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Reasons within Passions: Emotions and Intentions in Property Rights Bargaining**

"People are not rational. People are irrational." Susan Kingsfield.[1]

"Despair, regret, and tenderness is what I feel for you." Madonna.[2]

INTRODUCTION

The above pair of quotations nicely captures a central thesis of this Article, namely that people do not behave the way that rational actors do because people also feel emotions and those emotions drive behavior. Susan Kingsfield, daughter of the legendary fictional Harvard law professor Kingsfield in the movie *The Paper Chase*, makes the first statement while arguing with a first-year law student who is trying to categorize or pig-

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** The title is adapted from ROBERT H. FRANK, PASSIONS WITHIN REASONS: THE STRATEGIC ROLE OF THE EMOTIONS (1989).

[1] THE PAPER CHASE (Twentieth Century Fox 1973).

[2] MADONNA, *Time Stood Still*, *on* THE NEXT BEST THING (Maverick Records 2000).

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eonhole their budding relationship. In her first sentence, she presumably means that people are not completely rational or only possess bounded rationality. In her next sentence, she presumably does not intend the word irrational to be pejorative, but instead means that people behave unlike mere rational actors. Her position leaves open the question of just what exactly real world humans do that makes them more complicated than simple rational actors. The line from the song by Madonna provides one possible answer: people have feelings towards other people.

This Article discusses the role of emotions (or feelings or affects) in property rights bargaining. Real world people choose bargaining strategies based upon not only rational calculations, but also their gut feelings. This Article considers the impact of anger and shame on bargaining over property rights and the Coase Theorem. Such emotions may depend on beliefs (or expectations or assessments) about whether particular strategic decisions should or will occur. Such beliefs can be viewed as attributions over the intentions of others.

The observation that a desire to experience good feelings and to avoid bad feelings motivates human behavior is self-evident upon a moment of introspection. The rational actor model of neoclassical economics reduces all feelings into the concept of utility. The field of law and economics consists of applying the rational actor model of neoclassical microeconomics to analyze legal rules and institutions.[3] Rational actors choose actions that maximize their (in the face of risk, expected) utilities.[4] Neoclassical economics assumes that the preferences of individuals are fixed, or in the language of economics, exogenous. This assumption means that people's tastes lie outside the boundaries of economics and lie within the domains of economics' neighboring disciplines, such as anthropology, psychology, or sociology.[5]

The law's standard role within the rational actor paradigm is to

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[3] *See generally* ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS (3d ed. 2000) (providing an exposition of basic microeconomics with applications to property, contracts, torts, civil procedure, and criminal law); A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS (2d ed. 1989) (same); ROBERT D. COOTER, THE STRATEGIC CONSTITUTION (2000) (providing a systematic account of constitutional law drawing on the rational actor model, collective or public choice theory, positive political theory, and comparative law and economics).

[4] COOTER & ULEN, *supra* note 4, at 10-11 (explaining that economists assume that rational actors maximize some objective function subject to constraints).

[5] *Id.* at 18 (discussing the neoclassical economics assumption of exogenous preferences).

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change the constraints that rational actors face.[6] However, economics is not a monolithic field of study restricted to purely "rational" emotionless actors.[7] More recent economics models explore the phenomena of endogenous preferences.[8]

These models recognize another role that law can play, namely changing rational actors' preferences.[9] In fact, people can have a variety of conceivable preferences.[10] Some legal scholars have began to investigate the implications of emotions for the law.[11] One view of why classical property theory involves telling alternative stories is that narratives can alter the preferences of their listeners.[12] Similarly, economists have been viewed as storytellers.[13] This argument that preferences of audience members may change from listening to stories is also related to the idea that education can also change preferences. Finally, there is evidence suggesting that people who study neoclassical economics might behave less cooperatively than others.[14]

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[6] Robert Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523, 1524-25 (1984) (explaining how laws can impose sanctions or create prices).

[7] Peter H. Huang, *Dangers of Monetary Commensurability: A Psychological Game Model of Contagion*, 146 U. PA. L. REV. 1701, 1712, 1721 (1998) (observing that economics is a language and there are numerous dialects within that language).

[8] Samuel Bowles, *Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions*, 36 J. ECON. LITERATURE 75, 87-90 (1998) (discussing the construal effects of markets).

[9] Kenneth G. Dau-Schmidt, *An Economic Analysis of the Criminal Law as a Preference-Shaping Policy*, 1990 DUKE L.J. 1, 14-22, 32-37 (1990) (explaining how law can shape preferences and distinguishing between criminal and tort law).

[10] Carol M. Rose, *Property as Storytelling: Perspectives from Game Theory, Narrative Theory, Feminist Theory*, 2 YALE J.L. & HUMAN. 37, 43-48 (1990) (providing a thought experiment involving scenarios of six types of preferences that people might have).

[11] *See, e.g.*, Symposium, *Law, Psychology, and the Emotions*, 74 CHI.-KENT L. REV. 1423 (2000); Heidi Li Feldman, Foreword, *Law, Psychology, and the Emotions*, 74 CHI.-KENT L. REV. 1423, 1426 (2000) (urging for legal scholars to pay "careful attention to the reality of how human beings think and feel").

[12] Rose, *supra* note 10, at 39-40, 55-57 (suggesting that storytelling has the power to change preferences from narrowly conceived self-interest to more cooperative preferences).

[13] GEORGE A. AKERLOF, AN ECONOMIC THEORIST'S BOOK OF TALES 5-6 (1984) (discussing the style of writing that applies concepts from anthropology, psychology, and sociology to economics); DONALD N. MCCLOSKEY, IF YOU'RE SO SMART: THE NARRATIVE OF ECONOMIC EXPERTISE (1990) (explaining how economists tell stories to persuade their colleagues, the public, and politicians).

[14] Robert H. Frank et al., *Does Studying Economics Inhibit Cooperation?*, J. ECON. PERSP., Spring 1993, at 159, 167-70 (presenting experimental and survey evidence that economics students are more likely to expect others to behave less cooperatively and to behave less cooperatively themselves than are non-economics students); Robert H. Frank et al., *Do Economists Make Bad Citizens?*, J. ECON.

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This Article describes people who both reason and feel. John Conlisk, in the introduction of his article surveying bounded rationality includes quotations from two of Shakespeare's plays, *Hamlet* and *A Midsummer Night's Dream*.[15] The first quotation reads: "Hamlet: 'What a piece of work is a man, how noble in reason, how infinite in faculty.'"[16] The second quotation reads: "Puck: 'Lord, what fools these mortals be!'"[17] The article starts off by stating: "[n]early everyone would see the truth as between Hamlet and Puck. Including Hamlet and Puck. Hamlet is feigning madness, and Puck is just being, well, puckish. Model-writing economists, however, tend not to the middle but to the 'infinite in faculties' extreme."[18]

The starting premise of this Article is that real world people care more about emotions in bargaining over property rights than do the unemotional inhabitants of neoclassical rational actor models. Ample recent experimental evidence supports this position. In fact, some economists argue that such behavior is evolutionarily stable.[19] This Article investigates the implications of emotions in bargaining for property law. By recognizing the role of emotions in strategic decision-making over property

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PERSP., Winter 1996, at 187, 191-92 (arguing the above empirical results combined with surveys of charitable giving and prisoner's dilemma experiments provide clear evidence that economic training leads people to expect others to defect in social dilemma settings and therefore preemptively defect also). *But see* Jack Hirshleifer, *The Dark Side of the Force*, 32 ECON. INQUIRY 1, 2-3 (1994) (arguing that some economists underrate the degree that crime, politics, and war are economic activities and emphasize too much the mutual benefits from exchange); Anthony M. Yezer et al., *Does Studying Economics Discourage Cooperation? Watch What We Do, Not What We Say or How We Play*, J. ECON. PERSP., Winter 1996, at 177, 180-85 (finding that economics students behave more cooperatively than others in the real world as opposed to in experimental and hypothetical settings).

[15] John Conlisk, *Why Bounded Rationality?*, 34 J. ECON. LITERATURE 669 (1996).

[16] WILLIAM SHAKESPEARE, HAMLET act 2, sc. 2, 301-02 (G.R. Hibbard ed., 1987).

[17] WILLIAM SHAKESPEARE, A MIDSUMMER NIGHT'S DREAM act. 3, sc. 3, 115 (Harold F. Brodes ed., 1979).

[18] Conlisk, *supra* note 16, at 669.

[19] ROBERT H. FRANK, PASSIONS WITHIN REASON: THE STRATEGIC ROLE OF THE EMOTIONS (1988) (explaining how certain emotional dispositions may have been selected in humans for their survival value in strategic interactions); Jack Hirshleifer, *On the Emotions as Guarantors of Threats and Promises*, *in* THE LATEST ON THE BEST: ESSAYS IN EVOLUTION AND OPTIMALITY 307, 311-21 (John Dupré ed., 1987) (providing models of how certain emotions can have strategic value); JACK HIRSHLEIFER, THE AFFECTIONS AND THE PASSIONS: THEIR ECONOMIC LOGIC (University of California, Los Angeles, Department of Economics Working Paper No. 652, 1992) (same). *But see* Paul M. Romer, *Thinking and Feeling*, 90 AM. ECON. REV. 439, 441-43 (2000) (noting that some feelings may induce actions that actually diminish reproductive success in novel situations).

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rights, this Article proposes a more realistic conception of human behavior than neoclassical rational actor models. It should be noted that this Article is not the first to do so as several scholars including management scholars have long recognized the importance of emotional considerations in bargaining.[20] In addition, some legal scholars have begun to investigate the implications of emotions for the law.[21] One view of emotions is they are irrational or non-rational and cannot be captured within a cost-benefit model.[22] Thus emotions are viewed as an additional impetus for why rationality must be bounded.[23] According to this perspective, emotions such as fear and anger disrupt normal rational thought and reasoning capabilities.[24] Conversely, there is also neuro-psychological evidence that emotions help people make better decisions.[25] Also, emotions may be related to reproduc-

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[20] J. KEITH MURNIGHAN, BARGAINING GAMES: A NEW APPROACH TO STRATEGIC THINKING IN NEGOTIATIONS 47-66 (1992) (discussing the role of emotions in bargaining, stressing how emotions such as anger can lead to rash negotiations).

[21] *See, e.g.*, Symposium, *Law, Psychology, and the Emotions*, 74 CHI.-KENT L. REV. 1423 (2000); SUSAN A. BANDES, THE PASSIONS OF LAW (1999) (providing an anthology of essays on the pervasive roles that emotions play in the law); Eric A. Posner, *Law and the Emotions*, 89 GEO. L.J. (forthcoming June 2001) (interpreting emotions as predictable and temporary changes in preferences that people act under and in anticipation of and discussing how the law in diverse areas should take those effects into account).

[22] Jon Elster, *Emotions and Economic Theory*, 36 J. ECON. LITERATURE 47, 63, 72-80 (1998) (criticizing a psychic cost benefit model of emotions).

[23] Bruce E. Kaufman, *Emotional Arousal as a Source of Bounded Rationality*, 38 J. ECON. BEHAV. & ORG. 135, 139 (1999) (arguing that extremes in emotional arousal provide a source of bounded rationality in addition to such constraints on human cognition as limited computational ability or selective memory and perception).

[24] Robert S. Adler et al., *Emotions in Negotiation: How to Manage Fear and Anger*, 14 NEGOTIATION J. 161, 168-74 (1998). *See generally* George Loewenstein, *Out of Control: Visceral Influences on Behavior*, 65 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 272, 288 (1996) (explaining how visceral factors, including certain emotions can lead human behavior to deviate from perceived self-interest); George Loewenstein, *Emotions in Economic Theory and Economic Behavior*, 90 AM. ECON. REV. 426, 429-30 (2000) (stating that such negative emotions as anger, fear, and embarrassment cause people to undertake extreme actions in many important contexts, including bargaining).

[25] ANTONIO R. DAMASIO, DESCARTES' ERROR: EMOTION, REASON, AND THE HUMAN BRAIN 53-54 (1994) (providing clinical evidence that patients who suffered certain brain injuries have trouble feeling emotions and making decisions in spite of retaining their cognitive powers); ANTONIO R. DAMASIO, THE FEELING OF WHAT HAPPENS: BODY AND EMOTION IN THE MAKING OF CONSCIOUSNESS 294-95 (1999) (describing recent experimental evidence that emotions help humans and rats learn new facts).

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tive success.[26] Finally, there is substantial psychological evidence that positive affect or feeling good significantly affects decision-making.[27] By incorporating this fundamental insight into an economic model with completely rational actors, a diverse range of previously inexplicable behaviors are capable of being explained.[28]

First, there is a currently renewed interest among economists to incorporate emotions into the rational actor model and strategic decision-making.[29] In some of these models, emotions act to ensure the credibility of threats.[30] In those models, the intensities of emotions are exogenously fixed. But, there is experimental evidence that people who comply with a norm of cooperation feel strong negative emotions towards those who free ride with the intensity of such emotions increasing as more free riders deviate from that group norm.[31]

Also, legal scholars are increasingly employing game theory to

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[26] VICTOR S. JOHNSTON, WHY WE FEEL: THE SCIENCE OF HUMAN EMOTIONS 167-80 (1999) (discussing the evolutionary value of certain emotions in repeated prisoner's dilemmas and other situations).

