Jonathan Baron and Ilana Ritov, "Intuitions about Penalties and Compensation in the Context of Tort Law", 7 *J. Risk and Uncertain.* (1993) 33 (importance of morality considerations in torts); Cass R. Sunstein, "Moral Heuristics", 28 *Behav. and Brain Sci.* (2005) 531 (role of moral thinking in a variety of legal domains); Tor, Gazal-Ayal and Garcia (supra note 139) (importance of moral considerations in determining the willingness to accept plea offers).

content domains, such as simple monetary gambles, fully applies to morally laden domains, such as remedies for breach of contract. The problem with such applications is illustrated by a recent study that found default remedies for breach of contract to have almost no effect on participants' choice of contract.[309] That study, which closely adhered to the conventions of experimental economics, purported to examine contractual behavior by manipulating choices over color-coded gambles. As I point out in more detail elsewhere, however, these gambles were devoid of the very institutional and legal context that define a real-world contract, remedy, or default rule,[310] and thus of limited relevance for contract law scholarship.

Hence, the impact of law as content on decision processes provides an additional role for those direct empirical tests described above.[311] Many such studies test theoretical behavioral propositions, implicitly examining, *inter alia*, whether specific legal institutions – such as litigation, legal rights, or contracting – impact human decision processes in ways that limit the applicability of established behavioral findings that were generated outside these institutional settings.

Importantly, beyond the effect they exert in providing content to legal decision making, institutions also provide the context within which such judgment and choice take place. Institutional context shapes decision processes in multiple ways, defining both the environment and the nature of the decision task. In fact, one of the main insights of judgment and decision research concerns the context-dependent character of human decision processes.[312] For instance, the extensive evidence on framing effects reveals how decision frames and reference points – which often are determined by the decision context – shape risk preferences, as evinced in the Asian disease example.[313] This context is commonly provided by the institutional environment of the decision task, such as when default rules of contract law provide a reference point for judging alternative contractual arrangements.[314]

In addition to structuring the decision task, institutional context provides an environment that impacts decision behavior. Environmental effects take place, for example, when people make decisions they are accountable for – that is, decisions they expect they may be called to justify to others – a common characteristic of legal, political, and organizational decision making.[315] In the legal domain, for example, trial

309. Sloof, Oosterbeek and Sonnemans (supra note 128).

310. Tor, *Experimental Law and Economics* (supra note 128) p. 27.

311. For a discussion of direct empirical tests in the behavioral analysis of law see supra Part III.B.

312. Rachlinski (supra note 13) pp. 743-744.

313. See supra note 97 and the accompanying text.

314. See Korobkin, *Status Quo Bias* (supra note 127).

315. See, *e.g.*, Payne, Bettman and Johnson (supra note 18) pp. 3-4; Phillip E. Tetlock, "An

court judges know their decisions may be reviewed later by an appellate court. The effects of accountability are complex, tending to increase attention to and effort in the decision process, with a more mixed effect on decision quality.[316]

Other institutional contexts that impact legally relevant behavior include groups and organizations, to name but two pervasive examples. Commonly, these institutions shape many characteristics of decision tasks, providing reference points and frames, incentives, information, and more. They also define the decision environment, through the social forces of group or organizational membership, roles, and the like.[317] In a series of experiments this Author and colleagues found, for example,

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Alternative Metaphor in the Study of Judgment and Choice: People as Politicians", 1 *Theo. And Psych.* (1991) 451.

316. For a recent review of accountability in decision making see: Jennifer S. Lerner and Phillip E. Tetlock, "Bridging Individual, Interpersonal, and Institutional Approaches to Judgment and Decision making: The Impact of Accountability on Cognitive Bias", Emerging Perspectives (supra note 297) p. 431.

317. With respect to groups, see generally: Norbert L. Kerr and R. Scott Tindale, "Group Performance and Decision Making", 55 *Ann. Rev. Psych.* (2004) 623 (providing a general review of group decision making); See also: Daniel Gigone and Reid Hastie, "Proper Analysis of the Accuracy of Group Judgments", 121 *Psych. Bull.* (1997) 149; Norbert L. Kerr Robert J. MacCoun and Geoffrey P. Kramer, "Bias in Judgment: Comparing Individuals and Groups", 103 *Psych. Rev.* (1996) 687. With respect to the less developed research on the potentially positive impact of organizational settings on decision process see: Chip Heath, Richard P.Larrick and Joshua Klayman, "Cognitive Repairs: How Organizational Practices can Compensate for Individual Shortcomings", 20 *Res. In Organiz. Behav.* (1998) 1. A similar possibility has been noted in the legal context in Jeffrey J. Rachlinski and Cynthia R. Farina, "Cognitive Psychology and Optimal Government Design", 87 *Cornell L. Rev.* (2002) 549, p. 559 (while noting the many problems with governmental decision making, also stating that "when decisions are made in an organizational setting – the typical practice in modern regulatory government – institutional design can counter the effect of cognitive limitations"). See also: Chip Heath and Sim B. Sitkin, "Big-B versus Big-O: What is Organizational about Organizational Behavior?", 22 *J. Organiz. Behav.* (2001) 43, p. 44 (noting that "the field has historically focused on the behavior and attributes of individuals and groups, while focusing less attention on the organizational aspects), 47 tbl. 1 (enumerating a long list of organizational research topics, which does not include decision making explicitly, only a number of other topics with some connection to it). In general, most research concerning organizational and managerial decision making simply applies and extends individual level, and sometimes group level, evidence to the organizational or managerial setting. See, *e.g.* Max H. Bazerman, *Judgment in Management Decision Making* (5th ed. 2001) (a

that participants behaved more cooperatively towards members of their own group in decisions involving comparisons with other groups than in decisions involving identical comparisons that concerned only members of their own group. However, these findings were pronounced only for individuals who self-categorized as group members and identified with this categorization.[318]

Yet despite the pervasive presence of these institutions in legal settings and the significant body of basic research studying them, legal scholars have directed only limited attention to their behavioral effects. The extant research, insofar as it exists, focuses on the group level, most notably concerning the specific case of jury decision making.[319]

The impact of markets as context powerfully illustrates the legal significance of institutions. Much legally relevant behavior occurs in market settings, implicating doctrinal areas ranging from contract and tort to corporate, securities, antitrust, consumer protection, labor, tax law and more. Understanding the impact of markets on decision behavior is thus especially important, particularly in light of the common reliance of many law and economics scholars on the ability of markets to eliminate

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leading reference in this area). But see: Shapira, *Organizaional Decision Making* (supra note 295) (an unusual collection of articles examining organizational decision making by taking into account both the main characteristics of the organizational context and relevant insights of behavioral decision theory).

