

A NEW SYNTHESIS FOR LAW AND EMOTIONS: Insights from the Behavioral Sciences

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INTRODUCTION

The business of the law is to influence human behavior. To do this effectively, lawmakers must make assumptions about human psychology and how people think.¹ While the behavioral sciences dedicate their entire enterprises to investigating these questions, the law, even at its best, incorporates knowledge from those disciplines in a fragmentary and unsystematic fashion.² At its worst, the legal system overlooks or ignores advances in other fields and instead relies on inherited intuitions of behavior that can be both naïve and difficult to enumerate with precision.³

Nowhere is this phenomenon more evident than in the law’s longstanding struggle with emotions.⁴ Frequently relying on outdated folk psychology, the legal system’s attempts to codify, incorporate, explain, and otherwise reckon with emotions have produced many of the law’s most nebulous and imprecise concepts. Juries, for example, must decide whether a provoked killer acts “in [the] heat of blood” and “from passion, rather than judgment.”⁵ Speech is offensive when it “appeals to the prurient interest.”⁶ Partial-birth abortions

1. See, e.g., Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 457 (1897) (“The object of our study, then, is prediction, the prediction of the incidence of the public force through the instrumentality of the courts.”).

2. Owen D. Jones & Timothy H. Goldsmith, *Law and Behavioral Biology*, 105 COLUM. L. REV. 405, 407 (2005) (“Viewed as a whole, the process by which law informs itself about the causes of human behavior (as distinct from the effects and patterns of human behavior) is haphazard, idiosyncratic, and unsystematic.”).

3. See, e.g., Susan A. Bandes, *Introduction*, in THE PASSIONS OF LAW 1, 8 (Susan A. Bandes ed., 1999) (noting the “disastrous attempts to craft an insanity defense without regard for psychiatric knowledge”).

4. See, e.g., *id.* at 7 (“[I]t is an unfortunate by-product of the law’s well-known insularity and unwillingness to learn from other disciplines that legal scholars are so far behind in understanding how knowledge is acquired and how and why people act on it.”); Susan A. Bandes & Jeremy A. Blumenthal, *Emotion and the Law*, 8 ANN. REV. L. & SOC. SCI. 161, 174 (2012) (“[C]onstructing and maintaining legal institutions and crafting legal doctrines that too frequently rest on unexamined or demonstrably faulty assumptions about emotion and its effects on human behavior.”); Terry A. Maroney, *Law and Emotion: A Proposed Taxonomy of an Emerging Field*, 30 LAW. & HUM. BEHAV. 119, 121 (2006) (“The emotional aspects of our substantive and procedural law therefore have tended to develop *sub rosa*, consisting largely of unstated assumptions about human nature.”) (citation omitted).

5. *People v. Beltran*, 301 P.3d 1120, 1128 (Cal. 2013) (citations omitted).

6. *Miller v. California*, 413 U.S. 15, 24 (1973).

are banned based in part on the conclusion that “severe depression and loss of esteem can follow” even when the court finds “no reliable data to measure the phenomenon.”⁷ To recover for intentional infliction of emotional distress, the conduct must be “regarded as atrocious, and utterly intolerable in a civilized community.”⁸ And whether punishment is deemed cruel and unusual turns on “evolving standards of decency that mark the progress of a maturing society.”⁹

The ambiguity that typifies the law’s approach to emotion is especially troubling given the ubiquity of emotions in law.¹⁰ Emotions permeate the legal system: explicitly in statutes, legal opinions, contracts and jury instructions, and implicitly in the minds of offenders, victims, judges, juries, lawyers and legislators. Over the past several decades, the legal academy has amplified its interest, producing a wide array of scholarship seeking to clarify and deepen our understanding of emotions. Admirably, legal scholars have pursued a diverse, interdisciplinary approach, incorporating knowledge from psychology, philosophy, sociology, political science, anthropology, economics and cognitive neuroscience in their quest to understand. The contributions from these fields have been invaluable, yet significant disagreement persists and important questions remain unanswered. What role does emotion play in the course of judging? Where does “emotion” stop and “thinking” start? Is one able to reason when in an emotional state? What is the relationship between emotions and rationality?

The need for an interdisciplinary approach to answer these questions seems evident.¹¹ The insights gleaned from other disciplines have helped propel the field of law and emotions into the rich fount of scholarship that it is today. Conspicuously absent from the conversation, however, has been an evolutionary perspective. By and large, legal scholars examining emotions have yet to utilize the potent theoretical guidance and rich empirical findings of the evolutionary sciences.¹² In response, numerous scholars have noted the

7. *Gonzales v. Carhart*, 550 U.S. 124, 159 (2007) (citing Brief for Sandra Cano et al. as Amici Curiae Supporting Petitioner, *Carhart*, 550 U.S. 124 (No. 05-380) at 22–24).

8. RESTATEMENT (SECOND) OF TORTS § 46 cmt.d (AM. LAW INST. 1965).

9. *Trop v. Dulles*, 356 U.S. 86, 101 (1958).

10. E.g., Bandes, *supra* note 3, at 14 (“[E]motion pervades law, and always has.”).

11. E.g., Susan A. Bandes, *Repellent Crimes and Rational Deliberation: Emotion and the Death Penalty*, 33 VT. L. REV. 489, 506 (2009) (“Understanding emotion is necessarily an interdisciplinary endeavor”) (footnote omitted); Bandes & Blumenthal, *supra* note 4, at 174 (“Law and emotion . . . must be increasingly accompanied by interdisciplinary investigation.”).

12. *But see* Jones & Goldsmith, *supra* note 2, at 438–42 (discussing the evolutionary underpinnings of fairness and spite); Terry A. Maroney, *The Persistent Cultural Script of Judicial Dispassion*, 99 CALIF. L. REV. 629, 644–45 (2011) (recognizing and briefly discussing emotions as “evolved mechanisms for maximizing survival chances”); Terry A. Maroney, *Emotional*

lack of evolutionary theory in the law and emotions scholarship and entreated for its application.¹³

This Article is an attempt to answer that call. Evolutionary-minded scholars in the behavioral sciences have been analyzing emotions for some time, often with fruitful and insightful results. An evolutionary perspective can not only give a concrete, scientific explanation of what exactly emotions *are*, but can also provide a coherent framework for predicting how our various emotions will dictate or affect behavior in a given context. By supplementing current discussions with findings derived from an evolutionary framework, we can shed light on some of the persistent questions that continue to evade law and emotions scholars.

Part I of this Article briefly reviews the history of law and emotions scholarship, noting the progress of the field to date and highlighting some of the open questions and ongoing debates. Part II gives a (necessarily) abbreviated explanation of some foundational concepts of evolutionary psychology—including natural selection theory and the structure of the human mind—before turning to an evolutionary account of emotions. Part III shows how an evolutionary understanding can help inform some of the more puzzling questions in the law and emotions scholarship. Finally, Part IV illustrates how an evolutionary model can be applied and how it can contribute to future law and emotions investigation.

I. LAW AND EMOTIONS: GIVING CONTEXT TO THE MOVEMENT

Over the past three decades, the field of law and emotions has grown from an inchoate collection of discrete efforts into an expansive and interconnected web of legal scholarship.¹⁴ Any attempt to construct a history of the movement will be to some extent misleading, as the lines drawn will inevitably be both over and under inclusive. Nonetheless, below I discuss three separate periods (the early period, the period of expansion, and the

Regulation and Judicial Behavior, 99 CALIF. L. REV. 1485, 1497–98 (2011) (addressing emotions as adaptive mechanisms and citing work from the behavioral sciences).

13. See, e.g., Owen D. Jones, *Law, Emotions, and Behavioral Biology*, 39 JURIMETRICS J. 283, 287–88 (1999) (outlining what an evolutionary approach could add to the study of emotions); Maroney, *supra* note 4, at 135 (citing Jones, *supra* this note, and identifying evolutionary theory as a source of future theoretical insight); Stephen J. Morse, Book Review, 114 ETHICS 601, 601, 604 (2004) (review of *THE PASSIONS OF LAW*, *supra* note 3) (noting lack of evolutionary theory in the law and emotions scholarship and advocating for its role in current theory).

14. For three excellent histories—on which I have relied heavily in the writing of this article—see Kathryn Abrams and Hila Keren, *Who's Afraid of Law and the Emotions?*, 94 MINN. L. REV. 1997, 2003–08 (2010); Bandes & Blumenthal, *supra* note 4, at 162–63; Maroney, *supra* note 4, at 120–23.

modern era) that trace the high points of law and emotions scholarship and frame some of the open questions that might be informed by an evolutionary perspective.

A. “*The Progress of the Law*” and the Early Period (1987–1999)

Justice Brennan’s 1987 lecture *Reason, Passion, and “The Progress of the Law”* serves, as much as any single event can, as a suitable inception for the law and emotions movement.¹⁵ Though the legal landscape was already peppered with a few isolated examinations of emotion,¹⁶ Justice Brennan’s high profile lecture defending the role of emotion in judicial decision-making marks the starting point of a period of increased emotion-based scholarship from the legal academy.¹⁷ The lecture and its ensuing symposium are especially significant because they highlight the two themes that would come to define the early law and emotions scholarship. The first is an examination of the relationship between reason and emotion,¹⁸ and the second is an advocacy for recognition of the role emotions play in the law.¹⁹

Feminist scholars were particularly influential in these two areas, seeking to have emotions such as empathy and compassion recognized as legitimate forces within the law, while contrasting them with an unrealistic version of “reason” that the law tended to extol.²⁰ Contemporaneously, the Supreme Court explored similar themes across a series of prominent decisions, ruling

15. William J. Brennan, Jr., *Reason, Passion, and “The Progress of the Law”*, 10 CARDOZO L. REV. 3 (1988–89) (the forty-second annual Benjamin N. Cardozo lecture delivered at the Association of the Bar of the City of New York on Sept. 17, 1987).

16. See, e.g., Joshua Dressler, *Rethinking Heat of Passion: A Defense in Search of a Rationale*, 73 J. CRIM. L. & CRIMINOLOGY 421 (1982) (examining the emotional underpinnings of the heat of passion doctrine); John Ortiz Smykla, *The Human Impact of Capital Punishment: Interviews with Families of Persons on Death Row*, 15 J. CRIM. JUST. 331 (1987) (chronicling the grief reactions of forty relatives of inmates on Alabama’s death row).

17. See Symposium, *Reason, Passion, and Justice Brennan*, 10 CARDOZO L. REV. 1 (1988).

18. *Id.* at 11 (“Only by remaining open to the entreaties of reason and passion, of logic and of experience, can a judge come to understand the complex human meaning of a rich term such as ‘liberty.’”); see also Abrams & Keren, *supra* note 14, at 2003–08 (discussing in further detail the early law and emotions scholarship contrasting reason and emotion).

19. Symposium, *supra* note 17, at 16 (defending the role of emotion in due process analysis).

20. See, e.g., Lynne Henderson, *Legality and Empathy*, 85 MICH. L. REV. 1574, 1578 (1987); Lynne Henderson, *The Dialogue of Heart and Head*, 10 CARDOZO L. REV. 123, 132 (1988); Martha Minow & Elizabeth V. Spelman, *Passion for Justice*, 10 CARDOZO L. REV. 37 (1988); see also Bandes & Blumenthal, *supra* note 4, at 163 (discussing the role of feminist jurisprudence in advocating for empathy and compassion during the emergence of law and emotions scholarship); Maroney, *supra* note 4, at 131 (“Certainly many early contributions were made by feminist scholars, reflecting the strong historical association between emotion and ‘the feminine,’ and the attendant devaluation of both . . .”).

in *California v. Brown* that it was constitutional for jury instructions to require that jurors “must not be swayed by mere sentiment, conjecture, sympathy, passion, prejudice, public opinion or public feeling”²¹ and struggling, across a sequence of cases, to balance the emotional charge of victim impact statements with the “reasoned decision making” required of jurors.²² These decisions attracted attention from the legal academy, and spurred a host of scholarship analyzing the Supreme Court cases and the continued role of emotion in the decision-making processes of judges, jurors and parole boards.²³

Soon scholars were branching out, writing articles that would come to serve as foundational works for long lineages of law and emotions scholarship. Dan Kahan and Martha Nussbaum’s *Two Conceptions of Emotion in Criminal Law* sought to frame and explore the relationship between emotion and cognition, and its importance to the law,²⁴ while William Miller’s *The Anatomy of Disgust*²⁵ similarly touched off what would

21. *California v. Brown*, 479 U.S. 538, 541–43 (1987).