[27] Alice M. Isen, *Positive Affect and Decision Making*, *in* HANDBOOK OF EMOTIONS 261, 267-74 (Michael Lewis & Jeannette M. Haviland eds., 2d ed. 1999) (surveying these findings); Alice M. Isen et al., *Positive Affect Facilitates Creative Problem Solving*, 52 J. PERSONALITY & SOC. PSYCHOL. 1122 (1987) (finding that positive affect from getting a small bag of candy or watching a few minutes of a comedy film improved experimental subjects' performance on tasks that are viewed as requiring creative ingenuity); Alice M. Isen & Paula F. Levin, *Effect of Feeling Good On Helping: Cookies and Kindness*, 21 J. PERSONALITY & SOC. PSYCHOL. 384 (1972) (finding that feeling good from getting cookies while studying in a library or finding a dime in a pay phone increased experimental subjects' willingness to help); Paul Slovic et al., *The Affect Heuristic*, *in* INTUITIVE JUDGMENT: HEURISTICS AND BIASES (Thomas Gilovich et al. eds., 2000).

[28] Benjamin E. Hermalin & Alice M. Isen, *The Effect of Affect on Economic and Strategic Decision-Making* (visited Oct. 2, 2000) <http://papers.ssrn.com/paper.taf?ABSTRACT_ID=200295> (describing model and its various implications).

[29] Elster, *supra* note 23, at 48, 73 (providing a survey of how emotions can help understand human behavior for which good explanations are lacking and emphasizing the dual role of emotions in shaping choices and rewards). *See generally* JON ELSTER, STRONG FEELINGS: EMOTION, ADDICTION, AND HUMAN BEHAVIOR (1999) (studying the similarities and differences between emotion and addiction).

[30] Robert H. Frank, *A Theory of Moral Sentiments*, *in* BEYOND SELF-INTEREST 71, 75 (Jane J. Mansbridge ed., 1990) (explaining how certain emotions described by Adam Smith as moral sentiments, such as anger, envy, greed, shame, and remorse can assist humans in solving commitment problems).

[31] Ernst Fehr & Simon Gächter, *Cooperation and Punishment in Public Goods Experiments*, 90 AM. ECON. REV. 980 (2000) (reporting on findings in public good experiments that people heavily punish free riders even when punishment is costly for punishers and provides no material benefits to punishers).

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analyze legal institutions and rules.[32] For example, game theory provides an explanation of why women seem to fare worse than men do when acquiring and owning property.[33] This Article considers how two particular emotions, anger and shame, can affect bargaining over property rights.[34]

The remainder of this Article is organized as follows. Part I considers anger caused by self-centered inequity aversion. Part II considers both anger that depends on beliefs about strategic behavior regarding complying with fairness norms, and shame that depends on attributions about strategic behavior. Part III discusses how emotions change the received wisdom that bargaining over property rights invariably results in efficient outcomes. Part III also discusses other possible applications, extensions, and limitations of psychological emotions. This Article concludes by discussing the many contexts that can implicate emotions.

I

ANGER IN PROPERTY RIGHTS BARGAINING

Neoclassical law and economics usually assumes that people are motivated solely by their individual wealth and policymakers evaluate alternative social allocations only by aggregate wealth, not its distribution.[35] In practice, however, people often feel anger over the allocation of property rights. Anger can arise due to

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[32] *See generally* DOUGLAS G. BAIRD ET AL., GAME THEORY AND THE LAW (1994) (offering a modern introduction on how to apply game theory to study law); Peter H. Huang, *Strategic Behavior and the Law: A Guide for Legal Scholars to Game Theory and the Law and the Other Game Theory Texts*, 36 JURIMETRICS. J. 99 (1995) (reviewing DOUGLAS G. BAIRD ET AL., GAME THEORY AND THE LAW (1994) and related game theory texts).

[33] Carol M. Rose, *Women and Property: Gaining and Losing Ground*, 78 VA. L. REV. 421, 424-38 (1992) (explaining how prisoners' dilemma games and zero-sum games provide insights about relative wealth levels of women and men); *see also* Carol M. Rose, *Bargaining and Gender*, 18 HARV. J.L. & PUB. POL'Y 547, 548-62 (1995) (applying bargaining games to explain the different allocation of assets across gender in terms of real or culturally perceived differences in preferences for cooperative strategic behavior).

[34] *See, e.g.*, Jennifer Gerarda Brown, *The Role of Hope in Negotiation*, 44 UCLA L. REV. 1661, 1665-73 (1997) (considering three theories of hope in negotiation). Obviously, many other emotions can also influence the process and outcome of negotiations.

[35] *See generally* Robert C. Ellickson, *Bringing Culture and Human Frailty to Rational Actors: A Critique of Classical Law and Economics*, 65 CHI.-KENT L. REV. 23 (1989) (criticizing the rational actor model and urging a broader conception of rationality).

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preferences over consequences in terms of their distribution effects. There is experimental evidence that many people prefer fair or equitable outcomes because they care about not just absolute payoffs, but also relative payoffs and get angry if relative payoffs differ too much.[36] Additional survey evidence reveals that firms' internal wage structures are constrained by relative payoff considerations.[37] There is empirical evidence that people's comparison income given their socio-economic characteristics has a large and significant negative effect on their overall job satisfaction, holding everything else constant[38] and more relevantly, so do other people's wages.[39] Recent models involving people making relative comparisons or exhibiting self-centered inequity aversion are consistent with these findings.[40] Inequity aversion is termed self-centered if a person is more averse to inequity that is disadvantageous to that person than to inequity that is advantageous to that person (and disadvantageous to others).

How self-centered inequity aversion can generate anger is aptly illustrated by considering ultimatum games. In an ultimatum game, there are two players, a divider and an acceptor. The divider moves first and makes a take-it-or-leave-it offer to the other player by proposing a particular division of some given amount of money between the pair of players. The amount of money at stake is analogous to a fixed cake. An ultimatum game

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[36] George F. Loewenstein et al., *Social Utility and Decision Making in Interpersonal Contexts*, 57 J. PERSONALITY & SOC. PSYCHOL. 426, 438-39 (1989) (finding experimental subjects possess robust and strong aversion to disadvantageous inequality).

[37] Jonas Agell & Per Lundborg, *Theories of Pay and Unemployment: Survey Evidence from Swedish Manufacturing Firms*, 97 SCANDINAVIAN J. ECON. 295, 305 tbl.3 (1995) (providing such evidence); Truman F. Bewley, *Why Not Cut Pay?*, 42 J. EUR. ECON. REV. 459, 474-81 (1998) (same).

[38] Andrew E. Clark & Andrew J. Oswald, *Satisfaction and Comparison Income*, 61 J. PUB. ECON. 359, 363-73 (1996) (providing evidence of the effect of comparison income on job satisfaction).

[39] Sara J. Solnick & David Hemenway, *Is More Always Better?: A Survey on Positional Concerns*, 37 J. ECON. BEHAV. & ORG. 373, 375-78 (1998) (providing evidence of the effect of relative income on happiness).

[40] Gary E. Bolton, *A Comparative Model of Bargaining: Theory and Evidence*, 81 AM. ECON. REV. 1096, 1109-13 (1991) (presenting a model where people are motivated by relative comparisons); Gary E. Bolton & Axel Ockenfels, *ERC: A Theory of Equity, Reciprocity, and Competition*, 90 AM. ECON. REV. 166, 169, 171-73 (2000) (constructing a model where people minimize the differences between their own and others' monetary payoffs); Ernst Fehr & Klaus M. Schmidt, *A Theory of Fairness, Competition, and Cooperation*, 114 Q. J. ECON. 817, 820-25 (1999) (presenting a model of self-centered inequity aversion).

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is then simply a cake division problem. For example, suppose the amount is $10. If the divider proposes to keep some amount $D, the other player receives $(10-D), where D is a number in the range of zero to $10, including both extremes. If the other player accepts this division, they both get paid accordingly. However, if the other player rejects the proposed offer, they each get nothing.

Standard game theory predicts that an ultimatum game has a unique subgame-perfect Nash equilibrium. That is, the divider proposes $9.99 for her and one penny for the other player and the other player accepts. The intuition for only restricting attention to game-theoretic equilibria that are subgame-perfect is to rule out behavior that is not sequentially rational.[41] Game-theoretic equilibria that are not subgame-perfect entail behavior that is inconsistent over time because such equilibria involve threats or promises that are not in the best interests of those making them earlier to carry out later. In formal terms, such equilibria are also not renegotiation-proof, meaning that players would want to renegotiate their behavior once the game unfolds. In the ultimatum game, while the second player may threaten to reject a penny, they will not because one penny still exceeds nothing (assuming that player only cares about money).

But, a large body of experimental evidence on ultimatum bargaining games reveals that such predictions are descriptively false because players agree on an equal division of monetary payoffs.[42] While undisputed empirical findings have nonetheless led to dis-

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[41] Reinhard Selten, *Reexamination of the Perfectness Concept for Equilibrium Points in Extensive Games*, 4 INT'L J. GAME THEORY 25, 32-33 (1975) (defining a subgame perfect equilibrium of a game); Reinhard Selten, *The Chain Store Paradox*, 9 THEORY & DECISION 127, 155-56 (1978) (providing an example of how the criterion of subgame perfection eliminates behavior that is not sequentially rational).

[42] Colin Camerer & Richard H. Thaler, *Anomalies: Ultimatums, Dictators and Manners*, J. ECON. PERSP., Spring 1995, at 209, 210-14 (reviewing ultimatum bargaining experiments); Richard H. Thaler, *Anomalies: The Winner's Curse*, J. ECON. PERSP., Winter 1988, at 191, 196-99 (discussing ultimatum games); Werner Güth et al., *An Experimental Analysis of Ultimatum Bargaining*, 3 J. ECON. BEHAV. & ORG. 367, 383-85 (1982) (reporting on ultimatum bargaining experiments); Werner Güth, *On Ultimatum Bargaining Experiments — A Personal Review*, 27 J. ECON. BEHAV. & ORG. 329, 342 (1995) (reviewing numerous ultimatum experiments the author helped conduct); *see also* Colin F. Camerer, *Behavioral Game Theory*, *in* INSIGHTS IN DECISION MAKING 311, 313-15 (Robin M. Hogarth ed., 1990) (presenting and discussing experimental evidence of the Coase theorem and ultimatum games). *See generally* Alvin E. Roth, *Bargaining Experiments*, *in* THE HANDBOOK OF EXPERIMENTAL ECONOMICS 251, 253-348 (John H. Kagel & Alvin E. Roth eds., 1995); RICHARD H. THALER, QUASI RATIONAL ECONOMICS (1991).

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putes over their interpretation and robustness,[43] such results continue to hold in many variants of the above basic ultimatum game.[44] This evidence that equality plays a role in ultimatum games persists even if the monetary stakes are high.[45] Similar experimental results hold in related bargaining games involving property rights.[46]

One hypothesis, named the anonymity hypothesis, explains the behavior observed in experimental ultimatum games as the very result of experimental observation. Subjects behave the way they do to demonstrate concerns for fairness to the person running the experiment or to avoid embarassment in front of that person. Both of these proposed explanations of the anonymity hypothesis have been tested and empirically refuted.[47] In fact, the data support an alternative hypothesis, the punishment hypothesis, which states that people are willing to punish other people who treat them unfairly.

Another explanation for the observed behavior in experimental ultimatum games is proposers' concerns with fairness. To test this explanation, researchers ran dictator games where one player dictated how to divide a fixed sum of money and the other

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[43] *See, e.g.*, Thomas S. Ulen, *Rational Choice and the Economic Analysis of Law*, 19 L. & SOC. INQUIRY 487, 498-501 (1994) (discussing alternative theories consistent with findings of the prevalence of equal division and concluding that people's preferences depend on such non-monetary factors as fairness).

[44] *See, e.g.*, Bolton, *supra* note 41, at 1097-1105 (reporting results of a multi-variable study of a comparative model of bargaining); MURNIGHAN, *supra* note 21, at 103-21 (discussing such variants of the ultimatum game as dividing a melting ice cream cake); Jack Ochs & Alvin E. Roth, *An Experimental Study of Sequential Bargaining*, 79 AM. ECON. REV. 355, 368 tbl.6, 376, 378-80 (1989) (reporting and explaining experimental evidence finding that fairness matters).

[45] Lisa A. Cameron, *Raising the Stakes in the Ultimatum Game: Experimental Evidence from Indonesia*, 37 ECON. INQUIRY 47, 58 (1999); Robert Slonim & Alvin E. Roth, *Learning in High Stakes Ultimatum Games: An Experiment in the Slovak Republic*, 66 ECONOMETRICA 569, 573, 588 fig.3a (1998) (finding that raising the aggregate stakes from $10 to $100 to more than one week's income in a poor country does not have much effect, but very high stakes with repeated play does have some effect).

[46] Elizabeth Hoffman et al., *Preferences, Property Rights, and Anonymity in Bargaining Games*, 7 GAMES & ECON. BEHAV. 346, 370-72 (1994) (providing support for the proposition that offers in such games are motivated by strategic and expectation considerations instead of an autonomous and private preference for equity); Elizabeth Hoffman et al., *On Expectations and the Monetary Stakes in Ultimatum Games*, 25 INT'L J. GAME THEORY 289, 291, 297 (1996) (same).

[47] Gary E. Bolton & Rami Zwick, *Anonymity versus Punishment in Ultimatum Bargaining*, 10 GAMES & ECON. BEHAV. 95, 96, 98-100, 112-13 (1995) (reporting findings that refute fairness to the experimenter and embarassment theories).