318. Garcia, Tor, Bazerman and Miller, *Profit Maximization* (supra note 138).

319. There is a voluminous literature on jury decision making. See generally Dennis J. Devine, Laura D. Clayton, Benjamin B. Dunford, Rasmy Seying and Jennifer Pryce, "Jury Decision Making: 45 Years of Empirical Research on Deliberating Groups", 7 *Psych. Pub. Pol. and L.* (2000) 622 (provides a comprehensive review of the empirical research on jury decision making published between 1955 and 1999, totaling 206 distinguishable studies involving deliberating juries); Robert J. Maccoun, "Experimental Research on Jury Decision-Making", 244 *Science* (1989) 1046 (reviewing this research). For some more recent work that looks at juries from a decision making perspective see: David Schkade, Cass R. Sunstein, and Daniel Kahneman, "Deliberating about Dollars: The Severity Shift", 100 *Colum. L. Rev.* (1998) 1139; Cass R. Sunstein, Daniel Kahneman and David Schkadettt, "Assessing Punitive Damages (with Notes on Cognition and Valuation in Law)", 107 *Yale L.J.* (1998) 2071. In recent years, however, one finds a few legal scholars that collect research on group decision making and examines some of its legal implications. See, *e.g.,* Stephen M. Bainbridge, "Why a Board – Group Decisionmaking in Corporate Governance", 55 *Vand. L. Rev.* (2002) 1; Cass R. Sunstein, "Deliberative Trouble? Why Groups Go to Extremes", 110 *Yale L. J.* (2000) 71; Cass R. Sunstein, "Group Judgments: Statistical Means, Deliberation, and Information Markets", 80 *N.Y.U.L. Rev.* (2005) 962.

judgmental biases and decision errors.[320] For this reason even some behaviorally-oriented scholars have been too quick to concede that bounded rationality is of limited relevance in market settings.[321]

Markets are said to eliminate the effects of boundedly rational behavior through a number of mechanisms:[322] first, competitive selection should eliminate boundedly rational market participants, who will underperform, ultimately fail, and exit the market. Second, because erroneous decisions in markets are costly, decision makers will learn to correct them. Third, shrewd rational arbitrageurs will identify the mistaken decisions of boundedly rational market participants, exploit and profit from them, until all such opportunities – and their concomitant decision errors – are eliminated. Finally, even if boundedly rational behavior survives it is of no import when markets perform

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320. These arguments typically follow Milton Friedman's. See: Milton Friedman, "The Methodology of Positive Economics", *Essays in Positive Economics* (1953) pp. 3, 21-22. Hogarth and Reder summarize this position stating:

    The economics paradigm focuses on actions taken in competitive circumstances. The underlying assumption is that through competition the action of individual agents are subject to feedback that forces them either to be-come effective or to withdraw from such actions [...] .

    > Economists have little interest in modeling agents who do not behave according to rational principles since they believe that these agents will not survive in the market.

    Robin M. Hogarth and Melvin W. Reder, "Introduction: Perspectives from Economics and Psychology", *Rational Choice: The Contrast Between Economics and Psychology* (Robin M. Hogarth and Melvin W. Reder- eds., 1986) pp. 1, 6 [hereinafter "Rational Choice"] (note omitted). See also Schwartz and Scott (supra note 282) pp. 545-46 (suggesting that "[f]irms and markets are structured so as to minimize the likelihood of systematic cognitive error by important decisionmakers within the firm").

321. *E.g*., Jennifer Arlen, "Comment, The Future of Behavioral Economic Analysis of Law", 51 *Vand. L. Rev.* (1998) 1765, p. 1782 (suggesting that behavioral findings from nonmarket settings may not necessarily generalize to market settings); Jolls, Sunstein and Thaler (supra note 12) p. 1473 (finding it necessary to state, "law is a domain where behavioral analysis would appear to be particularly promising in light of the fact that nonmarket behavior is frequently involved"); Thomas S. Ulen, "The Growing Pains of Behavioral Law and Economics", 51 *Vand. L. Rev.* (1998) 1747, pp. 1748-1749, 1758-1760 (bounded rationality may be of limited importance for the analysis of market behaviors because of competitive discipline).

322. See generally: Tor (supra note 16) pp. 485, 561-63 (discussing the arguments relying on markets to eliminate bounded rationality and their limitations).

in the aggregate "as if" participants were rational, as will happen if individual errors are randomly distributed.

However, a closer look at these mechanisms on the one hand and the behavioral evidence on the other reveals the limited ability of markets to eliminate boundedly rational behavior. For instance, competitive selection will only eliminate some boundedly rational behavior, and may, on the contrary, even exacerbate some of its effects, as illustrated by the case of overoptimistic entry into markets.[323] Economic evidence reveals the prevalence of excess entry into markets, especially by startup entrants. Behavioral evidence, in turn, suggests that this excess entry is driven by entrants' overoptimistic predictions regarding their future performance prospects. Of course, not all entrants are overoptimistic, but the large proportion of overoptimistic entrants diminishes the survival prospects of their rational counterparts as well, and leads to an overrepresentation of the boundedly rational among the ranks of those ultimately successful entrants. The case of new entry thus illustrates the limited ability of competitive discipline to eliminate boundedly rational behavior from markets.

An examination of the other rationality-inducing market mechanisms reveals their limitations as well. The learning argument, for example, assumes that market participants are able to identify their mistakes, associate them with specific consequences, and proceed to correct them. These assumptions, however, are rarely met in legally relevant market settings, where decisions are made under uncertainty; outcomes are delayed and feedback is limited and noisy; and there is often no reliable information about the outcomes that would have occurred had a different choice been made. Furthermore, many significant decisions are unique or at least infrequent, and thus provide very little opportunity for learning.[324]

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323. The following discussion is based on Tor (supra note 16) pp. 531-543.