22. *See* *South Carolina v. Gathers*, 490 U.S. 805, 812 (1989) (ruling that victim impact statements are admissible during the sentencing phase of a trial if it “relate[s] directly to the circumstances of the crime”) (citations omitted); *Booth v. Maryland*, 482 U.S. 496, 497, 508–09 (1987) (ruling that “[t]he admission of the family members’ emotionally charged opinions and characterizations of the crimes could serve no other purpose than to inflame the jury and divert it from deciding the case on the relevant evidence concerning the crime and the defendant. Such admission is therefore inconsistent with the reasoned decisionmaking required in capital cases.”); *see also* *Payne v. Tennessee*, 501 U.S. 808, 825–28 (1991) (overturning *Booth* and *Gathers* in ruling victim impact statements admissible during the sentencing phase of a trial).

23. *See, e.g.*, Susan Bandes, *Empathy, Narrative, and Victim Impact Statements*, 63 U. CHI. L. REV. 361 (1996) (giving a contemporary analysis of the Supreme Court’s victim impact statement decisions); Vicki L. Fishfader et al., *Evidential and Extralegal Factors in Juror Decisions: Presentation Mode, Retention, and Level of Emotionality*, 20 LAW & HUM. BEHAV. 565, 565 (1996) (linking the vividness of video—as opposed to written—evidence to increased mood change and different liability judgments); Craig Haney et al., *Deciding to Take a Life: Capital Juries, Sentencing Instructions, and the Jurisprudence of Death*, 50 J. SOC. ISSUES 149, 149 (1994) (discussing the role of a defendant’s remorse in the decisions of sentencing judges, jurors and parole boards); *see also* Bandes & Blumenthal, *supra* note 4, at 167–68 (detailing the victim impact statement literature that was being produced at the time); Jessica M. Salerno & Bette L. Bottoms, *Emotional Evidence and Jurors’ Judgments: The Promise of Neuroscience for Informing Psychology and Law*, 27 BEHAV. SCI. LAW. 273, 278–82 (2009).

24. *See* Dan M. Kahan & Martha C. Nussbaum, *Two Conceptions of Emotion in Criminal Law*, 96 COLUM. L. REV. 269, 277–78 (1996) (“To introduce the two sides in a highly schematic way, we may say that the mechanistic view holds that emotions are forces more or less devoid of thought or perception—that they are impulses or surges that lead the person to action without embodying beliefs, or any way of seeing the world that can be assessed as correct or incorrect, appropriate or inappropriate. The evaluative view holds, by contrast, that emotions do embody beliefs and ways of seeing, which include appraisals or evaluations of the importance or significance of objects and events.”).

25. WILLIAM IAN MILLER, *THE ANATOMY OF DISGUST* (1997).

prove to be a long-lived discussion of the role of disgust in the law.²⁶ Elsewhere, the examination of the role of emotion in the judiciary was further expanded in articles on the role of sympathy in legal judgment²⁷ and on emotion in the language of judging.²⁸

By the late-1990s, law and emotions had become opportunely positioned at the convergence of several interrelated phenomena. First, just as the legal academy was ushering in a period of elevated interest in the emotions, other academic disciplines began undergoing their own emotion renaissance.²⁹ Economists,³⁰ psychologists,³¹ sociologists,³² philosophers,³³ and neuroscientists³⁴ turned toward emotion, often mirroring the discussions taking place in the legal literature.³⁵ Secondly, as this simultaneous turn toward emotions was occurring, legal scholarship was becoming more and more interdisciplinary in its approach, increasingly integrating the insights of other fields.³⁶ The combination of these trends—a heightened interest in emotions in the law, a heightened interest in emotions in other disciplines, and a newfound willingness to incorporate the knowledge of other

26. Abrams & Keren, *supra* note 14, at 2010 (“One can glimpse this pattern in scholarly arguments about disgust, whose role in the criminal law fueled one of the most vivid and extended debates in this body of work.”). For prominent later works in the debate, see generally *infra* note 46; MARTHA C. NUSSBAUM, *HIDING FROM HUMANITY: DISGUST, SHAME AND THE LAW* (2004).

27. See Neal R. Feigenson, *Sympathy and Legal Judgment: A Psychological Analysis*, 65 TENN. L. REV. 1 (1997).

28. See Martha C. Nussbaum, *Emotion in the Language of Judging*, 70 ST. JOHN’S L. REV. 23 (1996).

29. See Bandes & Blumenthal, *supra* note 4, at 162–63 (“[B]eginning in the 1980s and early 1990s, the topic of emotion began attracting renewed scholarly attention in fields such as philosophy, psychology, and sociology.”) (citations omitted).

30. *E.g.*, ROBERT H. FRANK, *PASSIONS WITHIN REASON: THE STRATEGIC ROLE OF THE EMOTIONS* (1988).

31. *E.g.*, PAUL EKMAN & KLAUS R. SCHERER, *APPROACHES TO EMOTION* (1984); CARROLL E. IZARD, *THE PSYCHOLOGY OF EMOTIONS* (1991); RICHARD S. LAZARUS, *EMOTION AND ADAPTATION* (1991).

32. *E.g.*, ROM HARRE, *THE SOCIAL CONSTRUCTION OF EMOTIONS* (1986); Peggy A. Thoits, *The Sociology of Emotions*, 15 ANN. REV. SOC. 317 (1989).

33. *E.g.*, PAUL E. GRIFFITHS, *WHAT EMOTIONS REALLY ARE: THE PROBLEM OF PSYCHOLOGICAL CATEGORIES* (1997); JEAN HAMPTON & JEFFRIE G. MURPHY, *FORGIVENESS AND MERCY* (1988).

34. *E.g.*, ANTONIO DAMASIO, *DESCARTES’ ERROR: EMOTION, REASON, AND THE HUMAN BRAIN* (1994).

35. See FRANK, *supra* note 30 and DAMASIO, *supra* note 34 for examples of the emotion versus reason debate in other academic contexts.

36. See Bandes & Blumenthal, *supra* note 4, at 162–63 (“The emergence of modern law and emotions scholarship was fueled by several interrelated trends . . . [L]egal scholarship took an interdisciplinary turn—rejecting the notion that all its questions could be answered internally and seeking to incorporate insights from other fields.”).

disciplines—made for verdant academic ground, and set the stage for the period of rapid expansion that the field would take in the next decade.

B. “*The Passions of Law*” and Expansion (1999–2006)

If there was a single catalyst that engendered the transition of law and emotions from a nascent collection of interests into a full-fledged movement, it was the publication of *The Passions of Law*.³⁷ This collection of essays, edited by Susan Bandes, was the coalescence of the interrelated movements of the previous decade. Bandes’ introduction served as a proclamation to the legal community that emotions pervade the law,³⁸ how we consider any particular emotion in the law will depend on its unique context,³⁹ and an interdisciplinary effort to understanding emotions is necessary.⁴⁰ The essays in *Passions* were contributed by scholars from a range of disciplines both in and outside the law, including political science,⁴¹ philosophy,⁴² classics⁴³ and the judiciary,⁴⁴ and previous strands of law and emotions scholarship were expanded, including the role of disgust in the law,⁴⁵ the need for emotion to

37. See Abrams & Keren, *supra* note 14, at 2008–09 (dubbing *Passions* a “landmark collection” and discussing its impact); Bandes & Blumenthal, *supra* note 4, at 163 (quoting Maroney, *supra* note 4, at 122 in emphasizing *Passions* as a “high-water mark” and noting its impact); Maroney, *supra* note 4, at 122 (“[W]hatever ground it left unplowed, the pivotal role of *Passions* in positioning law and emotions as a distinct enterprise is evident.”).

38. Bandes, *supra* note 3, at 1, 7 (“Emotion pervades the law . . . The essays in this volume move beyond the debate about *whether* emotion belongs in the law, accepting that emotional content is inevitable.”).

39. *Id.* at 7 (“The essays in this volume . . . focus on the important questions: [h]ow do we determine which emotions deserve the most weight in legal decision making and which emotions belong in which legal contexts?”).

40. *Id.* at 14 (“As these essays so well illustrate, the discussion of the appropriateness and desirability of various emotions will draw from philosophy, psychology, religion, history, ethics, classics, biography, social thought, popular culture, and a host of other sources.”).

41. See Austin Sarat, *Remorse, Responsibility, and Criminal Punishment: An Analysis of Popular Culture*, in THE PASSIONS OF LAW, *supra* note 3, at 168–90.

42. See, e.g., Cheshire Calhoun, *Making Up Emotional People: The Case of Romantic Love*, in THE PASSIONS OF LAW, *supra* note 3, at 217, 217–40; John Deigh, *Emotion and the Authority of Law: Variation on Themes in Bentham and Austin*, in THE PASSIONS OF LAW, *supra* note 3, at 285, 285–308; Jeffrie G. Murphy, *Moral Epistemology, the Retributive Emotions, and the “Clumsy Moral Philosophy” of Jesus Christ*, in THE PASSIONS OF LAW, *supra* note 3, at 149, 149–67.

43. See Danielle S. Allen, *Democratic Dis-ease: Of Anger and the Troubling Nature of Punishment*, in THE PASSIONS OF LAW, *supra* note 3, at 191, 191–214.

44. See Richard A. Posner, *Emotion versus Emotionalism in Law*, in THE PASSIONS OF LAW, *supra* note 3, at 309, 309–29.

45. Compare Martha C. Nussbaum, “*Secret Sewers of Vice*”: *Disgust, Bodies, and the Law*, in THE PASSIONS OF LAW, *supra* note 3, at 19, 45 (arguing against the usefulness of disgust in the

be recognized as an integral and unavoidable part of the legal system,⁴⁶ and the elusive relationship between emotion, reason and cognition.⁴⁷

The publication of *Passions* was followed by several book reviews and symposia, and a wave of new publications examining law and emotions.⁴⁸ This wave was also fueled by a shift in focus from the legitimacy of emotions in law to more specialized examinations of the individual emotions themselves.⁴⁹ As the scholarship took this more descriptive turn, the breadth and volume of articles expanded exponentially. The early-2000s saw the publication of articles ranging from workplace humiliation,⁵⁰ emotion in negotiation,⁵¹ the relationship between assessing blame and damages,⁵² the relationship between emotion and moral judgments,⁵³ the role of fear,⁵⁴ emotions in property law,⁵⁵ emotions in securities regulation,⁵⁶ to further

law), with Dan M. Kahan, *The Progressive Appropriation of Disgust*, in THE PASSIONS OF LAW, *supra* note 3, at 63, 63 (defending disgust as a way of shaping norms).

46. See, e.g., Kahan, *supra* note 45, at 63 (defending disgust); Murphy, *supra* note 42, at 149–67 (defending resentment); Robert C. Solomon, *Justice v. Vengeance: On Law and the Satisfaction of Emotion*, in THE PASSIONS OF LAW, *supra* note 3, at 121, 123–48 (defending vengefulness).

47. See, e.g., Bandes, *Introduction* to THE PASSIONS OF LAW, *supra* note 3, at 1, 6–7 (“More generally, what accounts for the law’s devotion to the myth of an emotionless, cognition-driven legal system? The mainstream notion of the rule of law greatly overstates both the demarcation between reason and emotion, and the possibility of keeping reasoning processes free of emotional variables.”).

48. See Maroney, *supra* note 4, at 122 (noting that *Passions* “prompted several book reviews . . . as well as multiple conferences and symposia on law and emotions, events that have become increasingly common.”) (citing several legal journal publications and symposia).