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player could not refuse. In other words, the first player dictates how to divide the cake. However, experimental results seem to reject the proposer-fairness hypothesis,[48] and none of several other hypotheses involving proposer-fairness predicted all of the results in ultimatum games.[49] Accordingly, proposers' concerns with fairness alone cannot explain observed behavior in ultimatum games. Although the results of experimental dictator and ultimatum games clearly indicate that proposers both exhibit and anticipate that others expect them to exhibit what are termed other regarding preferences (ORPs), these are not sufficient to explain observed experimental results. Additionally, ORPs depend on context and may vary with demographic characteristics, like gender.[50]

In contrast, fairness preferences on the part of responders, formalized in a model of self-centered inequity aversion, accounts for the observed experimental results in ultimatum games.[51] Envy or spite provides another potential explanation for the behavior that is observed in experimental ultimatum bargaining games.[52] Yet another explanation is that inequality triggers an-

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[48] Robert Forsythe et al., *Fairness in Simple Bargaining Experiments*, 6 GAMES & ECON. BEHAV. 347, 349 (1994) (summarizing the results).

[49] Rachel T.A. Croson, *Information in Ultimatum Games: An Experimental Study*, 30 J. ECON. BEHAV. & ORG. 197, 200-01, 210-11 (1996) (reporting on results from experiments examining ultimatum games with varying information conditions).

[50] JENNIFER ARLEN ET AL., ENDOWMENT EFFECTS, OTHER-REGARDING PREFERENCES, AND CORPORATE LAW (University of Southern California Law School Olin Working Paper No. 00-02, 2000) <http://papers.ssrn.com/paper.taf?ABSTRACT_ID=224435> (finding endowment effects and ORPs are dampened in experimental corporate contexts, but not uniformly across demographic subgroups); Rachel Croson & Nancy Buchan, *Gender and Culture: International Experimental Evidence from Trust Games*, 89 AM. ECON. REV. 386, 389-90 (1999) (finding no significant difference in the amount of trust men and women exhibit, but finding that women reciprocate significantly more than men in the U.S., China, Japan, and Korea); Catherine C. Eckel & Philip J. Grossman, *The Relative Price of Fairness: Gender Differences in a Punishment Game*, 30 J. ECON. BEHAV. & ORG. 143, 151-55 (1996) (finding mixed evidence of women exhibiting ORPs more than men in related punishment games); Catherine C. Eckel & Philip J. Grossman, *Are Women Less Selfish Than Men?: Evidence from Dictator Experiments*, 108 ECON. J. 726, 730-33 (1998) (finding women exhibiting ORPs more than men in dictator games). *But see* Gary E. Bolton & Elena Katok, *An Experimental Test for Gender Differences in Beneficent Behavior*, 48 ECON. LETTERS 287, 289-91 (1995) (finding no evidence of women exhibiting ORPs more than men in dictator games).

[51] Bolton & Ockenfels, *supra* note 41, at 173-75; Fehr & Schmidt, *supra* note 41, at 825-28.

[52] Georg Kirchsteiger, *The Role of Envy in Ultimatum Games*, 25 J. ECON. BEHAV. & ORG. 373, 379-87 (1994) (providing theoretical models involving envy that can explain the observed behavior in ultimatum bargaining experiments); David

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other emotion, namely anger. In other words, one may exhibit a taste for justice or fairness because others will feel anger over injustice and that anger can lead to expressive and individually and socially costly acts (such as rejecting positive offers in ultimatum games).[53] This principle is illustrated with the following scenario: you want your partners and your agents to feel such anger over how others behave towards them to the extent their well-being is tied to yours. Thus, people who feel such anger provide a public good to some others so long as the people have a shared sense of justice. But, if your partners and your agents feel anger upon being treated unfairly, you will also suffer the wrath of their anger if you misbehave towards them.

If people feel anger when a divider violates a norm of equality and dividers expect others to experience such anger, then dividers, in their own self-interest, should not violate the norm of equality. Additionally, there is experimental evidence that people feel differently towards inequality that is randomly generated versus inequality that is the result of somebody choosing to make uneven offers.[54] Models incorporating social comparisons into people's utility functions can still fail to distinguish between these different sources of inequality.[55] Additionally, if the absence of equality was unexpected, the degree of anger experienced is greater; this is an example of an emotion that depends upon beliefs about behavior. Such belief-dependent emotions are formally captured by psychological game theory.[56]

The distinguishing and novel feature of psychological games is

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K. Levine, *Modeling Altruism and Spitefulness in Experiments*, 1 REV. ECON. DYNAMICS 593, 600-04 (1998) (offering a theoretical model with players having preferences that are linear in the money incomes of themselves and others that is consistent with results of experimental ultimatum games); Vai-Lam Mui, *The Economics of Envy*, 26 J. ECON. BEHAV. & ORG. 311, 317-31 (1995) (modeling how envy interacts with legal institutions to determine the level of innovation, retaliation, sabotage, and sharing).

[53] Thanks to Bob Cooter for making this observation and the following two points.

[54] Sally Blount, *When Social Outcomes Aren't Fair: The Effect of Causal Attributions on Preferences*, 63 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 131, 142-43 (1995) (discussing findings that experimental subjects do not reject inequality, so much as punish unfair strategic behavior).

[55] Bolton, *supra* note 41, at 1109-13 (providing a formal model of players making relative comparisons, but not differentiating a distaste for uneven allocations from a willingness to punish others who have behaved unfairly by proposing uneven offers).

[56] *See* John D. Geanakoplos et al., *Psychological Games and Sequential Rationality*, 1 GAMES & ECON. BEHAV. 60, 65, 70-74 (1989) (providing the original definitions of psychological games); Van Kolpin, *Equilibrium Refinement in Psychological*

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that emotional responses to strategic decisions are determined endogenously. Such emotional responses are determined in equilibrium in light of beliefs about strategic decisions. It helps to distinguish between two categories of emotions: emotions that depend on beliefs about strategic behavior and those that do not. Emotions that are independent of beliefs about strategic behavior can easily be incorporated into extensive form game trees by changing some (possibly several) player's terminal payoffs or into strategic form games by altering some (possibly several) player's payoffs. But, emotions that depend on beliefs about strategic behavior cannot be handled in such a manner if the beliefs that such emotions depend on are to correspond to strategic decisions endogenously determined in a game-theoretic equilibrium. If players' beliefs about appropriate strategic behavior can be arbitrary, then emotions that depend on such beliefs are functionally equivalent to emotions that are independent of beliefs. If players' beliefs over appropriate strategic behavior are not arbitrary, but must instead correspond to strategies actually chosen in equilibrium, then such emotions will not be functionally equivalent to emotions that are independent of beliefs about strategic behavior. The condition that players' beliefs about strategic behavior correspond to actual strategic behavior requires that players have rational expectations or fulfilled beliefs. Emotions can be in response to not only actions or outcomes, but also attributions or beliefs about intentions.

Consider the game depicted in Figure 1. This is a discrete version of the ultimatum games discussed above. In Figure 1, A's payoffs are the first number in each pair, while B's payoffs are the second number in each pair. In this game, A can either maintain the status quo or make a proposal to engage in some joint venture or transaction, that makes both A and B better off, but A to a larger degree than B. The unique subgame-perfect Nash equilibrium is for A to propose and for B to accept because B is nevertheless better off by accepting rather than rejecting the uneven division. As reflected in Figure 1, while B may threaten to reject this uneven offer, if there is common knowledge of payoffs and players' rationality, such a threat is not credible to A.[57]

Games, 4 GAMES & ECON. BEHAV. 218, 220-21, 229-31 (1992) (extending and refining psychological game theory).

[57] For a discussion of the subtleties of assuming common knowledge, see Peter H. Huang, *Still Preying on Strategic Reputation Models of Predation*, 3 GREEN BAG

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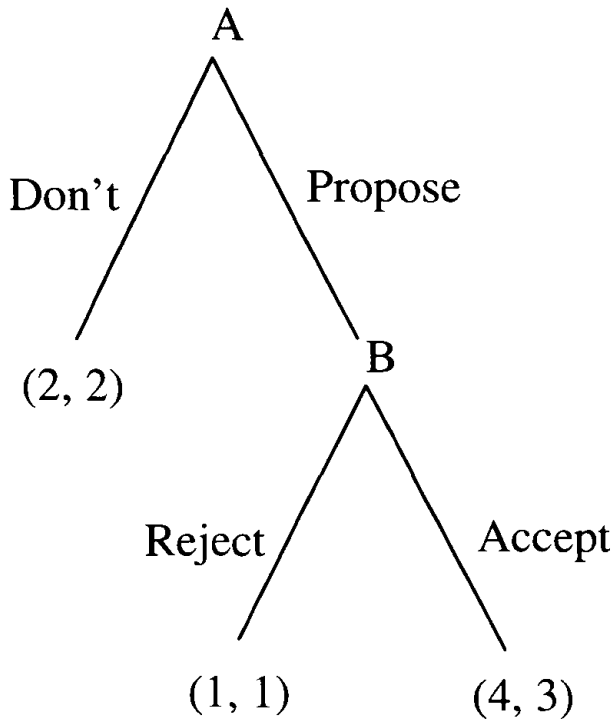
FIGURE 1: UNEMOTIONAL BARGAINING OVER PROPERTY RIGHTS



The game in Figure 1 is easily modified to capture the intuition that people (in particular, role B players) may get mad out of self-centered inequity aversion. Consider the modified version of this game in Figure 2. This game simply decreases B's payoff from accepting the inequitable offer from 3 to 3-M, where M represents how mad B is from accepting such an offer. Not surprisingly, if M is less than 2, B is mad but not enough to reject the offer. But, if M is larger than 2, B is mad enough to reject the offer. If M = 2, B is indifferent between accepting and rejecting the uneven split. Finally, M = 0 reproduces the no madness case. If M is common knowledge amongst the players, then A knows how mad B will get and can act accordingly. This method of incorporating anger or madness formulates emotions as a form of psychic cost that can then be incorporated into utilities. Emotions do not impair cognitive abilities in this framework. The amount of madness captured by the variable M is exogenous to the model and is also independent of players' beliefs. Thus, a drawback of this approach is the size of M is left unexplained. In

437, 439 (2000) (reviewing JOHN R. LOTT, JR., ARE PREDATORY COMMITMENTS CREDIBLE? WHO SHOULD THE COURTS BELIEVE? (1999)).

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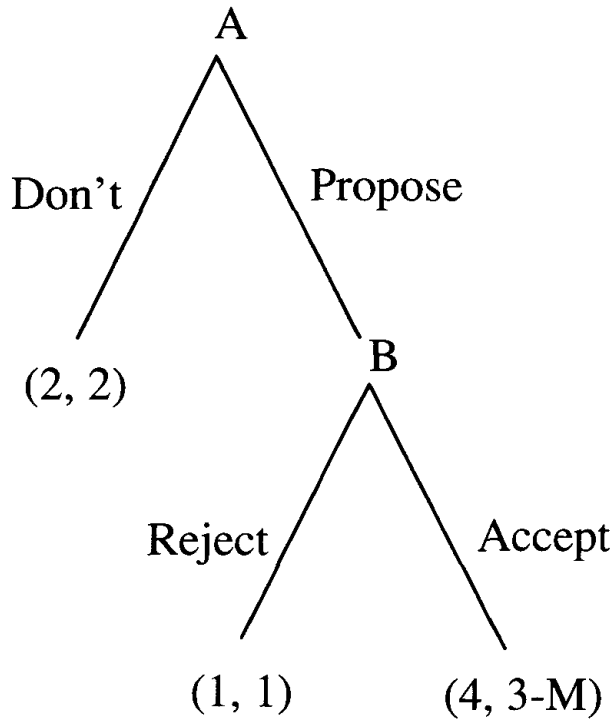
addition, there is no causal mechanism explaining how law can change M. For each fixed M, there is a unique game-theoretic equilibrium and thus, no possibility of moving among multiple equilibria.

FIGURE 2: ANGER IN BARGAINING OVER PROPERTY RIGHTS



II

ANGER AND SHAME THAT DEPEND ON BELIEFS

Psychological evidence suggests that how much anger one feels in a given situation may depend not just on outcomes, but also on attributions of intentions.[58] In other words, the same outcome can generate different levels of anger, depending on beliefs about the intentions of the other party. Thus, the utility that one feels in response to another's choice often depends on what other choices that other person could have made. In particular, if that other person had no choice, an unequal outcome might produce less anger than if they had many other choices.[59]

[58] Matthew Rabin, *Psychology and Economics*, 36 J. ECON. LITERATURE 11, 16-24 (1998) (discussing social preferences for fair allocations, reciprocity, and attribution).

[59] Blount, *supra* note 55, at 142-43 (discussing experimental findings that subjects punish unfair strategic behavior instead of reject inequality).