324. See, *e.g.*, Hillel J. Einhorn, "Learning from Experience and Suboptimal Rules in Decision Making", *Cogntive Processes in Choice and Decision Behavior* (Thomas S. Wallsten- ed., 1980) p. 1 (emphasizing the importance of unambiguous feedback for learning); Richard E. Nisbett , David H. Krantz, Christopher Jepson and Geoffrey T. Fong, "Improving Inductive Inference", *Judgment Under Uncertainty* (supra note 32) pp. 445-446 (noting that decision makers need to know that an error has occurred, how it has occurred, and how to improve the decision process). As Amos Tversky and Daniel Kahneman explain:

> Effective learning takes place only under certain conditions: it requires accurate and immediate feedback about the relation between the situational conditions and the appropriate response. The necessary feedback is often lacking for decisions made by managers, entrepreneurs, and politicians because (i) outcomes are commonly de-layed and not easily attributable to a particular action; (ii) variability in the environment degrades the reliability of the feedback, especially where outcomes of low probability are involved;

The arbitrage argument is severely limited as well. Arbitrage requires a sufficiently large group of actors who are able both to identify opportunities and to exploit them by selling to or buying from those biased, boundedly rational, market participants. These arbitrageurs also need substitutes for the products they trade with the boundedly rational, and must be able to bear the risk involved in their arbitrage efforts. In fact, because of these limitations, empirical evidence shows that arbitrage is limited even in developed financial markets.[325]

Similarly, the "as if" argument is of limited import in the case of bounded rationality, for two reasons: first, because decision processes often lead to systematic, unidirectional, deviations from rational action, mistaken judgments and decisions will not cancel each other out on average, in the aggregate. Second, the law is frequently concerned with individual behavior, even in the context of markets. This is clearly the case in areas such as consumer protection or securities regulation, where legal rules may be especially concerned with boundedly rational actors, their exploitation by others and their effects on markets. But it may also be the case in areas such as torts or contracts, where the law may seek to lead contracting parties and potential tortfeasors, rational and boundedly rational alike, to efficient outcomes.

The mechanisms of market discipline thus clearly serve to reduce the manifestation of boundedly rational behavior in economic settings, but frequently they are unlikely to eradicate it altogether. This conclusion, which is based on a direct examination of the asserted disciplinary mechanisms, is also corroborated by the extensive field evidence that scholars in behavioral economics and behavioral finance have amassed in recent decades. Boundedly rational market behavior appears prevalent not only for consumer behavior, housing markets, or labor markets, but also in financial markets and even among sophisticated, experienced, participants in these markets.[326]

All in all, therefore, the impact of markets as a context that shapes human behavior must be taken into account by behaviorally oriented scholars. And while a further

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(iii) there is often no information about what the outcome would have been if another decision had been taken; and (iv) most important decisions are unique and therefore provide little opportunity for learning.

Amos Tversky and Daniel Kahneman, "Rational Choice and the Framing of Decisions", *Rational Choice* (supra note 320) pp. 67, 90 (citation omitted).

325. Andrei Shleifer, *Ineffcent Markets: An Introduction to Behavioral Finance* (2000) pp. 1, 3-4, 13-16 (providing a highly readable introduction to the argument from arbitrage and related evidence from financial markets). See also: Andrei Shleifer and Robert W. Vishny, "The Limits of Arbitrage", II *Advances in Behavioral Finance* (supra note 24) p. 79.

326. See: Shleifer (supra note 325); *Advances in Behavioral Finance* (Richard H, Thaler- ed., 1993); II *Advances in Behavioral Finance* (supra note 24) (both collecting research providing evidence of boundedly rational behavioral in financial markets).

close study of specific legal questions is clearly needed, the extant evidence indicates that behavioral findings from non-market settings are neither irrelevant nor always applicable where market behavior is concerned.

V. Normative Neutrality and Normative Relevance

The fourth and final general proposition this Article develops is that the behavioral analysis of law is simultaneously normatively neutral and normatively relevant. It is normatively neutral because it is not committed to any specific legal goal or value system.[327] In this sense, the behavioral approach is fundamentally different from normatively committed legal methodologies, such as the economic analysis of law or rights-based theories. At most, the behavioral analysis of law may be committed to the instrumental value of integrating empirical evidence on human behavior into legal analysis, where relevant. However, the essential normative neutrality of the behavioral approach does not make it normatively irrelevant, but rather turns it into a useful tool for scholars of varied normative persuasions. Behavioral insights – when coupled with other, normative, legal approaches – clearly may assist in the normative evaluation of the law. This Part therefore first explains the neutrality claim, then turns to examine in some detail when behavioral findings in conjunction with the normative economic standard of social welfare[328] truly provide a justification for legal interventions and what form such interventions should take.

A. Normative Neutrality

The normative neutrality claim is manifested in the present definition of the behavioral approach as the application of empirical behavioral evidence to legal analysis, which includes no normative component; it is also reflected in the different legal applications offered throughout this Article. In some cases, behavioral findings were shown capable of advancing traditional legal goals such as justice or fairness. For example, evidence of the hindsight bias raised concerns that courts may hold liable in negligence people who have taken reasonable care, and thus justified a more careful evaluation of the degree to which the legal system addresses the prevalent challenge of judgments in hindsight;[329] findings on judgments by representativeness provided a new explanation of the evidence law rule that generally holds character evidence inadmissible in a criminal trial;[330] and compromise effects in choice behavior revealed the impact of

327. *Cf.* Rachlinski (supra note 13) pp. 764-765 (asserting that the behavioral approach is only committed to increasing the rationality of human behavior).