49. See Abrams & Keren, *supra* note 14, at 2008–09 (“The next phase of inquiry turned from a focus on the legitimacy of the emotions in law to a focus on the emotions themselves. This movement had been occurring incrementally for a number of years, but it was highlighted and consolidated in 1999 with the publication of Susan Bandes’s landmark collection, *The Passions of Law*.”).

50. Catherine L. Fisk, *Humiliation at Work*, 8 WM. & MARY J. WOMEN & L. 73 (2001).

51. Erin Ryan, *The Discourse Beneath: Emotional Epistemology in Legal Deliberation and Negotiation*, 10 HARV. NEGOT. L. REV. 231 (2005).

52. Neal Feigenson et al., *The Role of Emotions in Comparative Negligence Judgments*, 31 J. APPLIED SOC. PSYCHOL. 576 (2001).

53. Compare Jonathan Haidt, *The Emotional Dog and its Rational Tail: A Social Intuitionist Approach to Moral Judgment*, 108 PSYCHOL. REV. 814 (2001) (arguing generally that emotions cause moral judgments), with MARC D. HAUSER, *MORAL MINDS: HOW NATURE DESIGNED OUR UNIVERSAL SENSE OF RIGHT AND WRONG* (2006) (arguing generally that moral judgments cause emotions).

54. E.g., Mathew D. Adler, *Fear Assessment: Cost-benefit Analysis and the Pricing of Fear and Anxiety*, 79 CHI.-KENT L. REV. 977 (2004); Eric A. Posner, *Fear and the Regulatory Model of Counterterrorism*, 25 HARV. J.L. & PUB. POL’Y 681 (2002).

55. Peter H. Huang, *Reasons Within Passions: Emotions and Intentions in Property Rights Bargaining*, 79 OR. L. REV. 435 (2000).

56. Peter H. Huang, *Trust, Guilt, and Securities Regulation*, 151 U. PA. L. REV. 1059 (2003).

explorations of juror emotions⁵⁷ and the role of emotions in how and why we punish.⁵⁸

By the midpoint of the decade, law and emotions had become ensconced within the legal academy. As Maroney phrased it, law and emotions “might now be added to a family of interdisciplinary approaches that includes, for example, law and economics and feminist jurisprudence.”⁵⁹ Publications in legal journals began referring to the field of “law and emotion” by that moniker,⁶⁰ and the other interdisciplinary approaches began to recognize and contribute to the field. While law and feminism scholars had contributed since the beginning,⁶¹ this period of expansion saw the publication of new emotion-based articles by scholars in law and psychology⁶² and law and economics⁶³ and, shortly thereafter, by behavioral law and economics.⁶⁴

C. *The Modern Era (2006–Present)*

By the mid-2000s, law and emotions scholarship was headed in two directions. On the one hand, the field continued the rapid expansion of the first half of the decade, probing deeper into previous questions,⁶⁵ branching

57. Reid Hastie, *Emotions in Jurors' Decisions*, 66 BROOK. L. REV. 991 (2001); Scott E. Sundby, *The Capital Jury and Empathy: The Problem of Worthy and Unworthy Victims*, 88 CORNELL L. REV. 343 (2003).

58. Stephen P. Garvey, *The Moral Emotions of the Criminal Law*, 22 QUINNIPIAC L. REV. 145 (2003); Dan Markel, *Against Mercy*, 88 MINN. L. REV. 1421 (2004).

59. Maroney, *supra* note 4, at 119–20 (noting that “it has been suggested” law and emotions reached such a stage and citing several works referring to the field as such) (citations omitted).

60. *See id.* at 122 (citing “the first publications in legal journals to describe the emerging field [of law and emotion] as such”).

61. *See, e.g., supra* note 20 and accompanying text.

62. *See, e.g.,* Jeremy A. Blumenthal, *Does Mood Influence Moral Judgment? An Empirical Test with Legal and Policy Implications*, 29 L. & PSYCHOL. REV. 1, 1 (2005); Heidi L. Feldman, *Foreword: Law, Psychology, and the Emotions*, 74 CHI.-KENT L. REV. 1423, 1423 (2000); J.W. Roberts, *Between the Heat of Passion and Cold Blood: Battered Women's Syndrome as an Excuse for Self-Defense in Non-Confrontational Homicides*, 27 L. & PSYCHOL. REV. 135, 135 (2003).

63. *See, e.g.,* Posner, *supra* note 44, at 310; Adler, *supra* note 54, at 978; Ward Farnsworth, *The Economics of Enmity*, 69 U. CHI. L. REV. 211, 211 (2002).

64. *See, e.g.,* CASS R. SUNSTEIN, *LAW OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE* 1 (2005).

65. *See, e.g.,* Jody L. Madeira, “*Why Rebottle the Genie?*”: *Capitalizing on Closure in Death Penalty Proceedings*, 85 IND. L.J. 1477, 1488 (2010) (continuing the discussion on victim impact statements); Terry Maroney, *Angry Judges*, 65 VAND. L. REV. 1207, 1208 (2012) (continuing the discussion of emotion in judicial decision making); *cf.* Jeremy A. Blumenthal, *Abortion, Persuasion, and Emotion: Implications of Social Science Research on Emotion for Reading Casey*, 83 WASH. L. REV. 1, 6 (2008) (expanding the purview of fear analysis into the context of choosing whether or not to have an abortion).

out in new interdisciplinary directions like law and neuroscience,⁶⁶ and placing an increased emphasis on normative analysis.⁶⁷ On the other hand, the large volume of work produced over the prior two decades allowed scholars to begin to zoom out and take stock of law and emotions *as a movement*. Scholars began cataloging the vast amounts of work that had been done, categorizing the work to date and identifying common themes and questions.⁶⁸ Subsequent reviews began placing an increased emphasis on defining the *purpose* of the law and emotions field and identifying its possible contributions. Abrams and Keren (and later, Bandes and Blumenthal), for example, suggested that law and emotions seeks primarily to (1) illuminate the roles emotions play in legal problems, (2) investigate these roles through interdisciplinary analysis, and (3) integrate these findings into normative recommendations for the law.⁶⁹ The findings of law and emotions, they proposed, could contribute to normative reforms such as “revising doctrine, reconsidering the design of legal institutions or the allocation of institutional roles, revisiting policy objectives or their means of implementation, and rethinking means of communication and persuasion.”⁷⁰

The curatorial focus of the past decade has produced a coherent picture of the state of the field. The claim that emotions are in fact present in the law seems no longer contested; it is difficult to find a facet of the law that has not been addressed in the law and emotions scholarship. Within the literature, however, many questions continue to perplex scholars. What role do (or

66. See, e.g., John Mikhail, *Emotion, Neuroscience, and Law: A Comment on Darwin and Greene*, 3 EMOTION REV. 293, 294 (2011); Salerno & Bottoms, *supra* note 23, at 278; see also Abrams & Keren, *supra* note 14, at 2021–27 (discussing the law and neuroscience movement within the context of law and emotions scholarship).

67. See Abrams & Keren, *supra* note 14, at 2011–13 (“As legal scholars interested in the emotions ventured into other disciplines, some brought insights gleaned from this work to bear normatively on specific legal questions.”); see, e.g., Madeira, *supra* note 65, at 1477 (arguing in favor of keeping closure in capital proceedings).

68. See Maroney, *supra* note 4, at 126 tbl.1 (proposing six approaches to law and emotions: emotion-centered, emotional phenomenon, emotion-theory, legal doctrine, theory-of-law, and legal actor).

69. See Abrams & Keren, *supra* note 14, at 2033–34 (“We argue this scholarship has demonstrated three ‘dimensions’ which can inform both the more modest end of improving legal doctrine, and the more ambitious aspiration of using law to produce desirable emotional effects The first dimension, ‘Illumination,’ stands for the task of highlighting the often unacknowledged way that emotions are implicated in a particular legal setting. The second, ‘Investigation,’ reflects the interdisciplinary effort to better understand the nature and characteristics of the specific emotions at issue. The third, ‘Integration,’ represents the challenge of incorporating the new affective insights gleaned through this effort into normative suggestions for legal change.”); see also Bandes & Blumenthal, *supra* note 4, at 164–65 (using and citing the Abrams & Keren framework).

70. Bandes & Blumenthal, *supra* note 4, at 170 (citing Abrams & Keren, *supra* note 14, at 2049–68 for a thorough analysis of these approaches).

should) emotions play in judging?⁷¹ In the jury room?⁷² Is disgust something to be embraced and harnessed, or should it be exiled from law altogether?⁷³ Is the killer who acts in the heat of passion less culpable, and if so, why?⁷⁴ Is shaming an effective and/or acceptable form of punishment?⁷⁵

Many of the different specific questions within the field are premised on the same core inquiries. For example, the role of emotion in judging and the role of emotion in the jury room both revolve around how emotions influence the reasoning process.⁷⁶ Likewise, seemingly disparate areas such as heat of passion, insanity defense, and law and neuroscience scholarship, all involve core questions regarding the cognitive status of emotions, their automaticity, and whether emotions should be characterized as “thinking.”⁷⁷ These questions, present at the inception of the law and emotions movement,⁷⁸ continue to pervade the literature today.⁷⁹ If there is any consensual answer to be gleaned from the existing scholarship, it is only: it’s complicated.

The aim of this Article is to supplement the current trends of discussion in the law and emotions field and address some questions with an evolutionary

71. See, e.g., Samuel H. Pillsbury, *Harlan, Holmes, and the Passions of Justice*, in *THE PASSIONS OF LAW*, *supra* note 3, at 330, 330–32 (“Critics of Holmes have argued that his jurisprudence lacks moral content, a deficiency they trace to the man’s lack of feeling for his fellow man. Meanwhile Harlan has been criticized as a judge who distorted legal doctrine to reach the conclusions his heart desired.”) (footnote omitted); see also Posner, *supra* note 44, at 311; Maroney, *supra* note 65, at 1208; Symposium, *supra* note 17.

72. See, e.g., *supra* notes 21–23, 57 and accompanying text.

73. See, e.g., *supra* notes 25–26, 45 and accompanying text.

74. See generally Symposium, *The Nature, Structure, and Function of Heat of Passion/Provocation as a Criminal Defense*, 43 U. MICH. J.L. REFORM 1 (2009); see also Dressler, *supra* note 16, at 450–67 (arguing for heat of passion as a type of excuse).

75. See Toni M. Massaro, *Show (Some) Emotions*, in *THE PASSIONS OF LAW*, *supra* note 3, at 80, 80–120 (discussing both shame and disgust in the context of criminal law).

76. See, e.g., Hastie, *supra* note 57, at 999–1009 (giving an overview of the ways in which emotions influence the decisions of jurors); Richard A. Posner, *The Role of the Judge in the Twenty-First Century*, 86 B.U. L. REV. 1049, 1063–64 (2006) (discussing the influence of emotions on intellectual thought and whether they promote rational decisions).

77. See, e.g., Dressler, *supra* note 16, at 463–64 (“In provocation cases . . . the involuntariness resulting from anger is like insanity, not duress. Our common experience informs us that anger affects choice-capabilities, not mere opportunities. Anger makes us less *able* to respond in a legally and morally appropriate fashion.” (footnote omitted)); Joshua Greene & Jonathan Cohen, *For the Law, Neuroscience Changes Nothing and Everything*, 359 PHIL. TRANSACTIONS ROYAL SOC’Y LONDON, SERIES B: BIOLOGICAL SCI. 1775, 1781 (2004) (“The law will continue to punish misdeeds, as it must for practical reasons, but the idea of distinguishing the truly, deeply guilty from those who are merely victims of neuronal circumstances will, we submit, seem pointless.”).

78. See, e.g., *supra* notes 15–18 and accompanying text.

79. See, e.g., Susan A. Bandes, *Emotion and Deliberation: The Autonomous Citizen in the Social World*, in *PASSIONS AND EMOTIONS: NOMOS LIII* 189, 189–211 (James E. Fleming ed., 2013) (discussing the various relationships between deliberation, intuition, emotion, and reason).

account of emotions. An evolutionary perspective can not only provide descriptive clarity, but can also help inform some of the normative debates. While these questions will eventually only be answered through consilience, evolutionary theory can contribute a coherent framework for understanding both the causal influences (the *why*) and the cognitive mechanics (the *how*) of emotions.