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A recent experiment demonstrates that identical offers in four mini-ultimatum games produce systematically different acceptance rates depending on the other choices given proposers.[60] In each of the four games, proposers must divide 10 points between themselves and responders. Proposers always faced two choices, the first always being to propose 8 for proposers and 2 for responders. Proposers' other choices were as follows: in game 1, an even split of 5; in game 2, 2 for proposers and 8 for responders; in game 3, 8 for proposers and 2 for responders (that is, no real choice for proposers); and finally, in game 4, 10 for proposers and 0 for responders. Rejection rates of the offer of 8 for proposers and 2 for responders were 44.4% in game 1, 26.7% in game 2, 18% in game 3, and 8.9% in game 4.[61] In addition, the percentage of proposers choosing to make the offer of 8 for proposers and 2 for responders and the acceptance rates of responders to such proposals both monotonically increase from game 1 to game 2 to game 4 (remember there is no real choice in game 3 for proposers).[62]

These results demonstrate that players care about not only the distribution of material outcomes, but also the other alternatives given other players. While these results could be just choice-set effects, they might show that other players' intentions matter. This interpretation is plausible upon realizing that whether a given action is attributed as kind or unkind depends on the range of other possible actions that were not chosen, beliefs over what actions would or should be taken, and social norms.[63]

The idea that intentions, not just outcomes, matter is of course a familiar one in law. Intentions often distinguish between whether the same action is treated as a crime or a tort, and if a tort, whether it should involve punitive damages. Similar distinctions occur in criminal law in terms of the requisite mental state or culpability for each material element of an offense.[64] Another example of where intentions matter in criminal law is the same

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[60] ARMIN FALK ET AL., ON THE NATURE OF FAIR BEHAVIOR (Institute for Empirical Research in Economics, University of Zurich Working Paper No. 17, 1999) <http://papers.ssrn.com/paper.taf?ABSTRACT_ID=203289>.

[61] *Id.* at 7 fig.2.

[62] *Id.* at 8 fig.3.

[63] Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, 14 J. ECON. PERSP. (forthcoming 2000) (demonstrating the powerful implications of reciprocity for labor market interactions, contributions to public goods, and enforcing incomplete contracts and social norms).

[64] MODEL PENAL CODE § 2.02(1)-(2).

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action of killing another human being has different legal consequences depending on whether that act is committed with premeditation or in self-defense.[65] Intentions are also related to a notion of reciprocity, in which people punish unkind actions and reward kind actions.[66]

In particular, anger can also be induced by beliefs that other people should follow certain social fairness norms when they do not do so. Recently, legal scholars have stressed the importance of social norms in affecting behavior.[67] One interpretation of norms is that they are beliefs about what should or will be done in certain interactions.[68] This section builds on that view by suggesting that someone not complying with certain social norms can trigger anger in others.

This section considers two particular fairness norms, equality and equity. An equality fairness norm expresses a belief that, other things being equal, a fair division involves no party to a bargain receiving a higher or lower payoff than any other party. In other words, a fair outcome involves payoffs that are equal across parties. Violating an equality norm can result in anger or disappointment, which can in turn cause bargaining impasses or breakdowns and noncompliance with mutually agreed upon resolutions or joint ventures. Many economic and psychological experiments reveal that people have deep-rooted beliefs in equality norms.[69]

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[65] Peter H. Huang, *Law and Economics in Xena, Warrior Princess*, 2 WHOOSH! (1996) (visited Oct. 2, 2000) <http://whoosh.org/issue2/huang.html> (discussing the difference between pre-meditated killing versus killing in the heat of battle).

[66] Ernst Fehr & Simon Gächter, *Reciprocity and Economics: The Economic Implications of Homo Reciprocans*, 42 EUR. ECON. REV. 845 (1998) (demonstrating that reciprocity explains a diverse range of empirical phenomena).

[67] *See generally* Robert C. Ellickson, *Law and Economics Discovers Social Norms*, 27 J. LEGAL STUD. 537, 538 (1998); Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 340 (1997) (defining social norms); Cass R. Sunstein, *Social Norms and Social Roles*, *in* FREE MARKETS AND SOCIAL JUSTICE 32-69 (1997).

[68] Peter H. Huang & Ho-Mou Wu, *More Order without More Law: A Theory of Social Norms and Organizational Cultures*, 10 J.L. ECON. & ORG. 390, 395 (1994) (viewing social norms as beliefs about strategic behavior); David M. Kreps, *Corporate Culture and Economic Theory*, *in* PERSPECTIVES ON POSITIVE POLITICAL ECONOMY 90 (James E. Alt & Kenneth A. Shepsle eds., 1990) (viewing corporate culture as providing focal points for behavior in response to unforeseen contingencies).

[69] Elizabeth Hoffman & Matthew L. Spitzer, *Entitlements, Rights, and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice*, 14 J. LEGAL STUD. 259, 275 (1985) (providing experimental evidence that in certain bargaining games, nearly equal division often prevailed over unequal division); Daniel

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Recall that the distinguishing feature of a psychological game is that at least one player's utility depends not only directly on the strategies that players choose, but also *directly* on some beliefs about appropriate or expected strategic behavior. A psychological equilibrium is a set of strategies and beliefs about strategic behavior that satisfy two conditions. First, the strategies are best responses to each other. Second, the beliefs about strategic behavior correspond to actual strategic behavior. The first requirement is the defining property of a non-psychological (Nash) equilibrium.[70] The second is a condition that beliefs about strategic behavior are correct. To further explore people's deep-rooted beliefs about equality norms, this section applies the structure of psychological games to the setting of bargaining over property rights to illustrate how emotions can affect bargaining over property rights.

Psychological games have been applied in previous work to model decisions concerning whether to sue, settle, or proceed to trial.[71] Psychological games can incorporate fairness notions into models of economic phenomena like pricing decisions by a monopolist and welfare economics.[72] Psychological games also

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Kahneman et al., *Fairness and the Assumptions of Economics*, 59 J. BUS. S285, S288-98 (1986) (reporting on three experiments demonstrating the willingness to enforce fairness is common); Daniel Kahneman et al., *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 AM. ECON. REV. 728, 729-37 (1986) (reporting on a survey of community standards of fairness); Alvin E. Roth, *Laboratory Experimentation in Economics: A Methodological Overview*, 98 ECON. J. 974, 984-91 (1988) (discussing experimental results that suggest fairness matters in bargaining); Vesna Prasnikar & Alvin E. Roth, *Considerations of Fairness and Strategy: Experimental Data from Sequential Games* 107 Q. J. ECON. 865, 886 (1992) (summarizing experimental evidence that ideas about fairness play important roles in people's expectations and/or preferences); Alvin E. Roth et al., *Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study*, 81 AM. ECON. REV. 1068, 1070-71 (1991) (reporting on differences of bargaining and market experiments across cultures).

[70] John F. Nash, Jr., *Equilibrium Points in N-Person Games*, 36 PROC. NAT'L ACAD. SCI. 48, 49 (1950) (defining and proving existence of a Nash equilibrium).

[71] Peter H. Huang & Ho-Mou Wu, *Emotional Responses in Litigation*, 12 INT'L REV. L. & ECON. 31 (1992) (providing formal models of the role of psychological and non-psychological emotions in suit, settlement, and trial decisions); *see also* WILLIAM G. MORRISON & GLENN D. FELTHAM, GETTING ANGRY AND GETTING EVEN: EMOTIONAL BEHAVIOR AND CIVIL DISPUTES (Wilfrid Laurier University, Economics Working Paper Series 9600, 1977) (characterizing emotions as non-psychological "reflex" decisions to go to trial instead of settle).

[72] Matthew Rabin, *Incorporating Fairness into Game Theory and Economics*, 83 AM. ECON. REV. 1281, 1284-90, 1292-96 (1993) (developing normal or strategic form psychological game-theoretic models involving fairness and applying them to monopoly pricing and welfare economics).

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demonstrate how guilt can mitigate the problem of malfeasance in principal-agent relationships.[73] Experimental evidence is consistent with a psychological game-theoretic model of guilt.[74] A general theory of sequential reciprocity that is based on psychological games has applications to ultimatum games and sequential prisoners' dilemmas.[75] A single formal theory of reciprocity based on psychological games explains the stylized findings in many experimental games, including ultimatum games, dictator games, market games, and public goods games.[76]

In psychological games, the impact of anger on payoffs depends on endogenously determined equilibrium beliefs about behavior. The less likely that a party believes that it will be offered the smaller part of an unequal division, the more anger that party will suffer if such an offer is made. Conversely, the more likely a party believes that it will be offered the lesser share of an unequal division, the less anger it will suffer if such an offer is made. In contrast with the anger in the game shown in Figure 2, anger that depends upon beliefs about behavior, although lowering the payoff to the party that receives the smaller portion, does not necessarily reduce it sufficiently to induce that party to reject all such offers. Anger that depends upon beliefs about behavior thus captures the phenomenon of a party not always accepting nor always rejecting a given offer, but instead choosing to accept such offers sometimes and reject them at other times, depending on their beliefs. This variation in behavior is due to the multiplicity of self-confirming beliefs about what is to or should be offered.

Consider Figure 3, depicting the simplest psychological game-theoretic model of the above situation, involving the potential for anger on the part of a player receiving the smaller share of some monetary stakes.[77] In each pair of payoffs in Figure 3, the first

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[73] Huang & Wu, *supra* note 69, at 392-401 (providing formal models of the role that guilt can play in maintaining social order and controlling corruption in principal-agent-supervisor relationships).

[74] Martin Dufwenberg & Uri Gneezy, *Efficiency, Reciprocity, and Expectations in an Experimental Game* (visited Oct. 2, 2000) <http://greywww.kub.nl:2080/greyfiles/center/1996/79.html>.

[75] Martin Dufwenberg & Georg Kirchsteiger, *A Theory of Sequential Reciprocity* (visited Oct. 2, 2000) <http://greywww.kub.nl:2080/greyfiles/center/1998/37.html>.

[76] Armin Falk & Urs Fischbacher, *A Theory of Reciprocity* (visited Oct. 2, 2000) <http://www.iew.unizh.ch/grp/fehr/wp-fehr.html.>.

[77] More complicated bargaining games include ones where people get angry when they receive an unequal offer as opposed to when they are deciding whether to ac-

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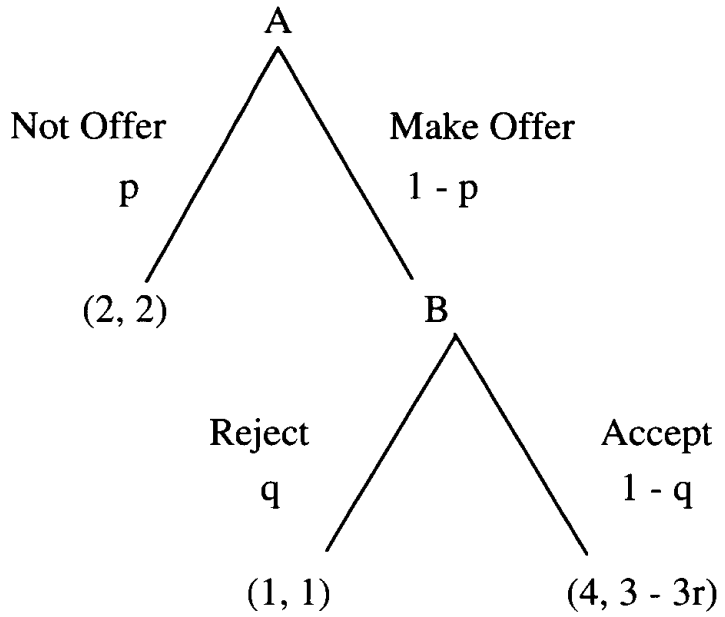
FIGURE 3: ANGER THAT DEPENDS ON BELIEFS ABOUT AN EQUALITY NORM



Note: r = B's Expectation of p

number is A's payoff, while the second number is B's payoff. The payoffs are in terms of individual utilities, inclusive of emotional considerations. If A does not make an offer, suppose the status quo payoffs are 2 for A and 2 for B. If A makes a skewed offer to B and B rejects the offer, suppose that both A's payoff and B's payoff decrease from 2 to 1 due to the foregone opportunity cost of resources used in bargaining. If A makes a skewed offer to B and B accepts A's offer, suppose that material payoffs are 4 for A and 3 for B. Let p denote the probability that A does not make a skewed offer. Then, (1 - p) is the probability that A makes the skewed offer. Let q denote the probability that B rejects the offer. Then, (1 - q) is the probability that B accepts A's offer. Let r denote B's expectation of p. For this to be a psychological game, B's non-material and total payoffs from accepting a skewed offer depend on r, B's beliefs over A not making the skewed offer. For simplicity, assume this dependence is

cept such an offer. Also, instead of the simple take-it-or-leave-it situation in Figure 3, a more complicated bargaining scenario would have the offeror choose from a range of possible offers. Both of these possible complications are important, but the point of Figure 3 is to exemplify the psychological game-theoretic approach by considering the simplest bargaining environment.

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linear.[78] In particular, note B will reject the skewed offer, whenever 1 is larger than (3 - 3r), or r is larger than 2/3. Similarly, for B to accept A's offer, (3 - 3r) must be larger than 1, or 2/3 must be greater than r.

This game has three psychological equilibria that are subgame-perfect, namely two pure ones, (p, q) = (1, 1) and (p, q) = (0, 0) and a mixed one (p, q) = (2/3, 2/3).

In the first equilibrium, B expects A will not make a skewed offer, thus were A to make such a skewed offer, the belief-dependent anger, r, suffered by B would be big enough to cause B to reject the offer. In a psychological equilibrium, B has rational expectations, meaning that r equals p, or r equals 1. B's payoff for accepting the offer is reduced to 3 - 3(1), or 0; while by assumption, B's payoff for rejecting A's offer is 1. So, B would choose to reject such a skewed offer, and thus A will not make such an offer in the first place.

In the second equilibrium, B expects A to make the skewed offer, thus when A makes that skewed offer, B does not feel any anger towards A for doing so. In the equilibrium, r has to equal p, equating r to 0. B's payoff for accepting the skewed offer increases to an unemotional level of 3; while B's payoff for rejecting A's offer is, by assumption, 1. So, B accepts the skewed offer and A chooses to make the skewed offer.