328. For an explanation of this concept see *infra* notes 340-341 and the accompanying text,

329. See supra notes 68-73 and the accompanying text.

330. See supra notes 34-37 and the accompanying text.

seemingly irrelevant alternatives on the categorization of criminal offenses, to name some examples.[331]

In many of the other applications offered here, on the other hand, behavioral insights were used to examine the efficiency of legal rules and institutions – that is, to conduct a behavioral law and economics analysis.[332] For instance, evidence of availability biases was used to advance the model of optimal deterrence in criminal law;[333] findings on the endowment effect and the status-quo bias necessitated a reexamination of the Coase theorem and the efficient allocation of entitlements, as well as the appropriate design of default rules;[334] and various behavioral phenomena were integrated in the efficiency analysis of liquidated damages doctrine.[335] The two sets of examples – of analyses seeking to promote justice or fairness on the one hand and those that are efficiency-oriented on the other – thus highlight the normative neutrality claim, showing how behavioral insights can be of service to these and other normatively committed legal approaches.[336]

Moreover, a comparison of the behavioral approach to its economic counterpart further clarifies the normative neutrality claim. The economic approach retains the standard normative commitment of economics to social welfare, a term that connotes some form of aggregation (*e.g.* addition, as suggested by utilitarian theory) of the utilities or well-being of individuals in society.[337] Based on this normative foundation,

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331. See supra notes 89-92 and the accompanying text.

332. Jolls, Sunstein and Thaler (supra note 12) p. 1473 (defining behavioral law and economics as a behaviorally informed law and economics).

333. See supra notes 42-44 and the accompanying text.

334. See supra notes 121-130 and the accompanying text.

335. See supra notes 171-180, 281-294 and their accompanying texts.

336. Another somewhat contentious set of examples concerns recent attempts at behavioral-libertarian (or, at least, autonomy-respecting) legal analyses. See, *e.g.*, Colin Camerer, Samuel Issacharoff, George Loewenstein, Ted O'donoghue and Matthew Rabin, "Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism"", 151 *U. Pa. L. Rev.* (2003) 1211 [hereinafter "Regulation for Conservatives"]; Gregory Mitchell, "Libertarian Paternalism is an Oxymoron", 99 *Nw. U. L. Rev.* (2005) 1245 [hereinafter "Oxymoron"]; Cass R. Sunstein and Richard H. Thaler, "Libertarian Paternalism is Not an Oxymoron", 70 *U. Chi. L. Rev.* (2003) 1159 [hereinafter "Libertarian Paternalism"].

337. *E.g.,* Shavell (supra note 5) pp. 595-598 (providing a brief, clear explanation of the notions of individual utility and social welfare). For a more extensive exposition see: Louis Kaplow and Sreven Shavell, *Fairness Versus Welfare* (2002) pp. 15-38. See also the different and much contested approach to the normative foundation of the economic approach to law see: Posner (supra note 5) pp. 3-16 (emphasizing the importance of efficiency as the basis

the economic analysis of law then engages in normative legal analyses that evaluate the desirability of the law from a social welfare perspective.[338] In contrast, behavioral decision research engages in the *descriptive* enterprise of understanding human behavior and identifying its psychological underpinnings, rather than in any normative effort.[339] Consequently, the behavioral approach retains its predominantly descriptive, normatively neutral, nature when informing legal analyses.

Put differently, the behavioral approach is normatively neutral standing on its own. In that basic state, however, it can hardly generate any meaningful normative evaluations of the law since those require some measure of value. Once coupled with other legal approaches – either explicitly or implicitly – it becomes a most useful and necessary instrument for legal scholars of various persuasions.

In practice, however, a very large proportion of those behaviorally informed legal analyses in recent years may be categorized as behavioral law and economics.[340] Moreover, even the most superficial review of the literature reveals a pro-intervention trend, where behavioral law and economics analyses recommending legal

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for evaluating the law, and discussing the limitations of utility and welfare in serving that role).

338. See, e.g, Kaplow and Shavell (supra note 337) pp. 3-4 ("Our central claim is that the welfare-based normative approach should be exclusively employed in evaluating legal rules. That is, legal rules should be selected entirely with respect to their effects on the well-being of individuals in society.").

339. Although some decision researchers are interested in assisting people in making judgments and decisions that more closely approximate the normative standards of rationality, most typically the concern of JDM researchers with the ways in which actual behavior deviates from standards of rationality is driven largely by a desire to understand the nature of human behavior, not by a commitment to any particular normative standard or outcome. *Cf.* Rachlinski, *"New" Law and Psychology* (supra note 13) p. 753 (explaining that behavioral analyses may not present a clear normative position since "behavioral decision theory is the study of how the human mind operates, not the study of how humans should behave ...").

340. Various factors, which are outside our present scope, may explain the great impact of behavioral insights on the economic analysis of law on the one hand, and the centrality of behavioral law and economics among the various behavioral-legal applications. Regardless of its reasons, however, this significant overlap has led some scholars mistakenly to identify behavioral law and economics as the *only* behavioral approach to law. But see, *e.g.*, Rachlinski (supra note 13) pp. 764-765 (offering a broad definition of the behavioral approach that is not normatively committed other than, possibly, to the reduction of human error).

interventions far outweigh those counseling against them.[341] This trend in turn has fueled a controversy among scholars on whether behavioral findings – which generally emphasize human error and limitation – truly justify paternalistic intervention, and what form such interventions, if and where justified, should take.[342] The remainder of this Part therefore focuses on the behavioral approach to law and economics, whose normative analyses are based on the social welfare criterion.

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341. *E.g.*, Jonathan Klick and Gregory Mitchell, "Government Regulation of Irrationality: Moral and Cognitive Hazards", 90 *Minn. L. Rev.* (2006) 1620, pp. 1620-1621 (asserting that behavioral evidence is increasingly used to "justify restrictions on market and nonmarket transactions).; Jeffrey J. Rachlinski, "Cognitive Errors, Individual Differences, and Paternalism", 73 *U. Chi. L. Rev.* (2006) 207, pp. 224-225 (noting that behavioral findings most commonly used to support paternalistic interventions) ["Individual Differences"].