II. THE EVOLUTIONARY PSYCHOLOGY OF EMOTIONS

A. Key Concepts of the Approach

Evolutionary psychology is an approach to understanding the human mind⁸⁰ that integrates principles from biology, anthropology, and the cognitive sciences into a holistic account of human nature. It rests on the assumption that the human mind, like the rest of the human body, was forged through natural selection. Natural selection is the process by which genetic variation (due to sexual recombination or mutation) and differential success over time (i.e., greater rates of survival and reproduction) lead to the transmission and increased frequency of adaptive behavior—that is, behavior that *contributed* to the overall survival and reproduction of the individual's genes.⁸¹

The logic of the approach is straightforward: because natural selection operates slowly over enormous spans of time, and because for nearly all of human history we existed as small bands of hunter-gatherers, the key to understanding how the mind works lies in examining the selection pressures of the environment of our hunter-gatherer ancestors.⁸² Adaptations, including psychological adaptations, are characteristics that were selected because they helped the organism or its relatives to survive and reproduce.⁸³ They are forged over hundreds—sometimes thousands—of generations and so to understand humans today requires reconstructing the biological, physical, and social environments that endured ancestrally.⁸⁴ By investigating the ancestral problems the brain evolved to solve, we can begin to identify the

80. I use the term “mind” simply to refer to what the physical brain does. *See generally* MARVIN MINSKY, *THE SOCIETY OF MIND* (1986).

81. *See generally* Julian Lim et al., *Adaptation*, in *THE CAMBRIDGE ENCYCLOPEDIA OF THE LANGUAGE SCIENCES* 85 (Patrick C. Hogan ed., 2011).

82. *See generally* John Tooby & Irven Devore, *The Reconstruction of Hominid Behavioral Evolution Through Strategic Modeling*, in *THE EVOLUTION OF HUMAN BEHAVIOR: PRIMATE MODELS* 183 (Warren G. Kinzey ed., 1987).

83. *See* Lim et al., *supra* note 81.

84. *See* Tooby & Devore, *supra* note 82, at 183.

functional units within the brain that were selected to accomplish these tasks and, subsequently, investigate their design.⁸⁵

The explanatory and predictive capabilities of this approach have provided theoretical guidance to the behavioral disciplines, including law, for decades⁸⁶ and yet in some circles the application of evolutionary theory is still treated like a dark art.⁸⁷ Because so many others have previously addressed common misconceptions about the theory and its application,⁸⁸ I will not do so in any great detail here.⁸⁹ I will, however, emphasize that (a) despite its

85. See Leda Cosmides & John Tooby, *Better than Rational: Evolutionary Psychology and the Invisible Hand*, 84 AM. ECON. REV. 327, 328 (1994) [hereinafter Cosmides & Tooby, *Better than Rational*] (“The applicability of evolutionary biology is based on a simple but powerful idea. Form follows function: the properties of an evolved mechanism reflect the structure of the task it evolved to solve.”); see also Leda Cosmides & John Tooby, *Introduction*, in THE NEW COGNITIVE NEUROSCIENCES 1163 (Michael S. Gazzaniga ed., 2d ed. 2000) (introducing Section X: Evolution); David M. Buss, *Evolutionary Psychology: A New Paradigm for Psychological Science*, 6 PSYCHOL. INQUIRY 1, 5–6 (1995) (discussing the investigation of evolved psychological mechanisms).

86. For a comprehensive review of the many ways in which evolutionary theory is useful to law, see Jones & Goldsmith, *supra* note 2.

87. See John Tooby, Lecture at Singularity Summit 10: Can Discovering the Design Principles Governing Natural Intelligence Unleash Breakthroughs in Artificial Intelligence? (August 14–15, 2010), <https://www.youtube.com/watch?v=GrIKrNtkwIQ> (noting that until very recently in the behavioral, cognitive, and brain sciences, and still for a great majority in these communities, “evolution is treated as a black art which is better not to dabble in”).

88. See, e.g., RICHARD DAWKINS, *THE BLIND WATCHMAKER* (1986); DANIEL C. DENNETT, *DARWIN’S DANGEROUS IDEA: EVOLUTION AND THE MEANINGS OF LIFE* (1995); STEVEN PINKER, *THE BLANK SLATE: THE MODERN DENIAL OF HUMAN NATURE* (2002); John Tooby & Leda Cosmides, *On the Universality of Human Nature and the Uniqueness of the Individual: The Role of Genetics and Adaptation*, 58 J. PERSONALITY 17 (1990). For more answers to common critiques and misguided perceptions of evolutionary psychology, see Robert Kurzban, *Alas Poor Evolutionary Psychology: Unfairly Accused, Unjustly Condemned*, 2 HUM. NAT. REV. 99 (2002), <http://human-nature.com/nibbs/02/apd.html>; Robert Kurzban, *Grand Challenges of Evolutionary Psychology*, 1 FRONTIERS EVOLUTIONARY PSYCH. 1 (2010).

89. But to preempt some common concerns, a few words on what an evolutionary perspective does not entail. First, the mind, like all other parts of the human body, was “designed” by natural selection. But that does not mean it was designed optimally: not all behavior is adaptive and not all traits are adaptations (i.e. characteristics that evolved because they helped the organism or its relatives to survive and reproduce). See generally Donald Symons, *On the Use and Misuse of Darwinism in the Study of Human Behavior*, in THE ADAPTED MIND: EVOLUTIONARY PSYCHOLOGY AND THE GENERATION OF CULTURE 137, 137–59 (Jerome Barkow et al. eds., 1992) (criticizing the proposition that because human beings are the product of natural selection, all human behavior can be expected to be adaptive); Tooby & Cosmides, *supra* note 88, at 19 (“This means that every personality phenomenon is, from an evolutionary perspective analyzable as either (a) an adaptation, (b) an incidental by-product of an adaptation, (c) the product of noise in the system, or (d) some combinations of these.”). Evolutionary theory, moreover, does not suggest that a person’s environment does not play a role in their development and behavior, but instead proposes that behavioral outputs are products of gene-environment interactions. Tooby & Cosmides, *supra* note 88, at 19. In fact, evolutionary psychology starts with the assumption that information can be stored genetically (e.g., the cognitive framework underlying the capacity for

detractors, natural selection remains the only known natural explanation for the complex functional design of human beings,⁹⁰ and (b) as other legal scholars have previously noted, any behavioral model that disregards the principles of natural selection and the biological components of behavior is necessarily incomplete.⁹¹

B. *The Modular Computational Mind*

Understanding how emotions work requires first understanding two of the key principles of cognitive science that emerged out of the cognitive revolution of the 1950's. The first is the notion that the brain is not an all-purpose learning instrument, but rather a complex system comprised of many specialized components.⁹² These specialized components—sometimes also referred to as systems or modules—have been tailored by natural selection to perform specific functions, such as language,⁹³ a concept of numbers,⁹⁴ spatial

language) or environmentally (e.g., whether one speaks English or Japanese). *Id.* at 21. The mapping of any adaptation entails positing a cognitive structure that takes advantage of both types of information to perform a particular function. *See, e.g.*, STEVEN PINKER, *HOW THE MIND WORKS* 27 (1997) (“The typical imperative from biology is not ‘Thou shalt . . . ,’ but ‘If . . . then . . . else.’”); Jon K. Maner & Douglas T. Kenrick, *Evolutionary Social Psychology*, in *ADVANCED SOCIAL PSYCHOLOGY* 616 (Roy Bumeister & Eli J. Finkel eds., 2010) (explaining why the traditional nature vs. nurture framework is insufficient and is rejected by evolutionary psychology). Because both genetics and environment are required for any system to develop, a properly understood evolutionary conception of the mind does not entail or justify genetic determinism, Social Darwinism, eugenics, sexism, racism, or any other type of pernicious separatism or discrimination. *See* Jones & Goldsmith, *supra* note 2, at 484–98 (addressing these specific concerns in more detail).

90. *See* John Tooby & Leda Cosmides, *The Psychological Foundations of Culture*, in *THE ADAPTED MIND: EVOLUTIONARY PSYCHOLOGY AND THE GENERATION OF CULTURE*, *supra* note 89, at 19, 51 (“As if by the handiwork of an invisible and nonforesightful engineer, element after element is added to a design over generations, making it a more functional system for propagation under the conditions prevailing at the time each new element was added. At present, there is no extant alternative theory for how organisms acquired complex functional organization over the course of their evolution.” (citing DAWKINS, *supra* note 88)). For a more potent endorsement, see also DENNETT, *supra* note 88, at 21 (“If I were to give an award for the single best idea anyone has ever had, I’d give it to Darwin, ahead of Newton and Einstein and everyone else. In a single stroke, the idea of evolution by natural selection unifies the realm of life, meaning, and purpose with the realm of space and time, cause and effect, mechanism and physical law.”).

91. *See, e.g.*, Jones, *supra* note 13, at 289 (“Any theory of behavior that ignores these aspects of human biology is simply ahistorical . . .”).

92. *See* PINKER, *supra* note 88, at 39–45 (discussing the cognitive revolution’s idea of the mind as a complex system composed of many interacting parts).

93. *See* NOAM CHOMSKY, *ASPECTS OF THE THEORY OF SYNTAX* (1988); STEVEN PINKER, *THE LANGUAGE INSTINCT: THE NEW SCIENCE OF LANGUAGE AND MIND* (1994).

94. *See* Stanislas Dehaene & Laurent Cohen, *Towards an Anatomical and Functional Mode of Number Processing*, 1 *MATHEMATICAL COGNITION* 83 (1995).

orientation,⁹⁵ cheater detection,⁹⁶ intention inference,⁹⁷ kin detection,⁹⁸ and face recognition,⁹⁹ to name a few, but they may also be integrated with other modules to perform more complex tasks such as forming and maintaining beneficial social relationships, or successively foraging for food.¹⁰⁰ Though finite in number, this collection of modules can solve a potentially infinite amount of problems by interacting with one another.¹⁰¹

The second key principle to emerge from the cognitive revolution is the computational theory of mind.¹⁰² Generally, the theory seeks to explain what the mind does in terms of information processing.¹⁰³ It describes the various modules of the mind in terms of (a) informational inputs gleaned from the environment, (b) internal algorithms and decision rules that process these inputs, and (c) cognitive and physiological outputs resulting from the process.¹⁰⁴ Importantly, only a small portion of this computation is consciously accessible: most of what goes on in the human mind is, in a sense, hidden from view.¹⁰⁵ The conscious experience of vision, for example, seems

95. See Lina Hermer & Elizabeth Spelke, *Modularity and Development: The Case of Spatial Reorientation*, 61 *COGNITION* 195 (1996).

96. See Leda Cosmides, *The Logic of Social Exchange: Has Natural Selection Shaped How Humans Reason? Studies with Wason Selection Task*, 31 *COGNITION* 187 (1989).

97. See Alan M. Leslie, *ToMM, ToBy, and Agency: Core Architecture and Domain Specificity*, in *MAPPING THE MIND: DOMAIN SPECIFICITY IN COGNITION AND CULTURE* 119, 119–48 (Lawrence A. Hirschfield & Susan A. Gelman eds., 1994).

98. See Debra Lieberman et al., *The Architecture of Human Kin Detection*, 445 *NATURE* 277 (2007).

99. See Brad Duchaine et al., *Elimination of all Domain-General Hypotheses of Prosopagnosia in a Single Individual: Evidence for an Isolated Deficit in 2nd Order Configural Face Processing*, 4 *J. VISION* 214 (2004).

100. PINKER, *supra* note 88, at 40 (“The mind is modular, with many parts cooperating to generate a train of thought or an organized action.”). Much disagreement persists as to how these modules are organized, how they should be defined, whether they are properly termed “modules” and how exactly they interact. For a cogent summary of the outstanding debates in this area and an outline of an evolutionary view of modularity, see H. Clark Barrett & Robert Kurzban, *Modularity in Cognition: Framing the Debate*, 113 *PSYCHOL. REV.* 628 (2006).