In the third, mixed strategy equilibrium, A makes the skewed offer 2/3 of the time and B rationally expects this, while B accepts the skewed offer 2/3 of the time.[79]

This example demonstrates how beliefs about strategic behavior determine which one of three possible equilibria is realized. Had B expected A to propose an unequal division, B would accept such an offer, and so, A would choose to make such an offer. On the other hand, had A realized that B had not expected an unequal offer, then A would not have made a skewed offer. Therefore, this psychological game highlights the important role of beliefs over whether a particular fairness norm should apply in this particular bargaining situation. In a negotiation between "equals," for example, B's may reject skewed offers and there-

[78] If there is a nonlinear relationship between anger and expectations about behavior, the multiplicity of equilibria is even more likely and less surprising.

[79] For A to be indifferent between making and not making a skewed offer, it must be that $2 = q + 4(1 - q)$, or $q = 2/3$. For B to indifferent between rejecting and accepting a skewed offer, it must be that $1 = (3 - 3r)$, or $r = 2/3$. Because B is required to have rational expectations in a psychological equilibrium, $p = r = 2/3$.

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fore A's may not make skewed offers. In contrast, A is likely to make a skewed offer when A is in a powerful position relative to B or alternatively when B is known to be likely to expect and accept skewed offers.

The multiplicity of equilibria also provides a role for law to serve as a focal point in selecting among multiple equilibria.[80] But, whether the law actually coordinates expectations depends on such other factors as whether the law is perceived to be just. For example, civil disobedience of a law will often occur if that law is perceived to be morally wrong.[81] An open question in general is under what conditions do emotions that depend on beliefs arise? In the context of property rights bargaining, when is there belief-dependent anger? In particular, suppose that in Figure 3 that A must decide whether to be an adverse possessor on B's land (corresponding to making a skewed offer) or not (corresponding to not making a skewed offer).

The legal doctrine of adverse possession aptly illustrates how a sense of entitlement is not always part of legal possession.[82] Initially, an adverse possessor has no legal entitlement to the land they wish to possess. However, if the adverse possessor satisfies certain requirements, the adverse possessor becomes the legal owner of that land.[83] Significantly, none of these requirements concern the adverse possessor's intentions. Yet, there is empirical evidence that judges and juries view trespassers as never becoming legally or morally entitled to adversely possessed land.[84]

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[80] Richard H. McAdams, *A Focal Point Theory of Expressive Law*, 86 VA. L. REV. (forthcoming 2000) (suggesting also that law can provide focal points for coordination of individual behavior).

[81] Huang & Wu, *supra* note 69, at 404 (suggesting that laws that are perceived to be fair and just become internalized as social norms that create decentralized order in societies).

[82] Thanks to Carol Rose for suggesting this example.

[83] LAWRENCE M. FRIEDMAN, A HISTORY OF AMERICAN LAW 413-14 (2d ed. 1985) (describing the doctrine of adverse possession).

[84] R.H. Helmholz, *Adverse Possession and Subjective Intent*, 61 WASH. U. L.Q. 331, 337-49, 358 (1983) (finding in a survey of cases decided between 1966 and 1983 that courts are likelier to apply the rule of adverse possession when the initial trespass was not intended). *But see* Roger A. Cunningham, *Adverse Possession and Subjective Intent: A Reply to Professor Helmholz*, 64 WASH. U. L.Q. 1, 23-37 (1986) (debating the exact role subjective intent has played in decided adverse possession cases); R.H. Helmholz, *More on Subjective Intent: A Response to Professor Cunningham*, 64 WASH. U. L.Q. 65, 71-75, 82-97 (1986) (same); Roger A. Cunningham, *More on Adverse Possession: A Rejoinder to Professor Helmholz*, 64 WASH. U. L.Q. 1167, 1172-83 (1986) (same).

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Thus, whether an individual gets angry if property is taken away or not given to her can depend on many subjective factors.

Anger that depends on beliefs about strategic behavior can also arise in response to violations of another fairness norm, namely that of equity. This Article will now consider the influence of the fairness norm of equity.

The equity fairness norm expresses a belief that, ceteris paribus, an equitable division occurs when parties receive payoffs that are proportional to their contribution, knowledge, or status quo payoffs. Studies by economists and social psychologists offer empirical support for the proposition that people care about equity in relationships.[85] Social psychologists have suggested a general theory of equity in human relationships.[86] This theory has profound implications for welfare economics and such macroeconomic phenomena as wage stickiness and internal labor markets.[87] Compliance with or violations of equity norms is illustrated by modifying Figure 3.

Consider the psychological game in Figure 4, involving anger if a norm of equity is violated. In each pair of payoffs in Figure 4, the first number is A's payoff, while the second number is B's payoff. The payoffs are in terms of individual utilities, inclusive of emotional considerations. If A does not make an offer, suppose the status quo payoffs are 1 for A and 4 for B. Assume that B considers this to be equitable. If A makes an offer to B and B rejects the offer, suppose that both A's payoff and B's payoffs decrease by 1 due to the foregone opportunity cost of resources used in bargaining. Suppose that A can make an offer to B, which if B accepts, results in material payoffs of 5 for A and 5 for B. Let p denote the probability that A does not make such an offer. Then, (1 - p) is the probability that A offers B such an offer. Let q be the probability that B rejects the offer. Then, (1 - q) is the probability that B accepts A's offer. Let r denote B's expectation of p. For this to be a psychological game, B's non-

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[85] C. Alan Garner, *Equity in Economic Relationships: Towards a Positive Theory*, 7 J. ECON. BEHAV. & ORG. 253, 260-62 (1986) (discussing experimental findings by social psychologists and survey evidence compiled by economists showing that equity matters).

[86] *See generally* ELAINE WALSTER ET AL., EQUITY: THEORY AND RESEARCH (1978) (providing the basic principles of equity theory).

[87] Garner, *supra* note 86, at 255-59, 261-62 (describing how equity theory explains productivity variation by workers in response to perceived inequity and providing microeconomic foundations for macroeconomics).

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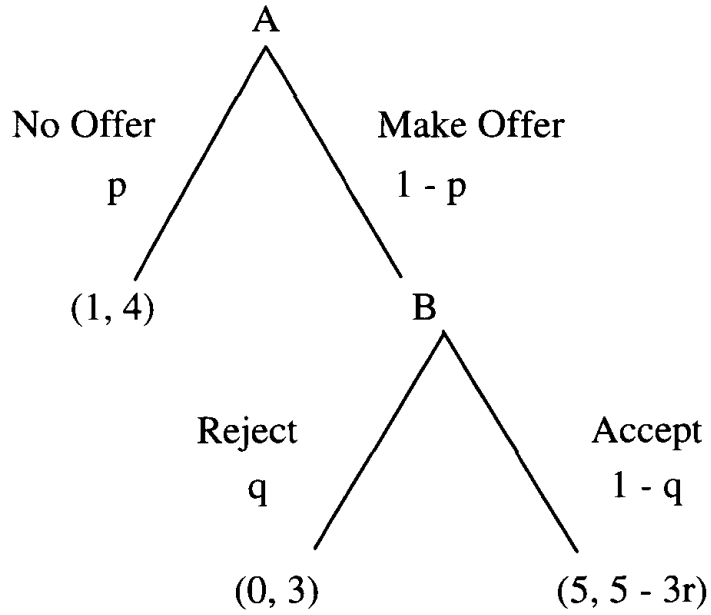
material and total payoffs from accepting such an offer depend on r, B's beliefs over A not making such an offer. For simplicity, assume this dependence is linear. In particular, note B rejects such an offer, whenever 3 is larger than (5 - 3r) or r is larger than 2/3. Similarly, in order for B to accept A's offer, (5 - 3r) must be larger than 3, or 2/3 must be greater than r.

FIGURE 4: ANGER THAT DEPENDS ON BELIEFS ABOUT AN EQUITY NORM



Note: r = B's Expectation of p

This psychological game has three psychological equilibria that are subgame-perfect, namely two pure equilibria, (p, q) = (1, 1) and (p, q) = (0, 0) and a mixed equilibrium (p, q) = (2/3, 4/5).

In the first equilibrium, B expects A not to make B an inequitable offer; thus, were A to make the inequitable offer, B experiences belief-dependent anger great enough to cause B to reject such an offer. Because in a psychological equilibrium, expectations are rational, r = p and so, r = 1. B's payoff from accepting the offer is 5 - 3(1), or 2; while, B's payoff for rejecting A's offer is 3. Hence, B would reject A's offer were A to make one, and so, A will not make such an inequitable offer in the first place.

In the second equilibrium, B expects A to make B an inequitable offer. Thus, if A makes an inequitable offer, B experiences no anger. In equilibrium r = p, or r = 0. B's payoff from accepting such an offer increases to an unemotional level of 5;

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while, B's payoff for rejecting such an offer is assumed to be 3. Thus, B would accept such an inequitable offer were A to make one, and so, A makes such an offer.

In the third, mixed strategy equilibrium, A makes the skewed offer 2/3 of the time and B rationally expects this. B accepts the skewed offer 4/5 of the time.[88]

This example demonstrates how beliefs over choices determine which of the three equilibria is realized. If B expected A to make an inequitable offer, then B would have accepted such an offer, and so, A would choose to make such an offer. On the other hand, if B had not expected an inequitable offer, then B would reject such an offer, and thus, A would not make such an offer. So, this psychological game highlights an important role that beliefs over whether a norm of equity does or should apply to a specific bargaining situation can play in selecting among multiple equilibrium outcomes.

Which of the competing norms, that of equality or that of equity, prevails in a given situation depends on the context and the players. A possible justification for an unequal division might be B investing four times the resources or effort levels compared to A. In this case, a norm of equity favors a four to one division in favor of B. Thus, this psychological game highlights the important role of beliefs over whether the social norm of equality or equity should prevail in determining behavior. This psychological game-theoretic model also captures the phenomenon of an individual not always accepting nor always rejecting a particular offer, but instead choosing to accept such offers sometimes and reject them at other times. This variation in behavior is caused by the multiplicity of self-confirming beliefs about what is offered. For example, an equality norm instead of an equity norm can seem more appropriate if proposers are randomly determined than when proposers earned that role in some non-random manner. Experimental evidence finds that uneven division is offered less frequently and rejected more frequently when the role of proposer is randomly assigned than when that role is based upon better performance on a quiz or in another game.[89]

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[88] For A to be indifferent between making and not making a skewed offer, it must be that $1 = 0q + 5(1 - q)$, or $q = 4/5$. For B to indifferent between rejecting and accepting a skewed offer, it must be that $3 = (5 - 3r)$, or $r = 2/3$. Because B is required to have rational expectations in a psychological equilibrium, $p = r = 2/3$.

[89] Hoffman & Spitzer, *supra* note 70, at 276 tbl.1, 280-81 (reporting this experimental finding).

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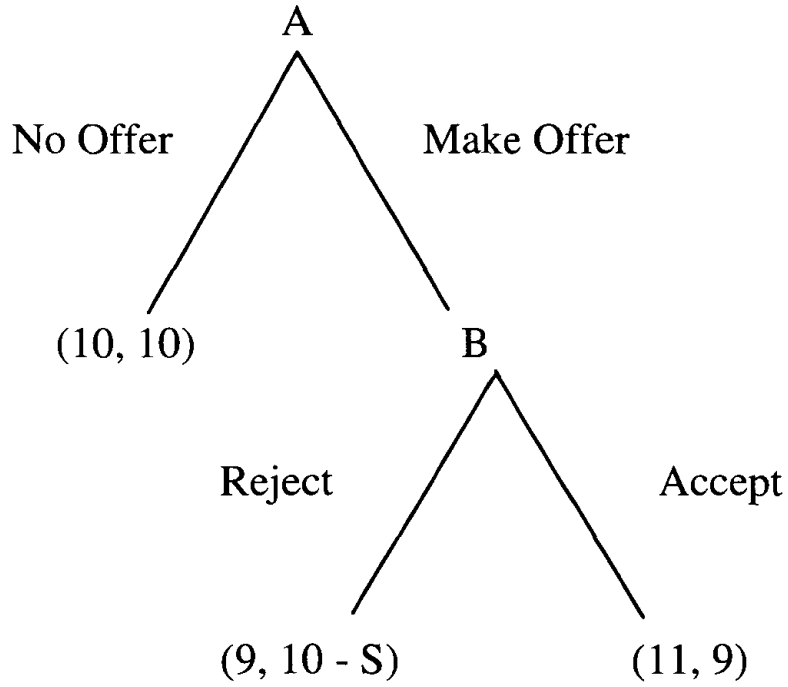
This suggests that the perceived legitimacy of authority can play a significant role in determining the behavior of both the authority and those subject to authority.[90]

Next, we analyze how shame can influence behavior in ultimatum games.[91] Consider the non-psychological game in Figure 5.