342. For representative positions in the debate see: Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) pp. 1211, 1218 ("The scientific consolidation of psychological findings into a new brand of behavioral economic theory breathes new life into the rationales for paternalistic regulation ... The challenge is figuring out what sorts of "idiotic" behaviors are likely to arise routinely and how to prevent them, while imposing minimal restrictions on those who behave rationally"); Edward L. Glaeser, "Paternalism and Psychology", 73 *U. Chi. L. Rev.* (2006) 133 (arguing that bounded rationality creates a greater problem for government due to problems of incentives and capture and therefore militates against paternalism); Jolls, Sunstein and Thaler (supra note 12) p. 1541 (arguing the behavioral evidence at least supports anti-antipaternalism); Klick and Mitchell (supra note 342) pp. 1622-1627 (arguing that paternalistic interventions are problematic since they inhibit individuals' motivation and ability to learn and correct errors in the long run); Mitchell (supra note 336) (arguing that behavioral findings do not make paternalism inevitable, that one could use liberty rather than welfare to guide paternalistic interventions, and more); Posner (supra note 261) p. 1575 (arguing that behavioral findings apply to government bureaucrats equally and therefore do not justify intervention, except possibly in the form of debiaing); Jeffrey J. Rachlinski, "The Uncertain Psychological Case for Paternalism", 97 *Nw. U. L. Rev.* (2003) 1165, p. 1168 [hereinafter "Uncertain Paternalism"] ("The psychological case for paternalism, however, must rest on a relative assessment of the cognitive costs of improved decision against the costs of supplanting individual choice"); Rachlinski, *Individual Differences* (supra note 342) (arguing that taking individual differences into account requires are more careful approach to behaviorally-based interventions); Sunstein and Thaler, *Libertarian Paternalism* (supra note 339) (arguing that it is both possible and desirable for private and public institutions to influence behavior in welfare-promoting ways without eliminating freedom of choice).

B. Normative Relevance

From the perspective of social welfare, when systematic decision errors diminish decision makers' individual welfare, interventions aimed at reducing or eliminating these errors may be socially beneficial.[343] For example, when people who underestimate product risks over-consume, or when those who underestimate product benefits purchase too little, interventions could increase welfare by better aligning consumers' decisions with their true[344] preferences.[345] This error–intervention connection is manifested in studies calling for ex-post interventions in some contractual terms that may reflect systematic biases of contracting parties; the imposition of increased tort liability and additional regulation of behavior involving financial, health and safety risks to error-prone consumers; and more.[346]

Of course, behavioral findings may well justify such interventions, but a closer look suggests that compelling behaviorally based interventions should rest on more than mere proof of some systematic deviation from strict rationality in a concrete

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343. The costs generated by such errors have been dubbed "internalities" by some researchers, suggesting an analogy to those negative externalities that occur when the behavior of one actor negatively affects the well-being of other individuals, which may justify welfare increasing, interventions. See Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) p. 1221 ("When consumers make errors, it is as they are imposing externalities on themselves because the decisions they make ... do not accurately reflect the benefit they derive"). For an even more extreme variant of this argument see: Colin F. Camerer, "Wanting, Liking, and Learning: Neuroscience and Paternalism", 73 *U. Chi. L. Rev.* (2006) 87, p. 92 (suggesting that neuroscience evidence on the existence of different systems for recording liking, expressing wanting, and for learning to want what the brain likes may provide a basis for paternalistic corrections that produce choices that are not wanted but will be liked later, if these interventions do not cause much harm to rational agents). The law and economics literature on externalities is extensive. See generally: Shavell (supra note 5) pp. 77-109 (defining externalities and their resolution in the context of property rights). See also Steven Shavell, "The Optimal Structure of Law Enforcement", 36 *J. L. and Econ.* (1993) 255, pp. 261-270 (a comparative analysis of different methods of intervention aimed to control undesirable behavior).

344. These preferences, however, are "true" only in limited the sense of reflecting the choices these individuals would have made had they possessed an accurate estimate of the risks and benefits of products, not taking into account the many other environmental variables that may contribute to the construction of preferences.

345. See: Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) p. 1221 (making the argument from internalities).

346. See, *e.g.*, Rachlinski, *Uncertain Paternalism* (supra note 343) pp. 1177-1135 (reviewing similar pro-intervention arguments in a variety of legal contexts).

legal setting. First, a convincing pro-intervention argument must satisfy the general requirements of the behavioral analysis of law: it should draw on robust empirical evidence of behavioral regularities; take into account their boundary conditions; and consider the policy implications of the various research gaps identified above.[347]

Second, the paternalistically oriented argument should distinguish among different categories of deviations from normative standards of rationality, most notably between deviations in the domain of judgment and deviations in the domain of choice, which possess different normative characteristics. Decision makers are likely to view judgmental deviations as simple mistakes, errors that they would be happy to correct. Successful interventions that aim to debias such errors or reduce their negative impact on behavior are more likely to make people better off, generating real welfare gains.[348]

In the domain of choice (or preferences), on the other hand, the justification for intervention is more limited and problematic. For one, some deviations from typical standards of rational action – such as social preferences, where individuals' utility depends on the outcomes received by other people – may comprise valuable, valid, preferences. Choice "deviations" due to such social preferences are therefore unlikely to justify paternalism.[349]

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347. Supra Parts II, III, and IV respectively.

348. *Cf.* Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) pp. 1217-1218 (arguing that debiasing self control problems and judgmental errors can produce welfare gains). Of course, this may not always be the case even with respect to judgmental biases. For instance, overoptimism may serve as a motivating force that people value despite its biasing effect on their judgments. Some biases, moreover, may also ameliorate the effects of other, conflicting, decision errors, and their elimination may therefore ultimately prove welfare reducing. See, *e.g.*, Keren Shapira-Ettinger and Ron A Shapira, "The Constructive Value of Overconfidence", (October 10, 2007). Bar Ilan University, Public Law and Legal Theory Working Paper Available at SSRN: [http://ssrn.com/abstract=1079762] (making this type of argument with respect to overoptimism).