101. See PINKER, *supra* note 88, at 36–39 (discussing the cognitive revolution’s idea that “an infinite range of behavior can be generated by finite combinatorial programs in the mind”).

102. *Id.* at 31–34 (discussing the cognitive revolution’s idea “that the mental world can be grounded in the physical world by the concepts of information, computation, and feedback”).

103. *Id.*; see also Allen Newell et al., *Elements of a Theory of Human Problem Solving*, 65 *PSYCHOL. REV.* 151, 151–52 (1958) (giving an early elucidation of the mind as an information processing system).

104. See DAVID MARR, *VISION: A COMPUTATIONAL INVESTIGATION INTO THE HUMAN REPRESENTATION AND PROCESSING OF VISUAL INFORMATION* 19–29 (1982).

105. See PINKER, *supra* note 89, at 19 (“Hidden behind the panels of consciousness must lie fantastically complex machinery—optical analyzers, motion guidance systems, simulations of the world, databases on people and things, goal-schedulers, conflict-resolvers, and many others.”); Leda Cosmides & John Tooby, *Evolutionary Psychology: A Primer*, CENTER FOR EVOLUTIONARY PSYCHOL., U.C. SANTA BARBARA, <http://www.cep.ucsb.edu/primer.html> (last updated Jan. 13,

simple: you open your eyes and see. Unconsciously, though, there are many complex processes at work coordinating the various specialized vision circuits of the brain (e.g., shape, light, color, object recognition, distance, depth, motion) to take the light-dependent chemical reactions occurring in a two-dimensional sheet of retinal cells and generate the three-dimensional images that we consciously experience.¹⁰⁶

The integration of these two concepts (modularity and computation) with evolutionary theory is what Jerry Fodor deemed the “New Synthesis.”¹⁰⁷ It takes the framework of the brain as a system of computational modules and explains the function and operation of these modules in terms of solving the adaptive problems faced by our hunter-gatherer ancestors.¹⁰⁸

To successfully survive and reproduce, our hunter-gatherer ancestors faced a multitude of repeated challenges, such as obtaining food, navigating the physical world, communicating with one another, attaining status, avoiding incest, forming cooperative coalitions, evading predators and wooing potential mates.¹⁰⁹ What the New Synthesis proposes is that evolution tailored the human mind to solve these problems through functional specialization: the modules of the brain are by and large defined by the

1997) (“Consciousness is just the tip of the iceberg; most of what goes on in your mind is hidden from you. . . . You are not, and cannot become, consciously aware of most of your brain’s ongoing activities.”); see also JERRY FODOR, *THE MODULARITY OF MIND* 64–86 (1983) (explaining the idea of information encapsulation); cf. FYODOR DOSTOYEVSKY, *THE IDIOT* 484 (2003) (Dostoyevsky’s percipient observation that “the reasons for human actions are usually incalculably more complex and diverse than we tend to explain them later, and are seldom clearly manifest.”).

106. See Cosmides & Tooby, *supra* note 105 (explaining the difference between the conscious and unconscious experiences of vision); see also Robert Kurzban et al., *An Opportunity Cost Model of Subjective Effort and Task Performance*, 36 *BEHAV. & BRAIN SCI.* 661, 672 (describing the phenomenon of vision as feeling effortless despite it entailing “substantially complex computational processing”). For an in-depth overview of the computational vision process, see generally Cosmides, *supra* note 96.

107. Fodor named this school of thought during the course of a high-profile debate with cognitive scientist Steven Pinker. Pinker’s original elucidation of the theory is the subject of his book *How the Mind Works*. PINKER, *supra* note 89. For Fodor’s reply, in which he coined the term “New Synthesis” and criticized the theory, see JERRY FODOR, *THE MIND DOESN’T WORK THAT WAY* 12 (2000). For Pinker’s answer, see Steven Pinker, *So How Does the Mind Work?*, 20 *MIND & LANGUAGE* 1 (2005).

108. See Pinker, *supra* note 107, at 1–2 (“In sum, the mind is a system of organs of computation that enabled our ancestors to survive and reproduce in the physical and social worlds in which our species spent most of its evolutionary history.”).

109. See generally John Tooby & Leda Cosmides, *The Past Explains the Present: Emotional Adaptations and the Structure of Ancestral Environments*, 90 *ETHOLOGY & SOCIOBIOLOGY* 375 (1990) (outlining the difficulties of early humans navigating relationships and identifying survival techniques.).

ancestral problems they evolved to solve, or help solve.¹¹⁰ Likewise, the computational parameters of these modules—the information from the environment that the module uses, the internal calculations that process the environmental information, and back-end informational output—are demarcated by the task they were selected for.¹¹¹ From this framework emerges a conception of the human mind as a literal, not figurative, computer composed of many systems, each specialized to perform a specific kind of task in furtherance of an ancestrally-adaptive goal.¹¹²

C. *The Emotions*

1. A Coordinated Response

In order for our ancestors to successfully navigate the vast challenges of their environment, a finite number of cognitive and physiological resources had to be allocated between the various goal-seeking systems of the brain.¹¹³ This is most obvious in the case of our body: we cannot sleep, engage in sexual intercourse, and hunt predators all at once. Because we only have one body, pursuing one action entails, in almost all cases, foregoing another. This same logic is applicable to the brain: its various goal-seeking systems must share cognitive resources such as attention, perception, inference, learning, memory, goal choice, physiology, motivational priorities, categorization and conceptual frameworks, assessment of probability estimates, and weighting of the costs and benefits of presented behavioral alternatives.¹¹⁴ These tools

110. See generally PINKER, *supra* note 89; H. Clark Barrett *Enzymatic Computation and Cognitive Modularity*, 20 *MIND & LANGUAGE* 259 (2005); Dan Sperber, *The Modularity of Thought and the Epidemiology of Representations*, in *MAPPING THE MIND*, *supra* note 97.

111. See Barrett & Kurzban, *supra* note 100, at 644 (explaining how the modular and evolutionary views dovetail in yielding the functional parameters of a given module).

112. See Leda Cosmides & John Tooby, *Origins of Domain Specificity: The Evolution of Functional Organization*, in *PHILOSOPHY OF PSYCHOLOGY: CONTEMPORARY READINGS* 539, 550 (Jose Luis Bermudez ed., 2008) (“Natural selection shapes domain-specific mechanisms so that their structure meshes with the evolutionarily stable features of their particular problem-domains.”); John Tooby & Leda Cosmides, *The Evolutionary Psychology of the Emotions and their Relationship to Internal Regulatory Variables*, in *HANDBOOK OF EMOTIONS* 114 (Michael Lewis et al. eds., 3d ed. 2008) [hereinafter Tooby & Cosmides, *Psychology of Emotions*] (“It is not a metaphor but a reality that the brain is a computer—a physical system that came into existence to carry out computations.”).

113. See Kurzban et al., *supra* note 106, at 663 (“We argue that certain mental processes can be flexibly deployed to multiple purposes—but not all at the same time. Choosing to do one with thing with such a mental process necessarily requires choosing not to do another, and making such trade-offs optimally entails prioritizing options of greatest net value.”).

114. See Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112.

are not universally flexible or inexhaustible—we cannot, for instance, register all of the sounds we hear with the same acuity, focus our eyes on our total field of view simultaneously, retrieve all information from our memory concurrently, or instantaneously compute the potential contingencies and expected payoffs of pursuing one goal instead of another.¹¹⁵ Our motivation, attention, perception, etc., are constrained by the physical architecture, functional capabilities, and computational limits of the human mind.¹¹⁶ In practical terms, what this means is that when our attention is focused on finding food, it cannot be optimally attuned to securing a friendship. If we are motivated to sleep, we lose the motivation to accomplish other tasks that would require us to be awake. If we interpret a smile as an act of kindness, it *necessarily* means we are not interpreting it as an act of aggression.¹¹⁷

Some of the recurrent problems faced by our ancestors—likely those that removed organisms from, or oriented organisms toward, time-constrained events carrying large fitness costs or benefits—would have been more efficiently and effectively solved through an automatic, coordinated response. Accordingly, what evolution has done over thousands of generations is select for those combinations of cognitive and physiological settings that outperformed alternatives (on average) in navigating these adaptive problems. These automatic, coordinated responses are what we have come to call emotions.¹¹⁸ In computational terms, emotions can be conceptualized as software programs that orchestrate the mind's many tools into the configuration best suited to complete a particular task, or class of tasks.¹¹⁹ When the salient environmental cues are detected by the brain, the corresponding emotional program is initiated, prioritizing the relevant

115. Kurzban et al., *supra* note 106, at 663.

116. For the classic example of such limitations, see George A. Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information*, 63 PSYCHOL. REV. 81 (1956). For a more modern, technical account, see Rene Marois and Jason Ivanoff, *Capacity Limits of Information Processing in the Brain*, 9 TRENDS IN COGNITIVE SCI. 296 (2005).

117. *I.e.*, interpreting it as an act of kindness also means that we are not interpreting it as an act of kindness *and* an act of aggression. If we say that the two are both reasonable interpretations, we are not, by definition, actually interpreting them in either one of those ways.

118. Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 117 (“In this view, the best way to understand what the emotions are, what they do, and how they operate is to recognize that mechanism orchestration is the function that defines the emotions, and explains in detail their design features. They are neurocomputational adaptations that have evolved in response to the adaptive problem of matching arrays of mechanism activation to the specific adaptive demands imposed by alternative situations.”) (citations omitted).

119. Randolph M. Nesse, *Evolutionary Explanations of Emotions*, 1 HUM. NATURE 261, 269 (1990) (“In several respects, emotions provide for the mind what software programs provide for the computer.”); PINKER, *supra* note 89, at 384 (referring to emotions as “engineered software models”).

ancestral goal over the others and allocating the cognitive toolbox accordingly to place the mind and body in the best position possible to solve the problem.¹²⁰

As an illustration, consider fear.¹²¹ In the Pleistocene environment of our ancestors, ambush and attack by human or animal predators posed a persistent, potentially-fatal threat. As a result, the combination of cognitive and physiological settings that we call fear was gradually selected over time because it was the most efficient *available* configuration for navigating the problem of avoiding becoming prey.¹²² The informational cues activating the system might consist of some combination of darkness, being alone, unidentifiable noises, or other signals indicating a potential threat. As the signals become stronger and more reliable, the “fear” program is initiated and avoiding the threat becomes the prioritized goal. Your attention is allocated to sounds that would ordinarily not register, such as crunching leaves or footsteps, as they become increasingly clearer and more prominent. Your

120. Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 118 (“When a condition or situation of an evolutionarily recognizable kind is detected, a signal is sent out from the emotion program that activates the specific constellation of subprograms appropriate to solving the type of adaptive problems that were regularly embedded in that situation, and deactivates programs whose operation might interfere with solving those types of adaptive problems.”). Though this conception of emotions as superordinate mechanism orchestrators has been most thoroughly expatiated by Tooby and Cosmides, many other evolutionary psychologists have espoused similar viewpoints. *See, e.g.*, Martie G. Haselton & Timothy Ketelaar, *Irrational Emotions or Emotional Wisdom? The Evolutionary Psychology of Affect and Social Behavior*, in *HEARTS AND MINDS: AFFECTIVE INFLUENCES ON SOCIAL COGNITION AND BEHAVIOR* 21 (Joseph P. Forgas ed., 2006); PINKER, *supra* note 89, at 363–424; David M. Buss, *Evolutionary Criteria for Considering an Emotion “Basic”: Jealousy as an Illustration*, 6 *EMOTION REV.* 313 (2014); Robert W. Levenson, *The Intrapersonal Functions of Emotion*, 13 *COGNITION & EMOTION* 481 (1999); Debra Lieberman & Carlton Patrick, *Are the Behavioral Immune System and Pathogen Disgust Identical?* 8 *EVOLUTIONARY BEHAV. SCI.* 244 (2014); Nesse, *supra* note 119; Jessica L. Tracy, *An Evolutionary Approach to Understanding Distinct Emotions*, 6 *EMOTION REV.* 308 (2014). There is also a not-insignificant strand of evolutionary scholarship on emotions as commitment devices which, while not identical, is harmonious in that it serves as a proximate description of how such orchestrations accomplish their goals. *See, e.g.*, FRANK, *supra* note 30; Robert L. Trivers, *The Evolution of Reciprocal Altruism*, 46 *Q. REV. OF BIOLOGY* 35 (1971).