FIGURE 5: SHAME THAT IS INDEPENDENT OF BELIEFS



In each pair of payoffs in Figure 5, the first number is A's payoff, while the second number is B's payoff. The payoffs are in

[90] *See* TOM R. TYLER, WHY PEOPLE OBEY THE LAW 30-39 (1990) (summarizing and discussing studies relating compliance with the law to feelings of legitimacy and morality of the law); Tom R. Tyler & Gregory Mitchell, *Legitimacy and the Empowerment of Discretionary Legal Authority: The United States Supreme Court and Abortion Rights*, 43 DUKE L.J. 703, 783-84 (1994) (discussing the psychological basis of Supreme Court legitimacy); Tom R. Tyler, *Compliance with Intellectual Property Laws: A Psychological Perspective*, 29 N.Y.U. J. INT'L L. & POL. 219, 229-30 (1996-1997) (discussing the importance of legitimacy to compliance); Tom R. Tyler, *Procedural Fairness and Compliance with the Law*, 133 SWISS J. ECON. & STAT. 219, 224-25 (1997) (reporting on citizen interview studies finding that voluntary compliance with the law is linked to judgments regarding the legitimacy of authorities and morality of the law).

[91] *See* Toni M. Massaro, *Show (Some) Emotions, in* BANDES, *supra* note 21, at 80, 84-89 (pointing out that shame is a complex emotion that varies across contexts, cultures, history, and individuals); *see also* Toni M. Massaro, *The Meanings of Shame: Implications for Legal Reform*, 3 PSYCHOL. PUB. POL'Y & L. 645, 654-65 (1997) (discussing various psychological meanings of shame and the complexity of behavioral responses to shame).

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terms of individual utilities, inclusive of emotional considerations. Suppose the status quo payoffs are 10 for A and 10 for B if A does not make the offer to B. If A makes the offer to B, and B accepts this offer, A's payoff increases from 10 to 11. Suppose that B's payoff decreases from 10 to 9 by accepting the offer. A possible scenario is that B has many other property rights already and indeed that is why A made this offer to B, because of B's apparent expertise in managing all these property rights. Yet, it is precisely due to B's many existing property rights that B may not want another property right from A. For example, B may not have the additional resources necessary to fully benefit from this new property right so that accepting this property right means B has to divert resources from B's existing property rights to deal with the property right in question. Another possible reason why B can be worse off is that B has to deal with the higher level of influence costs generated by this newly acquired property right.[92] Both of the above scenarios provide reasons for why B's payoff decreases, despite B acquiring an otherwise valuable property right.

If A makes the offer to B and B rejects the offer, then A's payoff decreases from 10 to 9, due to the foregone opportunity cost of not making this offer to some other party during the negotiation process with B. As for B, choosing to reject this new property right is different from never having to deal with it. Suppose the shame that B experiences from rejecting A's offer is independent of beliefs. Such shame can be captured by a constant amount S. If S is less than 1, B does not suffer enough shame for B to accept A's offer. If S is larger than 1, the amount of shame that B would suffer from rejecting A's offer is large enough to make B accept A's offer. Finally, if S = 1, then B is indifferent between rejecting and accepting A's offer. If the variable S is common knowledge amongst the players, then A knows how much shame B will feel and can act accordingly. This approach to modeling shame captures the idea that B suffers shame simply because B knows that A observes what B does.

But, the amount of shame that an individual named A experiences often depends on A's beliefs about another's beliefs about A's actions. For example, consider the question of whether men

[92] PAUL MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION AND MANAGEMENT 192-94 (1992) (defining influence costs and providing examples of their importance).

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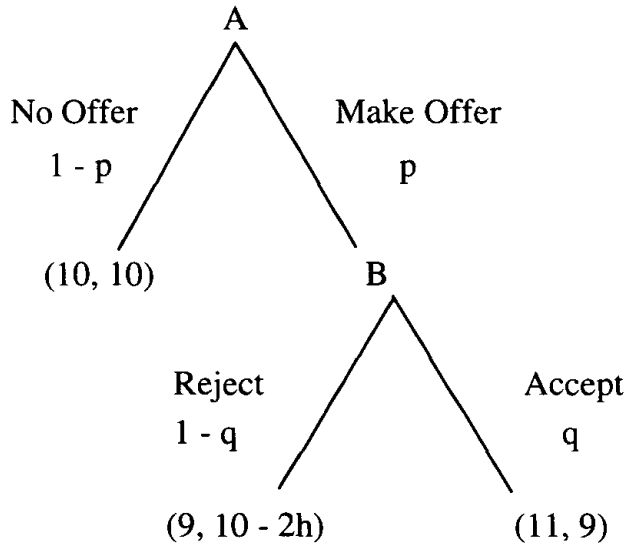
and women should share a restaurant bill on a date. Imagine that a particular man offers to split a check. The more that he believed that she believed that he was paying, the more ashamed he would feel. In the extreme case, if the woman expected with probability one (that is, was confident) that the man was paying and said so upon his offer to go "dutch," the man would feel maximal shame. Conversely, the less that he believed that she believed that he was paying, the less ashamed he would feel. In the extreme case, if she expected with probability one (that is, was confident) that they were going "dutch" and said so upon his offer to do so, the man would feel no shame.

Another example of shame that depends on beliefs is provided by a study of thirty families and their three-year old children.[93] The children exhibited significantly more shame when they failed easy tasks than when they failed difficult ones. A well-known developmental and clinical psychologist has constructed a cognitive attribution model of shame that is based on the general proposition that shame is the consequence of the self's failure in regard to a goal, standard, or rule.[94]

Consider shame that depends on such beliefs over beliefs

FIGURE 6: SHAME THAT DEPENDS ON BELIEFS



Note: h = B's Expectation of A's Expectation of q

[93] Michael Lewis et al., *Differences in Shame and Pride as a Function of Children's Gender and Task Difficulty*, 63 CHILD DEVELOPMENT 630 (1992) (reporting these findings).

[94] MICHAEL LEWIS, SHAME: THE EXPOSED SELF 64-76 (1992) (presenting this model).

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about strategic behavior in bargaining over property rights. Consider the psychological game in Figure 6 that modifies the non-psychological game in Figure 5 by making shame depend on endogenous beliefs.

Let p be the probability that A makes a particular offer to B. Then, (1 – p) denotes the probability that A does not make such an offer to B. Let q be the probability that B accepts A's offer. Then, (1 – q) is the probability that B rejects A's offer. Finally, let h denote B's expectation of A's expectation of q. For this to be a psychological game, B's non-material and total payoffs from accepting A's offer depend on h, B's beliefs over A's beliefs over B accepting the offer. For simplicity, assume this dependence is linear in this second-order belief variable. Thus, the difference between Figure 5 and Figure 6 is that in Figure 5 shame is an exogenous constant amount S, while in Figure 6 shame is a variable that depends on endogenously determined equilibrium beliefs, 2h. In other words, 2h in Figure 6 replaces the S in Figure 5.

Thus, B's payoff from rejecting the offer depends on h, B's beliefs about A's beliefs about q. Notice that B's beliefs over A's beliefs over B's decision can be interpreted as B's perception of how legitimate A believes A's offer is. The particular specification of B's payoff to rejecting A's offer in Figure 6 is such that the more that B expected A expected B to accept A's offer, the more shame B suffers from rejecting A's offer. In other words, the greater that h is, the greater the amount of shame B feels from rejecting A's offer is.

This game has three psychological equilibria that are subgame-perfect, namely two pure ones, (p,q)=(0,0) and (p,q)=(1,1) and a mixed one (p,q)=(10/19, 1/2).

In the first equilibrium, B expects that A expects B to reject A's offer (this is because an equilibrium requires that h = q and q = 0). Thus, were A to make this offer, B suffers no belief-dependent shame from rejecting A's offer. Formally, B's payoff for rejecting A's offer is just 10, while B's payoff for accepting A's offer is 9. Thus, B will reject A's offer if A makes it. This means that A's best response is to not make the offer. In other words, p = 0 is the best response to q = 0. Conversely, if p = 0, B does not get an opportunity to actually make a decision.

In the second equilibrium, B expects that A expects B to accept A's offer (this is because an equilibrium requires that h = q and q = 1). Thus, if A makes the offer, the belief-dependent

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shame that B suffers from rejecting is great enough to cause B to accept A's offer. Formally, B's payoff from rejecting A's offer reduces to 8, while B's payoff from accepting A's offer is 9. This means that A's best response is to make the offer. So, if $q = 1$, then A's best response is $p = 1$. Conversely, if $p = 1$, then B's best response, when $h = 1$, is $q = 1$.

In the third, mixed strategy equilibrium, A makes the offer 10/19 of the time and B rationally expects this, while B accepts the offer 1/2 of the time and A rationally expects this.[95]

These equilibria demonstrate how beliefs over strategic decisions affect which one of the above three equilibria will occur. If B had expected to suffer shame from rejecting A's offer, then B would have accepted A's offer, and so, A would make such an offer to B. On the other hand, if B had not expected to suffer shame from rejecting A's offer, then B would reject such an offer, and thus, A would not make such an offer to B. So, whether shame exists or not has implications for which equilibrium outcome will occur. Finally, the mixed strategy equilibrium entails values of p and q such that A is indifferent between making and not making an offer to B and B is indifferent between rejecting and accepting that offer. Thus, this psychological game demonstrates how the desire to avoid shame can affect equilibrium behavior in bargaining over property rights.

In Figure 5, the size of shame S is unexplained. For each possible value of S, there is a unique non-psychological game-theoretic equilibrium. There is thus no possible role for law to play in selecting among multiple equilibria when S is fixed. In addition, there is no causal mechanism to explain how law can alter the magnitude of S. In contrast, in Figure 6, when $S = 2h$, there are three equilibria and law can help select which equilibrium realizes by affecting beliefs about what B should do. Thus, the causal mechanism that explains how law can alter the magnitude of shame is that law alters beliefs about B's expected behavior, in other words, social norms about B's behavior.

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[95] For A to be indifferent between making and not making the offer, it must be that $10 = 9(1-q) + 11q$, or $q = 1/2$. Because B is required to have rational expectations in a psychological equilibrium, $h = q = 1/2$. This means that B receives 9 from either accepting or rejecting A's offer because $10-2h = 9$ when $h = 1/2$. For B to be indifferent between rejecting and accepting A's offer, it must be that $10(1-p) = 9p$, or $p = 10/19$.

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III

APPLICATIONS, EXTENSIONS, AND LIMITATIONS

Part III of this Article explores how emotions affect commonly accepted explanations of negotiations over property rights. This part first reviews two versions of the Coase Theorem. This part then applies the Coase Theorem to two empirical contexts, in which parties bargain over property rights, and discusses how those results are altered when parties' emotions are factored into the bargaining process. This part also discusses the insights of this Article applied to the following specific bargaining settings: mergers or acquisitions and marriage or divorce. This part concludes with a consideration of the limitations and possible extensions of the analysis in this Article.

The most famous example of the law and economics approach is a proposition developed by economist Ronald H. Coase.[96] Coase received the 1991 Nobel Prize in Economics in part for this proposition.[97] Coase stated that "[i]t is always possible to modify by transactions on the market the initial legal delimitation of rights. And, of course, if such market transactions are costless, such a rearrangement of rights will always take place if it would lead to an increase in the value of production."[98] A version of this result is known as the Coase Theorem.[99] A statement of the Coase Theorem is that "[w]hen transaction costs are zero, an efficient use of resources results from private bargaining, regardless of the legal assignment of property rights."[100] This version of the Coase Theorem is an efficiency claim.[101] A related but stronger claim is that, regardless of the assignment of initial property rights, private bargaining results not only in an efficient outcome, but also in the same outcome. This version of the

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[96] *See* Robert C. Ellickson, *The Case for Coase and Against Coaseanism*, 99 YALE L.J. 611, 611 n.2 (1989) (observing that Coase's article, *The Problem of Social Cost*, *infra* note 99, is the single most cited legal article); Thomas S. Ulen, *Flogging a Dead Pig: Professor Posin on the Coase Theorem*, 38 WAYNE L. REV. 91, 91-92 (1991) (discussing the impact of the Coase theorem).

[97] *See* The Nobel Foundation (last modified June 18, 2000) <http://www.nobel.se/economics/laureates/1991/press.html> (describing the reasons the Royal Swedish Academy of Sciences awarded the 1991 Nobel Prize in Economics to Coase).

[98] Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960).

[99] GEORGE J. STIGLER, THE THEORY OF PRICE 113 (3d ed. 1966) (naming a version of Coase's insight as the Coase Theorem).

[100] COOTER & ULEN, *supra* note 4, at 85.

[101] Donald H. Regan, *The Problem of Social Cost Revisited*, 15 J.L. & ECON. 427 (1972) (referring to the first claim of the Coase Theorem as the "efficiency" thesis).

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Coase Theorem is an invariance claim.[102] Such a conclusion only holds under the restrictive assumption that there are no wealth effects.[103]

Many law students encounter some version of the Coase Theorem in their first-year courses on property, contracts, criminal law, or torts. Indeed, a seminal article in the field of law and economics argued that what distinguishes property from torts or criminal law is the choice between property rules versus liability rules versus inalienability rules and that the Coase Theorem helps guide the selection among those choices.[104]

The Coase Theorem has been the subject of many debates.[105] An interesting early debate focused on whether empirical and survey evidence refuted the Coase Theorem.[106] An eminent law and economics scholar found the lack of an explicit model of bargaining in the original Coase article troubling.[107] Still other scholars have commented on the Coase Theorem from other perspectives.[108] Numerous critiques of the Coase Theorem involve asymmetric information economics; long-run entry; imperfect competition; non-cooperative bargaining under complete infor-

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[102] Regan, *supra* note 102, at 427 (referring to the second claim of the Coase Theorem as the "invariance" thesis because it claims the result of private bargaining does not vary with the assignment of initial property rights).