349. See, *e.g., id.,* However, economists have long debated whether even welfare-based analyses should sometimes exclude certain social sources of well-being, such as envy or spite, or the more extreme case of an individual who derives pleasure from inflicting pain on others. Of course, a pure welfarist standard would not exclude any sources of individual welfare. See, *e.g.*, Kaplow and Shavell (supra note 337) pp. 18-19 (noting that the notion of individuals' well-being used in welfare economics is comprehensive, and includes anything individuals might value, such that "[t]he only limit on what is included in well-being is to be found in the minds of individuals themselves, not in the minds of analysts.") (reference omitted).

Other preferences that do not accord with strict rationality but may sometimes be utility-maximizing also provide only a tenuous basis for intervention. Standard economic analysis makes clear, for instance, that "sunk" (incurred) costs should not impact future behavior, which should be based on forward-looking considerations alone.[350] That one has already invested, say, $10,000,000 in a project thus should have no bearing on the question of whether the project ought to be completed at an additional cost of $1,000,000. Instead, the project should be completed if its net present value – based on predictions of future performance – is positive. Otherwise, the project should not be completed, the sunk fortune notwithstanding. Behavioral research provides evidence, however, that decision makers are sometimes affected by sunk costs, "throwing good money after bad."[351] Such preferences that take sunk costs into account – although contrary to the theory of rational action – may be rational from the subjective perspective of the individual decision maker when the disutility of the pain incurred by the sunk cost is sufficiently large; when one has a reputation of "being decisive" or "not wasteful" to protect; when others honor sunk costs and may penalize one for not honoring them; and more.[352]

Moreover, intervention can be problematic even when choice behavior is clearly erroneous, as in the case of framing or context effects.[353] In these cases, where decision makers exhibit conflicting, inconsistent, or ad hoc constructed preferences, policy makers face the daunting task of determining "authentic" preferences. This problem could be overcome if policy makers were to determine the "correct" preferences

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350. *E.g.*, Posner (supra note 5) p. 7 (describing the principle and stating its importance).

351. See, *e.g.*, Hal R. Arkes, "The Psychology of Waste", 9 *J. Behav. Dec. Mak.* (1996) 213 (showing the role of waste concerns in the effect); Hal R. Arkes and Catherine Blumer, "The Psychology of Sunk Cost", 35 *Org. Behav. and Hum. Dec. Proc.* (1985) 124 (describing the basic phenomenon and examining variables that facilitate and inhibit it); Richard P. Larrick, James N. Morgan and Richard E. Nisbett, "Teaching the Use of Cost-Benefit Reasoning in Everyday Life", 1 *Psych. Sci.* (1990) 362, p. 363 (attributing the effect to an overgeneralization of the "don't waste" rule). Barry M. Staw, "The Escalation of Commitment to a Course of Action", 6 *Acad. Mgmt. Rev.* (1981) 577 (describing the basic phenomenon and examining variables that facilitate and inhibit it).

352. See: Dawes (supra note 15) pp. 500-502 (debating whether accounting for sunk costs should be counted irrational, citing the above factors as well additional organizational considerations). Taking sunk costs into account may also provide a reasonable choice heuristic for many everyday situations where past investment do reasonably predict future benefits. See: Hal R. Arkes and Peter Ayton, "The Sunk Cost and Concorde Effects: Are Humans Less Rational Than Lower Animals?", 125 *Psych. Bull.* (1999) 591 (suggesting the possible utility of such a heuristic).

353. See supra notes 87-96 and the accompanying text.

based on their own values, but such an approach is problematic for those who seek to promote social welfare based on individual utility considerations.

Third and importantly, the identification of systematic individual error reveals a problem, not its solution, since behaviorally based paternalistic interventions may be too costly for society to be justified, or simply ineffective. These cost and efficacy variables are also interrelated, moreover, since cheaper forms of intervention can be less effective, while more effective interventions often are more costly.

Behaviorally based interventions generate a variety of "implementation costs," including both the costs involved in any governmental action and some costs that are specific to the behavioral case. Such specific implementation costs include, for instance:

> (1) Interventions that restrict freedom of choice and thus impose a cost on those rational citizens who do not err.[354] For example, laws that require companies to issue certain securities to investors only on regulated exchanges reduce the flexibility of issuers and increase the costs of stock issues to all investors.
> (2) Choice restrictions - such as, say, laws mandating seat belt usage[355] – may also create a psychic cost for all decision makers who value freedom of choice.[356]
> (3) Insofar as boundedly rational individuals may learn to overcome some decision errors if given sufficient incentives and feedback, moreover, paternalistic interventions that reduce feedback and incentives for correction may prevent longer term welfare increases due to potential improvements in decision quality.[357] This particular set of implementation costs is often of limited significance, however, given the evidence on the limited impact of incentives on many decision errors and the limited availability of meaningful feedback in most real world settings.
> (4) In addition, although also of limited concern, some paternalistic interventions may impact consumer demand for certain products, occasionally diminishing producer welfare

354. See, *e.g.*, Rachlinski (supra note 342) pp. 224-226.

355. Assuming these laws hold even in identifiable circumstances where not using a seat belt poses no risk or cost whatsoever to anybody other than the careless driver.

356. See, *e.g.*, Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) p. 1214 n. 11. See also: Glaeser (supra note 346) pp. 150-156 (arguing that soft paternalism generates various costs, including emotional ones).

357. *E.g.*, Klick and Mitchell (supra note 342).

(profits).[358] This may be the case, for example, if government advertising campaigns and other regulations reduce consumption of hazardous tobacco products.

(5) Finally, a more troubling set of costs concerns the significant possibility of government error in adopting and implementing behaviorally driven interventions[359] since in the world of governmental decision making, laws and regulations tend to be especially sticky.[360] The problem of government error may be especially acute, moreover, in areas where interested private parties have the incentive and means to impact government policies.[361]

Furthermore, if the hurdles involved in the implementation of behaviorally based paternalistic policies were not enough, the efficacy of these policies often will be (a) limited and (b) inversely related to the degree of intervention they employ. For example, the mandatory provision of information about product risks or costs – which is frequently required for some consumer goods, health products, financial products, and more – is thought to reduce judgmental biases without constraining consumer choice.[362] However, not only is mandatory disclosure a debiasing mechanism of limited efficacy, but it is also a mechanism that could be subject to manipulation by the disclosing parties.[363] This may happen, for instance, when producers emphasize that certain foods are "low fat" – implicitly suggesting they are healthful – and deemphasizing their

358. But not total welfare – that is, the increase in consumer welfare will not be smaller than the decrease in producer welfare. See: Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin, *Regulation for Conservatives* (supra note 336) p. 1220.