121. The example of fear used in this paragraph has been frequently examined in the evolutionary literature, and my account is an amalgam drawn from several sources. *See* Daniel M.T. Fessler, *Emotions and Cost/Benefit Assessment: The Role of Shame and Self-esteem in Risk Taking*, in *BOUNDED RATIONALITY: THE ADAPTIVE TOOLBOX*, 191, 192–93 (Gerd Gigerenzer & Reinhard Selten eds., 2001); Nesse, *supra* note 119, at 270–71; Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 93–94, 118–119.

122. Importantly, the configuration we recognize as fear need not have been the *optimal* configuration, only slightly better or more efficient at navigating the problem than the alternatives that happened to have arisen and been selected for at the time. In colloquial terms, if two hikers are running from a charging bear, the hiker that survives need not have run faster than the bear, just the other hiker.

perception shifts: a sideways glance or curious movement pattern is now interpreted in a more threatening manner. Your motivation changes to finding help or safety: other states such as hunger or fatigue are temporarily inhibited. Any attempts at memory recall are similarly directed to avoiding the threat: did that man make the same turn on the path I did? Where is the closest populated place? The weighting of costs and benefits change: what was once a prohibitively long route to take suddenly becomes an attractive alternative because it is familiar. Finally, your physiology is altered: your heart rate changes, blood is pumped to your limbs, your eyes widen to take in the periphery, and breaths may become shorter as your body readies to fight, flee, or otherwise deal with the potential threat.¹²³ Once the relevant environmental cues indicate that you are no longer in danger, the fear program is de-initiated and body and mind returned to a more neutral, resting state.

2. Transitory Activation

The often ephemeral nature of emotions can be explained by the fact that each emotional configuration presents a trade-off: if your attention, perception, memory, physiology, etc. are being optimally orchestrated to solve one problem, they may not be available or optimally situated to solve a different problem.¹²⁴ The cognitive and physiological settings that accompany fear may be advantageous for avoiding danger, but are almost certainly deleterious for courting a romantic partner.¹²⁵ As a result, the decreased flexibility and specialization of any particular emotion is activated only for the time, and to the extent, necessary.¹²⁶ In this way, an emotion is better understood as a dial, rather than a switch. As the informational signals

123. DAMASIO, *supra* note 34, at 224 (“The energy availability and the metabolic rate of the entire organism are altered, as is the readiness of the immune system; the overall biochemical profile of the organism fluctuates rapidly; the skeletal muscles that allow the movement of head, trunk, and limbs contract; and signals about all these changes are relayed back to the brain, some via neural routes, some via chemical routes in the bloodstream . . . The net result of having the brain detect danger (or any similarly exciting situation) is a profound departure from business as usual . . . the changes occur in *both* brain and body proper.”); Nesse, *supra* note 119, at 270–71.

124. Robert Kurzban et al., *supra* note 106, at 664 (“To the extent that two different tasks require the same computational mechanisms, they cannot both be accomplished simultaneously with uncompromised effectiveness.”).

125. Cf. Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 116 (“[D]isastrous consequences would ensue if proprioceptive cues were activating sleep programs at the same time that the sight of a stalking lion was activating programs designed for predator evasion.”).

126. Lieberman & Patrick, *supra* note 120, at 247 (“Finally, the temporal duration of a state depends on the adaptive problem at hand. Whereas some adaptive problems occurred over short durations of time (e.g., predator avoidance), others persisted over longer durations (e.g., mate retention).”).

detected by the brain become stronger (e.g., a furtive stranger approaches with increasing speed), the emotional dial is turned up and, conversely, as the signals become weaker (e.g., you reach a safe place surrounded by people) the dial is turned back down again and flexibility restored.¹²⁷ Some situations (e.g., avoiding predators) may require the emotional state (fear) for only very short periods, while others (e.g., rearing offspring) may require the emotional state (love) for longer commitments.¹²⁸

Scholars of the effects of evolutionary processes on human behavior have used this framework to examine a fleet of emotions, including, for example: disgust as a program for avoiding pathogens and incest,¹²⁹ anger as a program for resolving conflicts in favor of the angry individual,¹³⁰ shame as a program for mitigating the likelihood or costs of reputational damage,¹³¹ jealousy as a program for guarding a valuable relationship,¹³² and love as a program for maintaining commitment.¹³³ By using this conceptualization of emotion, researchers are able to hone in on both the historical causes (i.e., the ancestral pressure that the emotion evolved to navigate), as well as the proximate mechanisms (i.e., the informational inputs, internal algorithms, and resulting configuration of cognitive and physiological outputs) that govern individual emotions. This, in turn, allows us to answer both *why* and *how* questions of emotions, questions which have been particularly elusive in the law's attempts to craft and deploy a behavioral model.

3. Programs Out of Time

Our emotions evolved to solve the problems faced by our ancestors. They were forged in a statistical composite of conditions faced by thousands of previous generations of small, frequently interacting, seminomadic bands of

127. *Cf. id.*; Robert Kurzban et al., *supra* note 106.

128. Lieberman & Patrick, *supra* note 120, at 247.

129. Joshua M. Tybur et al., *Disgust: Evolved Function and Structure*, 120 *PSYCHOL. REV.* 65 (2013). Tybur et al. also suggest that, in addition to pathogen and incest avoidance, disgust evolved to regulate decisions in other sexual and moral domains. *Id.* at 71–72.

130. Aaron Sell et al., *Formidability and the Logic of Human Anger*, 106 *PROC. OF THE NAT'L ACAD. OF SCI.* 15073 (2009).

131. Daniel Sznycer et al., *Cross-Cultural Differences and Similarities in Proneness to Shame: An Adaptationist and Ecological Approach*, 10 *EVOLUTIONARY PSYCHOL.* 352, 352 (2012).

132. David M. Buss & Martie Haselton, *The Evolution of Jealousy*, 9 *TRENDS IN COGNITIVE SCI.* 506 (2005); *see also* Martin Daly et al., *Male Sexual Jealousy*, 3 *ETHOLOGY & SOCIOBIOLOGY* 11 (1982).

133. Gian C. Gonzaga et al., *Love, Desire, and the Suppression of Thoughts of Romantic Alternatives*, 29 *EVOLUTION AND HUM. BEHAV.* 119 (2008).

hunter gatherers.¹³⁴ While emotions would have produced, on average, adaptive behavior in the ancestral environment, there is no reason to assume that they are equally adaptive in a modern environment that includes cars, electronic communication, or, most notably, a highly-institutionalized system of rules and punishment that is indifferent to the conditions of the Pleistocene.¹³⁵

Because of this temporal disconnect, an emotion has the potential to be under or over-inclusive in its modern-day deployment. An emotion evolved to solve ancestral problems by relying on recurrent ancestral cues for the activation of those problems. Evolutionarily novel cues, then, may not trigger an emotion even though it would be advantageous to do so. Because fear evolved in an environment of perils such as snakes, spiders, and cliffs, but not one of cars or electrical sockets, we may be particularly susceptible to—or experience fear more acutely for—the former group rather than the latter, even though today driving at fast speeds poses a much greater threat than being bitten by a snake.¹³⁶

Conversely, even though the ancestral problem that an emotion evolved to navigate may no longer exist, the proximate cues that activate the emotion may remain. For example, because females are fertilized internally, in our ancestral environment, men (unlike women) could never be truly sure that their spouse's child was theirs and so faced an asymmetric risk of investing resources into someone else's offspring.¹³⁷ Because of this unbalanced distribution of risk, men evolved a greater proclivity for sexual jealousy than women.¹³⁸ Consequently, men still more-jealously guard their mates in

134. Leda Cosmides & John Tooby, *Evolutionary Psychology: New Perspectives on Cognition and Motivation*, 64 ANN. REV. OF PSYCHOL. 201, 203 (2013) (“We no longer live in small, face-to-face societies, in seminomadic bands of 25–200 men, women, and children, many of whom were close relatives. Yet our cognitive programs were designed for that social world.”).

135. CHARLES DARWIN, ON THE ORIGIN OF SPECIES 199 (1st ed., 1859) (“But by far the most important consideration is that the chief part of the organization of every being is simply due to inheritance; and consequently, though each being assuredly is well fitted for its place in nature, many structures now have no direct relation to the habits of life of each species.”).

136. See generally ISAAC M. MARKS, FEARS, PHOBIAS, AND RITUALS: PANIC, ANXIETY, AND THEIR DISORDERS (1987) (discussing the ethological sources and mechanisms of fear); Arne Ohman, Anders Flykt & Francisco Esteves, *Emotion Drives Attention: Detecting the Snake in the Grass*, 130 J. EXPERIMENTAL PSYCHOL.: GEN. 466 (2001) (discussing the relative effectiveness of evolutionary relevant threatening stimuli in capturing attention).

137. Daly et al., *supra* note 132, at 11 (“In a species with internal fertilization, males cannot identify their offspring with confidence.”).

138. *Id.* at 12 (“Male sexual jealousy, by defending exclusive sexual relationships, functions to elevate paternity confidence.”).

today's world, even though birth control and paternity tests have rendered the issue of paternity uncertainty moot.¹³⁹

Sometimes, an emotion that was adaptive in the ancestral environment may still be advantageous in our modern world. For example, pathogen disgust, which evolved to detect and avoid pathogens by relying on visual (e.g., feces, blood, vomit, and pus), olfactory (e.g., rotten odorants), and tactile (e.g., wet and biological) cues associated with an increased probability of pathogens, remains a valuable tool for avoiding infection and disease in our current environment.¹⁴⁰

Other times, an emotion may not necessarily be adaptive in today's world, but is nonetheless innocuous. Humans' sense of awe and natural beauty produced by rolling vistas and expansive views is hypothesized to be the evolved mechanism that drove our ancestors into areas where predators, water, and paths could be spotted from afar.¹⁴¹ That we continue to derive pleasure from these views in an environment in which they are no longer necessary for survival may not be adaptive, but it is, for all intents and purposes, a harmless artifact.

Occasionally, however, an emotion that was adaptive in the ancestral environment can produce deleterious behavior today. Consider anger, a reputation-based emotion that motivates aggression and punishment (as either an infliction of costs or withholding of benefits) to ensure greater deference, or respect, for the angry individual.¹⁴² Reputation as a formidable male was of paramount importance in the ancestral environment.¹⁴³ It

139. See generally DAVID M. BUSS, *THE DANGEROUS PASSION: WHY JEALOUSY IS AS NECESSARY AS LOVE AND SEX* (Free Press ed., 2000) (explaining that although jealousy is an adaptive behavior that helped our human ancestors cope with reproductive threats, that rationale is not nearly as applicable now); David M. Buss et al., *Sex Differences in Jealousy: Evolution, Physiology, and Psychology*, 3 *PSYCHOL. SCI.* 251 (1992) (confirming the hypothesis that sex differences in jealousy emerged in humans as solutions to the respective adaptive problems faced by each sex); Margo I. Wilson & Martin Daly, *Male Sexual Proprietaries and Violence Against Wives*, 5 *CURRENT DIRECTIONS IN PSYCHOL. SCI.* 2 (1996) (finding that jealousy is one of the primary causes of males behaving violently toward females).

140. For studies investigating the evolved properties of disgust, see generally Val Curtis et al., *Evidence That Disgust Evolved to Protect from Risk of Disease*, 271 *PROC. OF THE ROYAL SOC'Y OF LONDON*, S131 (2004); Robert E. Oum et al., *A Feel for Disgust: Tactile Cues to Pathogen Presence*, 25 *COGNITION AND EMOTION* 717 (2011); Paul Rozin et al., *Operation of the Laws of Sympathetic Magic in Disgust and Other Domains*, 50 *J. PERSONALITY & SOC. PSYCHOL.* 703 (1986); Bruno Wicker et al., *Both of Us Disgusted in My Insula: The Common Neural Basis of Seeing and Feeling Disgust*, 40 *NEURON* 655 (2003).