[103] MILGROM & ROBERTS, *supra* note 92, at 35-38 (defining wealth effects and stating a version of the Coase Theorem when there are no wealth effects).

[104] Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1105-10, 1124-25 (1972) (distinguishing between property law and tort law in terms of the difference between property entitlements and liability entitlements and proposing that criminal law prevents converting property and inalienability rules into liability rules); *see also* Carol M. Rose, *The Shadow of the Cathedral*, 106 YALE L.J. 2175, 2178-83 (1997) (suggesting that such distinctions are blurred by the use of examples lurking in the shadows that drive the analysis).

[105] *See, e.g.*, KENNETH G. DAU-SCHMIDT & THOMAS S. ULEN, LAW AND ECONOMICS ANTHOLOGY 113-74 (1998) (providing overviews, notes and questions to some classic articles debating the Coase Theorem).

[106] Mark Kelman, *Consumption Theory, Production Theory, and Ideology in the Coase Theorem*, 52 S. CAL. L. REV. 669, 678-85 (1979) (criticizing the assumptions of the Coase Theorem). *But see* Matthew Spitzer & Elizabeth Hoffman, *A Reply to Consumption Theory, Production Theory, and Ideology in the Coase Theorem*, 53 S. CAL. L. REV. 1187, 1188-92, 1194-1208 (1980) (responding to Kelman's critique of the Coase Theorem).

[107] Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1, 14-24 (1982) (providing a discussion of bargaining and the Coase Theorem).

[108] *See, e.g.*, MILGROM & ROBERTS, *supra* note 92, at 293-306 (reconsidering the Coase Theorem by discussing bounded rationality, property rights that are ill-defined, inalienable, insecure, untradable, or unenforceable, and the ethics of private property).

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mation, one-sided incomplete information, and two-sided incomplete information; cooperative game theory; collective action; failures to satisfy convexity assumptions; departures from the neoclassical rational actor model; and prohibitive transactions costs.[109] The penultimate item from the above list with its focus on endowment effects due to loss aversion or status quo bias is related to a central theme of this conference, that is, new and critical approaches to law and economics.[110] Such insights have important consequences for the Coase Theorem.[111]

Significantly, Ellickson has questioned the underlying behavioral assumptions of neoclassical law and economics that people bargain over well-defined and enforceable property rights in the shadow of the law.[112] He found that in repeated games, people rely on informal social norms, not on formal law, to enforce property rights.[113]

In addition to Ellickson's field studies, asymmetric information models of strategic behavior formally demonstrate that ineffi-

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[109] Martin Zelder, *The Cost of Accosting Coase: A Reconciliatory Survey of Proofs and Disproofs of the Coase Theorem*, *in* COASEAN ECONOMICS: LAW AND ECONOMICS AND THE NEW INSTITUTIONAL ECONOMICS 65, 73-87 (Steven G. Medema ed., 1998) (discussing various criticisms of the Coase Theorem).

[110] *See, e.g.*, Elizabeth Hoffman & Matthew L. Spitzer, *Willingness to Pay vs. Willingness to Accept: Legal and Economic Implications*, 71 WASH. U. L.Q. 59, 87-91, 98-99 (1993) (explaining prospect theory and the endowment effect and their implications for the Coase Theorem); Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1483-85 (1998) (discussing the endowment effect, loss aversion, and the Coase Theorem); Daniel Kahneman et al., *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. POL. ECON. 1325, 1327 tbl.1, 1339-41 (1990) (summarizing empirical evidence of the endowment effect and its implications for the Coase Theorem); Daniel Kahneman et al., *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, J. ECON. PERSP., Winter 1991, at 193, 194-203 (discussing the endowment effect, status quo bias, loss aversion, and the differences between willingness to accept versus willingness to pay); Cass R. Sunstein, *Behavioral Law and Economics: A Progress Report*, 1 AM. L. & ECON. REV. 115, 119, 131-32 (1999) (discussing the impact of constructed preferences and loss aversion on the Coase Theorem).

[111] Ulen, *supra* note 44, at 516-17 (summarizing clearly the implications of quasi-rational economics for the Coase Theorem).

[112] Ellickson, *supra* note 68, at 538, 539-41 (explaining how more recent law and economics recognizes the importance of social norms); Ellickson, *supra* note 36, at 23, 24-26 (criticizing neoclassical law and economics for not incorporating social norms).

[113] *See* Robert D. Cooter, *Structural Adjudication and the New Law Merchant: A Model of Decentralized Law*, 14 INT'L REV. L. & ECON. 215, 226-27 (1994) (proposing that common law evolves toward efficiency precisely by raising efficient social norms to the status of laws and arguing convincingly that such a hypothesis is more satisfactory than evolutionary selective litigation models). *See generally* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES (1991).

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ciency is more often than not the result of bargaining.[114] Experimental tests of the Coase Theorem find that subjects reach efficient outcomes, but sometimes unevenly divide those outcomes between two and three players.[115] Similar findings result in larger groups of players.[116] The Coase Theorem even holds if experimental subjects bargain over monetary payments for drinking a distasteful liquid.[117] Further experimental tests of the Coase Theorem suggest that people are more likely to accept uneven divisions if they believe those with the right to a larger share earned that right.[118] Earning such a right can thus change beliefs over behavior as in psychological games. Experimental evidence supports the intuition that people in the real world are just as, if not even more, concerned with the fairness or equity of allocations of property rights than with the Pareto or Kaldor-Hicks efficiency of such allocations.[119]

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[114] Kenneth J. Arrow, *The Property Rights Doctrine and Demand Revelation under Incomplete Information*, *in* ECONOMICS AND HUMAN WELFARE 23, 29-31 (Michael Boskin ed., 1979) (demonstrating how bargaining under private information about preferences can produce inefficient outcomes); Joseph Farrell, *Information and the Coase Theorem*, J. ECON. PERSP., Fall 1987, at 113, 122-24 (showing that bargaining under private information complicates the Coase Theorem); William Samuelson, *A Comment on the Coase Theorem*, *in* GAME-THEORETIC MODELS OF BARGAINING 321, 321-24 (Alvin E. Roth ed., 1985) (discussing the Coase Theorem from the perspective of bargaining under incomplete information).

[115] Elizabeth Hoffman & Matthew L. Spitzer, *The Coase Theorem: Some Experimental Tests*, 25 J.L. & ECON. 73, 82 (1982) (reporting 89.5% of two- and three-person bargaining experiments resulted in efficient outcomes, but only sixty-two of those resulted in even division).

[116] Elizabeth Hoffman & Matthew L. Spitzer, *Experimental Tests of the Coase Theorem with Large Bargaining Groups*, 15 J. LEGAL STUD. 149, 158-59 tbl.3 (1986) (summarizing experimental results).

[117] Don L. Coursey et al., *Fear and Loathing in the Coase Theorem: Experimental Tests Involving Physical Discomfort*, 16 J. LEGAL STUD. 217, 227-30 (1987) (reporting on tests of the Coase Theorem involving a safe, but very bitter-tasting and unpleasant liquid).

[118] Hoffman & Spitzer, *supra* note 69, at 276 tbl.1, 280-81 (reporting and discussing experimental results for games exploring two methods for making players tolerate uneven division, namely earning the right to control the division versus winning that right in the simple game of skill known as Nim).

[119] Max H. Bazerman & Margaret A. Neale, *The Role of Fairness Considerations and Relationships in a Judgmental Perspective of Negotiation*, *in* BARRIERS TO CONFLICT RESOLUTION 86, 90-91 (Kenneth J. Arrow et al. eds., 1995); Steven J. Kachelmeier et al., *Fairness in Markets: A Laboratory Investigation*, 12 J. ECON. PSYCHOL. 447, 459 tbl.2, 461-62 (1991) (reporting and discussing eight laboratory experiments finding that fairness can affect market prices); Robert H. Mnookin & Lee Ross, *Introduction* to BARRIERS TO CONFLICT RESOLUTION 3, 11-13 (Kenneth J. Arrow et al. eds., 1995). *See generally* HOWARD RAIFFA, THE ART AND SCIENCE OF NEGOTIATION (1982).

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Although Coase said nothing about the division of surplus, the clever experiments described above provide general support for the efficiency aspect of the Coase Theorem. But, their very stylized nature raises the question of whether the same outcomes would occur in the real world with less controlled and more complicated situations.[120] However, real-world experiments designed and conducted for other purposes also provide a test of the Coase Theorem.[121]

The state of Illinois ran an experiment to determine if bonus payments to workers or their employers reduces the amount of time that unemployed workers remain on unemployment compensation.[122] Many workers and employers appeared to have acted inefficiently by not collecting their entitled bonuses.[123] In addition, workers participated more when bonuses were paid to them than when bonuses were paid to employers.[124] The results of this experiment conflict with the predictions of the Coase Theorem regarding efficiency of the outcome and invariance of the allocation of resources.[125]

Another real-world empirical study of twenty nuisance cases found that bargaining did not occur between the parties after judgment in any of the cases.[126] Most introductions to the Coase Theorem in the first year of law school property (and contract) law course suggest that such post-judgment bargaining does occur if transaction costs are low. One possible reaction is the court always awards the property right to the party that values it most. But, in the study, the parties' lawyers reported they did not believe there would have been any such bargaining had the court awarded the other side the judgment.[127] The lawyers identified two reasons for this lack of post-judgment bargaining.

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[120] John J. Donohue III, *Diverting the Coasean River: Incentive Schemes to Reduce Unemployment Spells*, 99 YALE L.J. 549, 552 (1989) (questioning the applicability to real-world conditions of experimental evidence supporting the Coase Theorem).

[121] *Id.* at 552-53 (describing this experiment).

[122] *Id.* at 553-56 (explaining more details of this experiment).

[123] *Id.* at 554, 572-73. *But see* Ellickson, *supra* note 96, at 616-21 (suggesting high transaction costs as the cause of not collecting bonuses).

[124] Donahue, *supra* note 120, at 554, 571-572. *But see* Ellickson, *supra* note 96, at 621 (suggesting differential transaction costs explain differential participation rates).

[125] Donahue, *supra* note 120, at 553, 569-91 (discussing the results of this experiment).

[126] Ward Farnsworth, *Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral*, 66 U. CHI. L. REV. 373, 384 (1999) (reporting this finding).

[127] *Id.* (reporting this finding).

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First, acrimony toward the other party was an important reason for the lack of such bargaining.[128] Such acrimony can be the result of anger generated during the adversarial litigation process. Second, the parties viewed the dispute to be about principle, not about money and stated they would feel ashamed to receive or pay compensation for property rights they felt were incommensurable with money.[129]

Ward Farnsworth suggests that economists build more contextual models that capture such phenomena.[130] This paper demonstrates that including emotions in economic models does this. One can see how emotions that are independent of strategic beliefs change the standard analysis in a straightforward way.

The usual story hypothesizes that if a court assigns a property right to a party who values it less than another party, there is a range of monetary payments that will make both parties better off if the property right is exchanged for an amount of money in that range. Clearly, if the party the court awarded the property right suffers fixed amounts of negative utility by receiving money from the other party due to anger and shame, then if those amounts are large enough, the first party can be worse off than if it kept the property right. Similarly, if the party paying money suffers fixed amounts of negative utility due to anger and shame from doing so, then if those amounts are large enough, that party can be worse off than if that party did not acquire the property right by post-judgment bargaining. In essence, the range of mutually acceptable monetary payments disappears if there are large enough negative emotions from the litigation process itself. In addition, the idea that post-judgment bargaining is analogous to making and receiving "bribes" suggests a negative emotional frame of reference.

It is also possible to formally build models of bargaining in nuisance cases after judgment by applying psychological game theory. The anger and shame that one feels from paying or receiving money may very well increase the more that one believes the court should have decided differently. People are less willing to pay for what they think they should have received in

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[128] *Id.* at 395 (describing the rancorous nature of nuisance cases and property litigation between neighbors, where parties end up not on speaking terms).

[129] *Id.* at 397-400 (describing how parties would feel shame from paying or receiving money in nuisance cases and property litigation between neighbors).

[130] *Id.* at 391, 410-15, 421-22.

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the first place. This is an example of anger that depends on beliefs. People may also be less willing to be paid for what a court has awarded them if they feel there is legitimacy to the court's decision. This is an example of shame that depends on beliefs. There may thus be both high levels of anger and shame to the parties privately undoing a court's judgment. Any non-psychological game tree for such post-judgment bargaining is convertible into a psychological reciprocity game utilizing a general transformation.[131] In such a converted game, the parties' feelings are affected by not only the judicial or post-judgment bargained outcomes, but also the parties' expectations and attributions over intentions regarding such outcomes. Such expectations and attributions over intentions are related to process concerns. In addition, emotional game-theoretic considerations may suggest a normative role for law. The question of who should receive an initial entitlement can turn on the alternative resulting expectations and expectation-dependent emotions. If the courts have reliable information regarding the presence or absence and magnitude of emotions, such data would be useful in predicting the outcome of post-judgment bargaining. Similarly, the question of what form of protection an entitlement should receive — liability, property, or inalienability — can turn on emotional reactions and beliefs about alternative processes of resolving disputes under those rules. Laws create different beliefs by the assignment of initial entitlements and their forms of protection.[132]

To provide an example, consider the role that emotions can play in two particular settings of bargaining over property rights: mergers or acquisitions and divorce.[133]

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[131] Falk & Fischbacher, *supra* note 77, at 12 (providing this general transformation in equation (7)).