359. See, *e.g*., Posner (supra note 261) p. 1575.

360. *E.g*., Korobkin (supra note 110) p. 1267 (suggesting that the endowment effect will contribute to making the regulatory status quo resistant to change); Rachlinski and Farina (supra note 317) pp. 604-605 (framing effects can explain regulatory stickiness).

361. Glaeser (supra note 343).

362. Rachlinski (supra note 243) p. 1224 (citing disclosure as a less intrusive alternative to restrictions on choice); Camerer, Issacharoff, Loewenstein and O'donoghue and Rabin (supra note 336) p. 1233 (same).

363. See, e.g, Jon D. Hanson and Douglas A. Kysar, "Taking Behavioralism Seriously: Some Evidence of Market Manipulation", 112 *Harv. L. Rev.* (1999) 1420, pp.1451-1455 (reviewing food manufacturers' marketing practices), pp. 1467-1502 (providing an extensive account of the manipulation efforts of cigarette manufacturers over the years).

high sugar content.[364] Furthermore, the costs of mandatory disclosure – even when completely unbiased – inevitably increase the costs of producing the products to which they pertain, costs that are imposed on all consumers, biased and unbiased alike.

Other "soft" interventions, such as the design of default rules that benefit biased decision makers but do not restrict the choices of unbiased ones, may be more effective in leading consumers to better choices, but they also generate significant costs.[365] For one, the provision of some default rule may often be unavoidable, since the law would want to provide some certainty as to legal outcomes in the absence of specific action by people.[366] The behavioral evidence on the power of defaults suggests, however, that an erroneous default-rule choice by the regulator can impose significant costs on society.[367] Moreover, insofar as regulatory errors are bound to occur, their costs will not be limited to those boundedly rational decision makers who will remain with inefficient defaults. Instead, these defaults will also diminish the welfare of some rational individuals who, because of the various non-behavioral causes for default rule stickiness,[368] will remain with the erroneous defaults, their individual rationality notwithstanding. In addition, public choice problems may be more severe for regulators who consciously account for the behavioral effects of default rules, especially if they become adept at manipulating preferences.[369]

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364. See, *e.g,* Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin (supra note 336) p. 1235 n. 85 (citing sources to this effect).

365. See, *e.g*., Sunstein and Thaler (supra note 336) pp. 1174-1177.

366. *E.g*., *id.,* p. 1175. Note, however, that in some limited circumstances "required active choice" provisions may substitute for default rules. See *id*. pp. 1188-1189.

367. Importantly, however, regulating bodies – their other limitations notwithstanding – typically will not be subject to the same errors commonly exhibited by the regulated, as suggested by some commentators, since they face different decision problems. Government agencies, for instance, often make general rules that concern situations they are not personally involved in, both of which factors may improve their decisions; they are also repeat players who often possess relevant expertise. See: Jolls, Sunstein and Thaler (supra note 12) pp. 1543-1545 (arguing that despite government's limitations, a degree of insulation from populist pressures combined with expertise may lead to better decision making); Rachlinski and Farina (supra note 317) pp. 558-559 (noting the potential of expertise and experience to improve governmental decision making). *Cf.* also Daniel Kahneman and Dan Lovallo, "Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking", 39 *Mgmt. Sci.* (1993) 17, pp. 25-26 (discussing the difference between the "inside view" of actors and the "outside view").

368. See, *e.g*., Omri Ben-Shahar and John A. E. Pottow, "On the Stickiness of Default Rules", 33 *Fla. St. U. L. Rev.* (2006) 651.

369. Glaeser (supra note 343) pp. 155-156.

Similarly, harsher interventions that directly restrict freedom of choice tend to be very costly for society. Behaviorally based restrictions on choice may be either procedural – as in the case of mandatory cooling off periods for certain consumer transactions – or substantive – such as laws that allow overtime work but prevent workers from waiving their right to a higher pay for overtime hours. The costs of such restrictions on choice, especially for non-biased decision makers, are significant, and go well beyond the psychic costs of diminished freedom of choice. For example, cooling off requirements, which permit boundedly rational consumers to back out of some transactions within a certain designated time frame,[370] increase the cost of products and thereby harm rational consumers.[371] In the same vein, substantive choice restrictions will sometimes prevent rational decision makers from reaching some welfare-increasing bargains. This would be the case, for instance, where a rational worker is willing to work overtime for the usual pay, but will not be able to obtain overtime work because the employer – who would be willing to offer overtime at normal wages – cannot afford to pay the higher, mandatory, pay.

Finally, restrictions on choice may also eliminate some learning opportunities that could reduce decision errors over time.[372] This may happen mainly in those limited circumstances where decision makers enjoy the conditions necessary for learning, including repeat play and the ability to identify mistakes, associate them with specific judgments or choices, and proceed to correct them.[373] These conditions will rarely

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370. See, *e.g.*, Sunstein and Thaler (supra note 336) p. 1187-1188 (suggesting that cooling-off rules may be justified by the bounded rationality and self-control of consumers).

371. Higher prices due to mandatory procedural constraints on choice may also harm some boundedly rational consumers whose benefits from the constraints are outweighed by their costs. Such constraints may even harm sellers (but increase total welfare), see: Camerer, Issacharoff, Loewenstein, O'donoghue and Rabin (supra note 336) p. 1240, although the latter sometimes may be able to reduce this harm if they can sort potentially biased from unbiased consumers, see: Rachlinski (supra note 342) p. 225.