141. See generally GORDON H. ORIANS, *SNAKES, SUNRISES, AND SHAKESPEARE: HOW EVOLUTION SHAPES OUR LOVES AND FEARS* (2014).

142. See Sell et al., *supra* note 130, at 15073–74.

143. Wilson and Daly explain the logic behind the greater emphasis on reputation and competition in males: "In most animal species, including *Homo sapiens*, male fitness is limited by access to fecund females, whereas female fitness is limited by physiological and energetic

increased chances of reproductive success and sent an admonition to potential rivals in a setting with no institutionalized police force.¹⁴⁴ Because of this, in an altercation in which reputation was at stake, anger could motivate an escalating scale of displays—from insults to threats to physical displays or attacks—until one party backed down.¹⁴⁵ If one party did not back down, injuries or death could occur.¹⁴⁶

Unfortunately, these psychological mechanisms still operate in our present environment despite a modern judicial system that has alleviated the need for self-help and laws that sanction the unwarranted use of force against other people. The psychologists Margo Wilson and Martin Daly, in a study of Detroit homicides committed in the 1970s, observed that the most common type of homicide among non-relatives is the result of a trivial altercation between young, unmarried men that escalates in an attempt to save face or respect.¹⁴⁷ In other words, those who would have had the least to lose and the most to gain from reputational growth in the ancestral environment continue to be the most likely to escalate confrontations into fatal encounters today, despite a modern infrastructure that has tapered the payoffs for doing so.

III. LAW AND EMOTIONS: IMPORTANT THEMES

This part will further elucidate the evolutionary model of emotions by addressing some of the important themes that continuously arise within the law and emotions literature. Many of these questions fall under the general umbrella of *how do emotions influence decision-making*—an umbrella that includes a host of more discrete inquiries, such as how do emotions influence: judgment, reasoning, cognition, thinking, deliberation, calculation, analysis, assessment, reflection and rational choice. Often, these terms can be used

constraints. It follows that very successful males can enhance their fitness by monopolizing the reproductive performance of several females, whereas the fitness of females cannot profit from multiple mates to the same extent. Females are therefore a ‘resource’ for which males compete.” Margo Wilson & Martin Daly, *Competitiveness, Risk Taking, and Violence: The Young Male Syndrome*, 6 ETHOLOGY AND SOCIOBIOLOGY 59, 60 (1985).

144. *Id.* at 60 (“[M]ales are in competition for those resources, including feeding territories, next sites, and more intangible ‘resources’ like political influence and social status, that can be converted into reproductive opportunity, whether because they are directly attractive to females or because they help quell rival males.”).

145. See John Tooby et al., *Internal Regulatory Variables and the Design of Human Motivation: A Computational and Evolutionary Approach*, in HANDBOOK OF APPROACH AND AVOIDANCE MOTIVATION 268 (Andrew J. Elliot ed., 2008) (“When the anger program is orchestrating aggression, it should activate the motivation to escalate the displays and threats until one of you backs down.”).

146. *Id.*

147. See Wilson & Daly, *supra* note 143, at 63–64.

interchangeably and without precise definitions: “cognition” may be used to mean “information processing” in one context, and “deductive reasoning” in another. Likewise “rational choice” can be used to mean “in a cool, deliberative fashion” or “to optimize expected utility.” Here I hope to avoid some of this definitional ambiguity by addressing these questions in terms of the phenomena they address, rather than the vocabulary they use.

In Section A, I address the historical tendency to place emotions outside of the physical realm of cognition and into more otherworldly territory. In Section B, I discuss the relationship between emotion and reasoning by examining the phenomena of thinking one way and feeling another and offering an evolutionary model for diagnosing how emotions color the reasoning process. Finally, in Section C, I attend to the relationship between emotions and the idea of optimal decision-making by showing how the forces of natural selection are indifferent to economic conceptions of rationality.

A. *Thinking vs. Feeling*

Some of the oldest and most fundamental questions regarding emotions, both inside and outside the law, revolve around the somewhat ethereal status that has historically been granted to emotions. There is an ancient tradition of characterizing mental processes as non-physical that continues to have vestigial traces today, most prominently in the philosophical literature.¹⁴⁸ In emotion scholarship, this dualist tradition sometimes manifests itself in the form of a dichotomy between thinking and feeling. In this view, thinking is the province of the brain and takes place in the body, while emotions cannot be tied to physical processes and instead are manifested in more enigmatic locations such as “the psyche.”¹⁴⁹

Though there is a certain intuitive appeal to this conception of the mind, the scientific record can no longer sustain it. There is now a wealth of cross-disciplinary evidence that emotions, like all cognitive and physiological phenomena, are observable, physical processes derived from brain activity. Neuroscientists, for example, have identified with reasonable clarity the

148. This “Cartesian” view is most famously elucidated by Rene Descartes in *MEDITATIONS ON FIRST PHILOSOPHY* (1641) and was derogatorily labeled “the dogma of the Ghost in the Machine” in GILBERT RYLE, *THE CONCEPT OF MIND* 15–16 (2000). For modern progeny of this school of thought see generally *OBJECTIONS TO PHYSICALISM* (Howard Robinson ed., 1996).

149. See, e.g., MICHAEL STOCKER, *VALUING EMOTIONS* 19 (1996) (“My main explanation of why I place affectivity in the psyche and not, or not just, in the body is put nicely by Descartes. Talking of emotions or passions, he writes, ‘we feel as though they were in the soul itself.’”) (citation omitted).

outlines of the brain structures that mediate emotions,¹⁵⁰ and neurobiologists have documented how injuries to specific brain areas can impair certain emotions while leaving other mental faculties intact.¹⁵¹ The brain, we now know, is no less an organ than the heart or the lungs, and just as the heart evolved to process blood, and the lungs to process air, the brain evolved to process information.¹⁵² Emotions are merely a subset of the many neurally-mediated information-processing programs executed by the brain.¹⁵³ They are computational procedures carried out by neural circuits, just as much as the more deliberative procedures we label “thinking.”¹⁵⁴

So why has this vaguely superstitious account of emotions persisted for so long? One explanation might be found in the varying degrees of consciousness with which “thinking” and “feeling” are associated.¹⁵⁵ Judges and legal scholars have long attempted to account for this contrast. Justice Brennan alluded to it when he said: “By ‘passion’ I mean the range of emotional and intuitive responses to a given set of facts or arguments, responses which often speed into our consciousness far ahead of the lumbering syllogisms of reason.”¹⁵⁶ Justice Stewart likewise suggested that emotions formulate decisions beyond the realm of perceptible cognition when he would not attempt to define when pornography was “offensive” but admitted that “I know it when I see it.”¹⁵⁷

While the activities we tend to categorize as thinking—e.g. complex mathematical calculations, or future planning—are done consciously, emotions do much of their work behind the scenes.¹⁵⁸ While we experience,

150. See Raymond J. Dolan, *Emotion, Cognition, and Behavior*, 298 *SCIENCE* 1191, 1194 (2002).

151. See DAMASIO, *supra* note 34, at 52–82.

152. See Cosmides & Tooby, *supra* note 134, at 203 (“Each organ in the body evolved to serve a function: the intestines digest, the heart pumps blood, the liver detoxifies poisons. The brain is also an organ, and its evolved function is to extract information from the environment and use that information to generate behavior and regulate physiology.”).

153. They are, as Steven Pinker notes, “adaptations, well-engineered software modules that work in harmony with the intellect and are indispensable to the functioning of the whole mind.” PINKER, *supra* note 89, at 370.

154. See, e.g., Lieberman & Patrick, *supra* note 120, at 247 (“Regardless of whether one labels a feature as pertaining to emotion or cognition, what is needed for a full description are the information-processing systems governing the feature in question. At the level of computation—that is, the business of neurons—the folk distinctions between cognition and emotion fall away. ‘Thinking’ and ‘feeling’ can be described in information-processing terms.”).

155. For a poetic example of this bifurcation, see BLAISE PASCAL, *PENSEES* 423 (1966) (“[T]he heart has reasons that reason doesn’t know at all.”); cf. DESCARTES, *supra* note 148.

156. Brennan, *supra* note 15, at 9.

157. *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring).

158. See generally Arne Öhman, *Distinguishing Unconscious from Conscious Emotional Processes: Methodological Considerations and Theoretical Implications*, in *HANDBOOK OF COGNITION AND EMOTION* 321 (Tim Dalgleish & Mick Power eds., 1999); Arne Öhman et al.,

for example, some of the motivational and physiological changes produced by the emotions (for instance, the qualia of being angry, or the urge to hit someone), the internal algorithmic calculations that initiate the emotions are made effortlessly, involuntarily, and largely subconsciously.¹⁵⁹ As a result, our traditional willingness to disembodiment emotions may be due to the fact that we have little choice over whether or not to initiate or experience an emotional program, and are only privy to their back-end cognitive and somatic outputs.

B. *The Emotion and Reason Dichotomy*

If “thinking” and “feeling” are both physical, computational procedures, occurring simultaneously, what accounts for the oft-cited phenomenon of thinking one way, but feeling another? What is the relationship between our intuitive emotions and cold, hard reasoned inference? Emotion and reason¹⁶⁰ have, since at least the time of the ancient philosophers, been positioned as concurrent—but separate, and sometimes competing—forces within the mind.¹⁶¹ Plato, for example, conceptualized the relationship as that of a charioteer riding two horses: the charioteer was reason, which sought to steer or direct the two horses, one horse representing the noble passions, and the other horse, the destructive ones.¹⁶² David Hume similarly theorized about the “combat of passion and of reason” that goes on in the mind, famously noting that “reason is and ought only to be the slave of the passions.”¹⁶³ The law has been no exception; this dichotomization has flourished, especially in the law’s historic tendency to exalt reason while relegating emotion to the

Unconscious Emotion: Evolutionary Perspectives, Psychophysiological Data, and Neuropsychological Mechanisms, in THE COGNITIVE NEUROSCIENCE OF EMOTION 296 (Richard D. Lane & Lynn Nadel eds., 2000); John S. Morris et al., *Conscious and Unconscious Emotional Learning in the Human Amygdala*, 393 NATURE 467 (1998).

159. See Arne Öhman, *Making Sense of Emotion: Evolution, Reason & the Brain*, 135 DAEDALUS 33, 34 (2006) (describing experienced feelings as the raw data of an emotional process and citing Jeffrey Gray, *The Content of Consciousness: A Neuropsychological Conjecture*, 18 BEHAV. & BRAIN SCIENCES 659 (1995)). In fact, some physiological changes—such as blushing skin or pupil dilation—that are part of an emotion program may also be made without any conscious awareness or effort. *Id.* at 35–36.

160. By reason, I broadly mean any conscious logical inference from premise to conclusion.

161. PLATO, *Phaedrus* 246a–246b, in PLATO: COMPLETE WORKS (John M. Cooper ed., 1997).

162. *Id.*

163. DAVID HUME, A TREATISE OF HUMAN NATURE 462, 891 (Penguin Books ed., 1969). There are countless examples of this type of characterization that persist even today, from serious academic work to popular culture. For example, more than 150 years after Hume’s quote, Woody Allen mused in *Crimes and Misdemeanors* that “My heart says one thing; my head says another. It’s very hard to get your heart and head together in life... In my case they’re not even friendly.” CRIMES AND MISDEMEANORS (Jack Rollins & Charles H. Joffe Productions 1989).

role of disruptive interloper.¹⁶⁴ As Bandes notes, labeling an influence as emotional has traditionally been tantamount to saying “it is inappropriate—the very opposite of the reasoned discourse on which the legal system is premised.”¹⁶⁵

Fortunately, most current law and emotions scholarship has abandoned the notion that there is a strict dichotomy at work; scholars now generally recognize that the relationship between the two is more complex and interactive than originally thought.¹⁶⁶ One current way legal scholars conceptualize the relationship is by starting from a baseline of reason, and documenting how emotion “short-circuits” or “colors” the reasoning process.¹⁶⁷ Scholars are quick to note that this coloration is not unidirectional; emotion can impede reasoning in some contexts, but enhance it in others.¹⁶⁸

164. See Maroney, *supra* note 4, at 120, n.4 (“A core presumption underlying modern legality is that reason and emotion are different beasts entirely: they belong to separate spheres of human existence; the sphere of law admits only of reason; and vigilant policing is required to keep emotion from creeping in where it does not belong. . . This point has been made by virtually every scholar who has delved, even briefly, into this area.”) (citations omitted).