[132] For a related and complementary model involving evolutionary game theory, see Iris Bohnet et al., *More Order with Less Law: On Contract Enforcement, Trust and Crowding* (visited Oct. 10, 2000) <http://papers.ssrn.com/paper.taf?ABSTRACT_ID=236476>. Bohnet et al. prove that economic incentives have a non-monotonic effect on behavior in a dynamic model of adaptive preferences. In their framework, weak enforcement crowds in trustworthiness, while medium enforcement crowds it out. They do not specify the details of the psychological costs of behaving dishonestly, but have in mind some type of guilt. They also provide related experimental tests.

[133] For a non-bargaining example of how changes in property law can alter norms, see Lior Jacob Strahilevitz, *How Changes in Property Regimes Influence Social Norms: Commodifying California's Carpool Lanes*, 75 IND. L.J. 1231, 1235, 1260-72 (2000) (discussing the impact of a program called Fastrak that made carpool lanes

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There are many accounts of the machinations and personalities involved with corporate mergers and acquisitions in the press and popular culture.[134] In fact, both the processes of and outcomes to making deals command a lot of public attention.[135] Clearly, belief-dependent anger can upset such bargaining. In addition, the psychological games in Part II can be applied to mergers and acquisitions or joint ventures. In particular, in each of the psychological games discussed in Part II, suppose that party A is a potential acquiring corporation and that party B is a target firm. Then, the proposed terms of a merger or acquisition might involve an even or equitable distribution of joint profits if there are such corporate norms. By their nature, mergers and acquisitions negotiations can be delicate and fragile. But, parties may create additional instability by provoking negative feelings that arise in response to violating corporate norms or accepted business practices.

The rhetoric of property can and has been applied to analyze marriages,[136] divorce law,[137] and children.[138] Clearly, spouses bargain over many things, including the sexual division of labor. Rhona Mahony examines the sexual division of labor in the home by drawing on such diverse fields as psychology, sociology, anthropology, literature, religion, movies, and insights about ne-

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available to solo drivers for a fee on norms about appropriate commuting behavior, norms regarding the acceptability of violating the law, and egalitarian norms concerning highway access; Fastrak affected norms by changing feelings including regret and concern about what others thought of those utilizing Fastrak).

[134] *See, e.g.*, BRYAN BURROUGH & JOHN HELYAR, BARBARIANS AT THE GATE: THE FALL OF RJR NABISCO (1990) (describing the takeover of RJR-Nabisco); BRUCE WASSERSTEIN, BIG DEAL (1998) (same); *see also* Edward B. Rock, *Saints and Sinners: How Does Delaware Corporate Law Work?*, 44 UCLA L. REV. 1009, 1064-69 (1997) (discussing newspaper coverage of management buyouts of large, publicly held companies).

[135] Jason Scott Johnston, *Communication and Courtship: Cheap Talk Economics and the Law of Contract Formation*, 85 VA. L. REV. 385, 387 (1999) (observing that stories of the making and unmaking of business deals dominate newspapers).

[136] Lloyd Cohen, *Marriage, Divorce, and Quasi Rents; or "I Gave Him the Best Years of My Life"*, 16 J. LEGAL STUD. 267, 287-303 (1987) (suggesting that marriage generates quasi rents and discussing alternative informal and legal means of protecting such quasi rents).

[137] Carol M. Rose, *Rhetoric and Romance: A Comment on Spouses and Strangers*, 82 GEO. L.J. 2409, 2413-21 (1994) (responding cogently to critiques of property rhetoric in marriage and divorce).

[138] Margaret Jane Radin, *What, If Anything, Is Wrong with Baby Selling?*, 26 PAC. L.J. 135, 136 (1995) (arguing that how we morally evaluate a transaction depends partly on how we think of it).

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gotiation from economics and game theory.[139] She stresses the role that beliefs regarding the sexual division of labor play in women and men's negotiations.[140] The traditional stereotypical view of women being less confrontational than men can explain experimental evidence of sexual discrimination in new car sales.[141] Mahoney also discusses how love affects marital bargaining.[142] Feelings of love during marriage can reduce the forms of anger discussed in Parts I and II. Feelings of hate during a divorce might correspondingly exacerbate the forms of anger discussed in Parts I and II. Indeed, the degree of love during a marriage could be highly correlated with the degree of hate during a divorce, especially if love and hate themselves depend on strategic beliefs.

The analysis in this Article can be extended in several ways. First is the issue of how repeated play affects psychological games. Even though bargaining over property rights might be a unique occurrence, the negotiations leading up to it are sequential processes that occur in real time. This raises the possibility of reputation and linkage effects across negotiations if one player faces a series of potential other players. It would be interesting to examine the psychological emotional analogue of repeated game theory.

A related concern is whether such effects will be accentuated by relaxing the assumption of common knowledge of payoffs. After all, different individuals have different emotional responses that may depend on beliefs about strategic behavior. In light of the diversity of emotional responses as functions of strategic beliefs, what happens if people without particular emotional responses that depend on strategic beliefs mimic those with such emotional responses? Is there an equilibrium proportion of people that possess emotional responses that depend on strategic beliefs under some type of evolutionary adjustment process?

Because individuals can have many different emotional responses that depend on strategic beliefs, the issue of which ones accurately describe a particular situation is clearly a crucial em-

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[139] RHONA MAHONY, KIDDING OURSELVES: BREADWINNING, BABIES, AND BARGAINING POWER (1995).

[140] *Id.* at 27-28.

[141] Ian Ayres, *Fair Driving: Gender and Race Discrimination in Retail Car Negotiations*, 104 HARV. L. REV. 817, 827-36 (1991) (reporting such findings).

[142] MAHONY, *supra* note 140, at 59-60.

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pirical question. The focus of the psychological game-theoretic models in this Article has been on how emotional responses that depend on beliefs about strategic behavior can, as opposed to must, occur in any bargaining over property rights. But, the question of whether they do is ultimately an empirical one. In addition, heterogeneity in emotional responses may affect the analysis by changing the number of multiple equilibria.

Finally, the focus on psychological equilibria assumes that people will come to possess rational beliefs about strategic behavior. Such a condition of rational expectations could fail to describe real world people who have trouble learning and it excludes the possibility that people are optimizing in the presence of delusions, self-induced or otherwise. While incorrect beliefs about strategic behavior do not occur in a psychological game-theoretic equilibrium, they may occur in the real world. Fortunately, there are formal models of people without correct beliefs making decisions.[143] In any formal representation of a game tree, players' beliefs that are not determined in equilibrium can be represented by fixed beliefs. Emotions that depend on such exogenous beliefs are similar to emotions that do not depend on beliefs about strategic behavior in the sense that both types of emotions can be formally captured by altering utility payoffs by fixed numerical amounts.

CONCLUSION

This Article demonstrates how such emotions as anger and shame can influence the outcome and process of bargaining over property rights. In so doing, it suggests a more complicated and realistic vision of bargaining than is currently found in standard law and economics. The fiction of parties rationally negotiating in a dispassionate and cool manner is ubiquitous in law and economics models. Even were such behavior to be desirable as a normative model, it certainly leaves much to be desired as a description of the world. The neoclassical model of economics is blind to many of the emotional realities of human interaction. None of us would deny that people feel emotions on a regular basis. One can, however, argue that although emotions have real effects, they have only "second-order" effects in motivating behavior. In other words, emotions can help break ties in choosing

[143] *See generally* George A. Akerlof, *The Economics of Illusion*, 1 ECON. & POL. 1 (1989) (providing two interesting models of decision-making under illusion).

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among otherwise indifferent alternatives.[144]

This Article proposes in the alternative that emotions not only can break ties in preferences, but also can play a primary role in the process of constructing preferences and making decisions. Emotions also provide a valuable source of information to decision-makers.[145] Emotions that depend on beliefs about strategic behavior can also provide a theoretical explanation for well-known endowment and framing effects. The difference between a person's willingness to pay and that same person's willingness to accept for the same physical commodity that is the result of an endowment effect can be understood as an example of preferences being dependent on expectations of entitlements. The asymmetric perception between gains and losses can be due to associated positive and negative feelings. Such effects have important implications not only for the efficiency of property law,[146] but also for contract law.[147]

The models in this Article suggest a conception of bargaining that differs from the standard unemotional analysis by incorporating emotions that may or may not depend on beliefs about strategic behavior. The relationship between these alternative viewpoints is worth examining. It is worth noting that this Article does not contradict the Coase Theorem, once emotional payoffs are factored into a party's subjective valuation or willingness to engage in bargaining over property rights.[148] Thus, the Coase Theorem is correct once the concept of transaction costs includes emotional reactions. Putting aside the historical question of what Coase really meant or intended to say, the important point is that because real humans experience emotions, bargaining among humans is different from negotiations between automatons or robots programmed without any emotional responses.

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[144] Elster, *supra* note 23, at 59-60 (discussing the view of emotions as tie-breakers).

[145] MARTHA C. NUSSBAUM & AMARTYA K. SEN, THE QUALITY OF LIFE 1-6 (1993) (arguing that such difficult issues as poverty, damages, privacy, or mitigation can not be adequately addressed without the information that emotions provide).

[146] Russell Korobkin, Note, *Policymaking and the Offer/Asking Price Gap: Toward a Theory of Efficient Entitlement Allocation*, 46 STAN. L. REV. 663, 675-97 (1994) (discussing implications of endowment effects for property law).

[147] Russell Korobkin, *Behavioral Economics, Contract Formation, and Contract Law*, *in* BEHAVIORAL LAW AND ECONOMICS 116, 118-26 (Cass R. Sunstein ed., 2000) (discussing implications of endowment effects for contract law).

[148] Interestingly, shame and stigma are often discussed in relation to the Coase theorem. *See*, *e.g.*, Donohue, *supra* note 120, at 600; Ellickson, *supra* note 96, at 622-23; Farnsworth, *supra* note 126, at 400-06.

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Ignoring the scope and power of emotions for motivating human behavior in our models is unnecessary, if not undesirable. Ignoring the scope and power of emotions for motivating human behavior in legal and policy analysis is misleading, if not dangerous.

Legal rules can shape emotions that depend on beliefs by selecting a set of self-fulfilling beliefs of what should occur. Legal intervention should occur if the people are better off in terms of their own utilities, taking into account emotional considerations. Officials who view efficiency as the sole objective of legal policy overlook the feelings that can arise over the inequity of some negotiations. Public officials often seem to be surprised by the outrage or anger that citizens express in reaction to events. To ignore such passions during negotiations over property rights can result in disastrous, unintended and perilous outcomes. Taking into account such passions avoids bad feelings, at the very least, and might even prevent disharmony and unrest.

The above discussion provides a possible justification for legal intervention into private bargaining because the sensitivity of people to (perceived) inequality or inequity may block voluntary exchanges that are otherwise mutually beneficial, in the absence of considerations of fairness and other emotions. But, unanswered are the questions of whether and how such intervention can be best accomplished. If the sensitivity to inequity or inequality occurs in the form of emotions that depend on beliefs about strategic decisions, then psychological game theory provides answers to both of these questions. Intervention is effective when it changes individual preferences by changing expectations or beliefs about strategic behavior.[149] The initial assignment of property rights or entitlements can select a set of self-fulfilling beliefs. Intervention should occur if after such intervention people are better off in terms of their own utilities, taking into account considerations of fairness and other emotions. Viewing allocational efficiency as the sole objective of legal policy overlooks the fact most people have strong feelings over the fairness of negotiations.

Of course, negotiations over property rights are quite diverse

[149] This is related to, but distinct from, asymmetric information or myopia based justifications for social policies designed to change private preferences. *See* Cass R. Sunstein, *Legal Interference with Private Preferences*, 53 U. CHI. L. REV. 1129, 1158-66 (1986) (providing those arguments); Cass R. Sunstein, *Preferences and Politics*, 20 PHIL. & PUB. AFF.. 3, 24-27 (1991) (same).

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in their legal and non-legal history, their physical and human dimensions, their financial and tax details, and other motivations. This means that specific legal rules may require detailed case by case analysis. The realization of potential gains from bargaining over property rights, however, is not automatic. The approach of this Article applies to not just preliminary negotiations over property rights, but also the inevitable renegotiations that must occur in response to unforeseen contingencies. Emotional responses that depend on beliefs about strategic behavior are even more important in repeated games than in one-shot games because of the longer horizon of perceived inequality, inequity, or injustice.

The central insight of this Article is not just simply that emotions matter, but also that expectations and emotions can interact in ways that matter. It should be obvious that although this Article focused on bargaining over property rights, the insights of this Article apply to all types of negotiations.[150] All of us continually negotiate. Bargaining can be over a divorce settlement, peace treaty, or international environmental accord. Negotiations might arbitrate conflicts between agents, principals or between parties in a labor dispute. People haggle over finalizing the terms in a contract agreement or the price of a car or a house. In all of these myriad situations, the importance of emotions and related concerns for adhering to various norms of fairness are omnipresent. Negotiators, whether they are political or organizational leaders, diplomats, lawyers, or arbitrators can only improve their bargaining performance by understanding and being aware of the stuff of life, namely, emotions in general and in particular, emotions that depend on beliefs about strategic behavior.

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[150] *See* MAX H. BAZERMAN, SMART MONEY DECISIONS: WHY YOU DO WHAT YOU DO WITH YOUR MONEY (AND HOW TO CHANGE IT FOR THE BETTER) 105-18 (1999) (discussing the role that fairness considerations and emotions based on them affect bargaining).

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