372. Glaeser (supra note 342) p. 139-141; Klick and Mitchell (supra note 342).

373. See *e.g.*, Hillel J. Einhorn, "Learning from Experience and Suboptimal Rules in Decision Making", *Cognitive Progress in Choice and Decision Behavior* (Thomas S. Wallsten- ed., 1980) p. 1 (emphasizing the importance of unambiguous feedback for learning); Richard E. Nisbett, David H. Krantz, Christopher Jepson and Geoffrey T. Fong, "Improving Inductive Inference", *Judgment Under Uncertainty* (supra note 32) pp. 445, 445-446 (noting that decisionmakers need to know that an error has occurred, how it has occurred, and how to improve the decision process). As Amos Tversky and Daniel Kahneman explain:

> Effective learning takes place only under certain conditions: it requires accurate and immediate feedback about the relation between the situational conditions and the appropriate response. The necessary feedback is often

occur for most important decisions, but may be relevant in some consumer-protection contexts, where a repeat experience with, say, unreliable online merchants may give consumers sufficiently focused feedback, together with many opportunities to seek non-governmental mechanisms for certifying merchant quality.[374]

All in all, the preceding analysis suggests that the scope for justified and efficacious, behaviorally based, welfare-increasing, paternalistic interventions is more limited than it may appear at first sight. Nevertheless, government intervention is not only occasionally beneficial, but also frequently unavoidable. As noted above, the legal system constructs the default background, which frequently provides the starting point for various legally relevant judgments and choices. Insofar as these starting points impact decision behavior, the government already and inevitably shapes some judgments and constructs some preferences.[375] Rather than rejecting all paternalistic interventions outright, therefore, a further comparative analysis of the merits and demerits of the different available policy approaches is required.[376]

VI. Conclusion

This Article defined the behavioral analysis of law as the application of empirical behavioral evidence to the analysis of legal rules and institutions. This definition helped outline the boundaries of the behavioral approach and some of its central methodological features, organized around four themes or propositions.

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lacking for decisions made by managers, entrepreneurs, and politicians because (i) outcomes are commonly delayed and not easily attributable to a particular action; (ii) variability in the environment degrades the reliability of the feedback, especially where outcomes of low probability are involved; (iii) there is often no information about what the outcome would have been if another decision had been taken; and (iv) most important decisions are unique and therefore provide little opportunity for learning.

Amos Tversky and Daniel Kahneman, "Rational Choice and the Framing of Decisions", *Rational Choice*, (supra note 320) p. 67, 90 (citation omitted).

374. As online markets have already developed. For a review of some such mechanisms and their relation to the legal regulation of online consumer transactions see, for instance, Shmuel I. Becher and Tal Zarsky, "E-Contract Doctrine 2.0: Standard Form Contracting in the Age of Online User Participation", 14 *Mich. Telecom. and Tech L. Rev.* 22-36 and n. 202 (forthcoming 2008).

375. *E.g.,* Sunstein and Thaler, *Libertarian Paternalism* (supra note 336) p. 1165.

376. Jolls, Sunstein and Thaler (supra note 12) p. 1545 (noting that "from the perspective of behavioral law and economics, issues of paternalism are to a significant degree empirical questions...").

The first proposition asserted that the efficacy of the law often depends on its accounting for relevant patterns of human behavior, most notably those identified by behavioral decision scientists and researchers in related areas. In developing this theme, Part II reviewed some important behavioral findings, which were divided into the two central categories of *judgment* and *decision making*. The first concerned the ways in which individuals form and update their beliefs about the surrounding world, while the second addressed the means people employ when constructing and expressing their preferences for action. Throughout this section, behavioral evidence was put in a legal context, such that the potential importance of the described phenomena for legal scholarship became apparent.

Part III then argued that the behavioral approach is characterized most clearly by its empirical foundations. The emphasis on the empirical link served both more clearly to demarcate the boundaries of the behavioral approach and to compare two main genres of behavioral-legal research: theoretical applications and direct empirical tests. Notably, this comparison suggested that theoretical applications comprise nearly all behavioral-legal applications, with only a small minority of studies involving direct empirical tests of behavioral questions in legal settings. Their popularity notwithstanding, however, this Part showed that compelling theoretical applications must be sensitive to the empirical contours of the behavioral phenomena they apply, verify their robustness, and make sure that the extant evidence is likely to be externally valid in the legal domain as well. On the other hand, the genre of direct empirical tests – whether observational tests of legal real-world ("field") data or experimental studies in legal settings – avoids some of the problems inherent in theoretical applications of non-legal findings, especially in the area of external validity. This genre also provides extremely valuable means of generating new empirical data on legal questions, where such data are often sorely lacking. In many legal domains, however, specific data on the operation of legal rules and institutions are difficult or impossible to obtain, while non-legal evidence may prove robust and informative. Overall, therefore, the two genres were shown to provide not only alternative approaches but also complementary means of addressing behavioral-legal questions.

Part IV developed the third theme, which emphasized a series of challenges to the behavioral analysis of law due to a variety of gaps between basic research findings, which are directed by decision researchers' priorities and interests, and the needs of the behaviorally oriented legal scholar, which are typically different. This Part distinguished among shrinking gaps, which exist in basic research areas that in the past received less attention from decision researchers but are now increasingly studied; second-order gaps, which concern research on the relationships among different decision processes; and institutional gaps, which relate to the pervasive, but under-researched, impact of social institutions on human judgment and decision process.

Within each of these three, non-mutually exclusive, categories of gaps, one or two important examples were developed in turn, to show how the gaps challenge legal scholars and what can be done to overcome them, minimize their negative effect, and separate real gaps from imaginary ones.

Part V then addressed the fourth proposition advanced here – namely, that the behavioral approach is simultaneously normatively neutral and normatively relevant. The normative neutrality claim was emphasized, since recent debates in the legal literature sometimes tend to confuse the behavioral approach generally with its specific, if most central and noticeable, variant of behavioral law and economics. After establishing the neutrality claim, the remainder of this Part illustrated the normative relevance of the behavioral analysis of law when coupled with other normative approaches. Specifically, this Part addressed the current debate among legal scholars on whether, from the economic perspective of social welfare, behavioral findings tend to justify paternalistic intervention, concluding with a very qualified "sometimes." Weighing the evidence on the costs and benefits of behaviorally based paternalism, this Part found that justified intervention must overcome many hurdles, beyond providing mere evidence of human error. However, from a social welfare perspective, such interventions may occasionally be beneficial.