165. Bandes, *supra* note 11, at 493.

166. See, e.g., Bandes & Blumenthal, *supra* note 4, at 168 (“Most current theories adopt a version of a dual-process model, involving some combination of quick, intuitive judgments and slower, more deliberative judgments. Much of the debate centers on how the two processes interact.”).

167. See, e.g., *id.* at 166 (“On the most basic level, emotion helps sort, evaluate, highlight, and prioritize information and provides an impetus to act upon it. It is ‘like an unseen lens that colors all our thoughts, actions, perceptions, and judgments’.” (quoting JEFF GOODWIN ET AL., *PASSIONATE POLITICS: EMOTIONS AND SOCIAL MOVEMENTS* 10 (Jeff Goodwin et al. eds., 2001))); Posner, *supra* note 44, at 310–11 (“The dichotomy of reason and emotion, misleading though it is, captures an important truth . . . Emotion is an efficient method of cognition in some cases but an inefficient one in others. One might put it this way: emotion short-circuits reason conceived of as a conscious, articulate process of deliberation, calculation, analysis, or reflection. Sometimes this is all to the good; emotion focuses attention, crystallizes evaluation, and prompts action in circumstances in which reflection would be interminable, unfocused, and indecisive. But in situations in which making an intelligent decision requires careful, sequential analysis or reflection, emotion may, by supplanting that process, generate an inferior decision.”) (citations omitted).

168. See, e.g., Jeremy A. Blumenthal, *A Moody View of the Law: Looking Back and Looking Ahead at Law and the Emotions*, in *EMOTION AND THE LAW: PSYCHOLOGICAL PERSPECTIVES* 185, 185–86 (Brian H. Bornstein & Richard L. Wiener eds., 2010) (contrasting examples of emotion as corruptive or biasing forces with examples of emotions as beneficial, informing and assistive in decision-making); Posner, *supra* note 44, at 310–11. For an example of how emotion can enhance decision-making in an experimental context, see the Iowa Gambling Task, where anxiety (as measured by anticipatory skin conductance responses) led participants to choose advantageously in a gambling task before they were able to consciously articulate which choice was optimal. Antoine Bechara et al., *Deciding Advantageously Before Knowing the Advantageous Strategy*, 275 *SCIENCE* 1293 (1997).

The quest for scholars, then, has turned to honing in on an inclusive explanation of exactly *how* these two processes interact.¹⁶⁹

But, taking a step back, if the relationship between the two is so complex, why has this dichotomization endured for so long? For my two cents—scholars’ attempts at nuance notwithstanding—the most interesting and enigmatic cases remain those in which we perceive “reason” telling us one thing and “emotion” telling us another. While the mind frequently operates in harmony, those cases rarely inspire examination. That a person should consciously decide on a behavior that is similarly motivated by emotion seems natural and intuitive. Conversely, the sensation of reason and emotion competing with one another has seemed to capture the attention of scholars for centuries. Understanding this phenomenon can be made less mysterious, though, by using the framework of an evolved, modular mind.

1. Imperfect Integration

As discussed above, the brain consists of many different specialized systems.¹⁷⁰ While these modules operate concurrently, they do not necessarily do so in concert.¹⁷¹ Each module has its own directive: it relies on specific informational inputs to perform its own internal algorithmic computation and generate its own outputs.¹⁷² Importantly, these functions may be encapsulated within that particular module—that is, as a result of the evolutionary process, any given module may or may not be communicating with any other given

169. See, e.g., Neal Feigenson, *Emotional Influences on Judgments of Legal Blame: How They Happen, Whether Should, and What do Do About It*, in EMOTION AND THE LAW: PSYCHOLOGICAL PERSPECTIVES, *supra* note 168, at 45, 46–47 (arguing that emotion can influence legal judgments by (i) affecting people’s strategies for processing information, (ii) biasing perception, recall, or evaluation of judgment-relevant facts, (iii) prejudicing informational cues in attributing responsibility or blame, and (iv) shaping decision making in the present through anticipation of future emotions); see also *id.* at 61–77 (discussing whether and when it is desirable for emotions to influence judgments of legal blame); Maroney, *supra* note 12, at 642–48 (arguing that contrary to the Enlightenment view of emotion and reason being at war, emotion reveals reasons, motivates action in service of reason, and enables reason).

170. See *supra* Part II.B and accompanying notes 92–112.

171. The social psychologist Jonathan Haidt phrases it this way: “To understand most important ideas in psychology, you need to understand how the mind is divided into parts that sometimes conflict. We assume that there is one person in each body, but in some ways we are each more like a committee whose members have been thrown together to do a job, but who often find themselves working at cross purposes.” JONATHAN HAIDT, THE HAPPINESS HYPOTHESIS: FINDING MODERN TRUTH IN ANCIENT WISDOM 4–5 (2006).

172. See MARR, *supra* note 104.

module.¹⁷³ This means that it is possible, and not necessarily uncommon, to hold competing, or even contradictory, positions concurrently.¹⁷⁴

It is easy to conjure many everyday examples of this phenomenon: resolving to lose weight and yet eating ice cream; setting an alarm and then ignoring it when it goes off; knowing you have no reason to be nervous while simultaneously getting butterflies in your stomach; committing to being a faithful spouse in between bouts of extra-marital rendezvous.¹⁷⁵ Consider the criminal who knows he will be punished for his crime, desires not to be punished, and yet feels *compelled* by emotion to commit the crime nonetheless. Provocation doctrine has long championed this framework, characterizing the defendant's heat of passion as a temporary coup by emotion in its ongoing tug-of-war with reason.¹⁷⁶

2. Selective Entrainment

During an emotional state, the modules involved in the emotion are configured to solve a recurrent ancestral problem, but that does not mean that all parts of the brain are perfectly entrained in this configuration. The activation of a particular emotion may reach some modules, or parts of modules, but not others. Hunger, for example, may affect your motivation to eat ice-cream without affecting your understanding that ice-cream is unhealthy for you; each of those two processes may be governed by different computational procedures and, as a result, generate different, even oppositional, outputs.¹⁷⁷ While an emotion may sway the balance of these modules in one particular direction or another to generate a behavior—temporarily activating or privileging those parts that were required to navigate the ancestral pressure—it may not necessarily entrain every part of the brain in doing so.

173. See FODOR, *supra* note 105.

174. For an accessible and entertaining explanation of the ideas discussed in this Section, see ROBERT KURZBAN, *WHY EVERYONE (ELSE) IS A HYPOCRITE: EVOLUTION AND THE MODULAR MIND* (2012). For a slightly more technical account, see PINKER, *supra* note 89.

175. For more examples, and further discussion of this concept of a divided self, see HAIDT, *supra* note 171, at 3–4.

176. See Dressler, *supra* note 16, at 425–32 (giving a history of the provocation doctrine); see also Reid G. Fontaine, *Adequate (Non)Provocation and Heat of Passion as Excuse not Justification*, 43 U. MICH. J.L. REFORM 27, 33–40 (2009) (examining the underlying rationale of the provocation doctrine).

177. See KURZBAN, *supra* note 174, at 43–44 (discussing the basic premise of holding competing views simultaneously); MARR, *supra* note 104 (explaining how different cognitive systems rely on different computational inputs and rules).

3. Subconscious Influence

When legal scholars use the verb “reason” they are typically referring to a process of logical inference from premise to conclusion.¹⁷⁸ These processes—sometimes characterized as “cold cognition”—can be thought of as a subset of the *thinking* processes discussed in Section A of this Part. Though they are typically made voluntarily and with some degree of effort, their defining characteristic is that they are made *consciously*—we are sentient of the steps in their calculation, and we could recount and replicate them if asked.¹⁷⁹ Conversely, emotions—as discussed above—do much of their work hidden from view; the subconscious calculations made in initiating and carrying out emotional programs are not so easily identified or replicated.¹⁸⁰ Because we are consciously aware of reasoning processes but are not necessarily aware of emotional processes, emotions are viewed as the short-circuiting or coloring force, instead of the reverse.

To summarize: (1) the brain is composed of many different systems that are not perfectly integrated, (2) emotional processes may affect some, but not all of these systems, which can result in conflict between conscious and subconscious processes, and (3) because we are consciously aware of the mechanics of the “reasoning” (i.e. conscious, deliberative) processes, but not fully aware of the mechanics of “emotional” (i.e. subconscious) processes, it is common to view emotion as the short-circuiting or coloring force.

Legal scholars have prodigiously documented the effects of emotion on decision-making, showing how emotion affects, for example, perceptions of probability and risk,¹⁸¹ susceptibility to persuasion,¹⁸² or punitive inclinations.¹⁸³ By and large, however, they have done so unsystematically and with little theoretical guidance. An evolutionary model allows scholars to predict and test how a given emotion “colors” a reasoning process by understanding that emotion in terms of the problem or class of problems that it evolved to solve. Roughly, we should predict increases in ability or performance in those systems that the particular emotion would have needed

178. See Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 118.

179. *Id.*

180. See John A. Bargh & Tanya L. Chartrand, *The Unbearable Automaticity of Being*, 54 AM. PSYCHOL. 462, 473 (1999) (explaining the unconscious nature of emotions and noting the difficulty of intentionally expressing them).

181. Dan M. Kahn, *Two Conceptions of Emotion in Risk Regulation*, 156 U. PENN. L. REV. 741 (2008); Cass R. Sunstein, *Probability Neglect: Emotions, Worst Cases, and Law*, 112 YALE L.J. 61 (2002).

182. See generally Blumenthal, *supra* note 65.

183. See generally Kevin S. Douglas et al., *The Impact of Graphic Photographic Evidence on Mock Jurors' Decisions in a Murder Trial: Probative or Prejudicial?*, 21 L. & HUM. BEHAV. 485 (1997).

to entrain to solve the ancestral problem, and, equally, no change in (or decrements to) the systems that were either not necessary to solving the problem or in competition for cognitive and physiological resources with the systems necessary for solving the problem. For example, while fear might impede the ability to do mathematical calculations, it may nonetheless heighten the ability to deduce safety or danger. Likewise, jealousy could hamper the capacity to memorize vocabulary words, while simultaneously enhancing the ability to memorize or recall actions indicating deceit. Ultimately, this type of framework can serve as a heuristic for predicting when emotions can help, and when they can hurt, individuals in making socially-desirable decisions, the subject of the next Part.

C. The Relationship between Emotion and Rationality

Within the law and emotions arena, the greatest amount of analysis on whether or not emotions motivate optimal decisions has been done by scholars working in the fields of law and economics and behavioral law and economics. Within their framework, the question is often presented as an inquiry into whether, and how, emotions fit into the rational choice model. That is, when do emotions aid an individual in acting as if balancing costs against benefits to maximize expected gains?¹⁸⁴

Early law and economics scholarship worked from the assumption that people are inherently rational, meaning they generally choose actions—deliberatively or not—in a way that produces results consistent with their best interests. Within this context, emotions were considered temporary lapses from such a state, distorting perceptions of rationality for the duration of the emotion.¹⁸⁵ Due in large part to the work of behavioral economists such as Daniel Kahneman and Amos Tversky, the rationality assumption of human behavior—and along with it the traditional law and economics behavioral framework—has been softened and qualified by the “boundedly rational”

184. See generally MILTON FRIEDMAN, *ESSAYS IN POSITIVE ECONOMICS* (1953) (elucidating the rational choice model). For an example of how this model is applied in legal analysis, see RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (8th ed. 2011).

185. See Eric A. Posner, *Law and the Emotions*, 89 *GEO. L.J.* 1977, 1981–82 (2001) (“[B]efore—and usually after—the emotion state, the person’s preferences are constant (the “calm preferences”), so he might disapprove of what he expects to do, or did, in the emotion state. It is this inconsistency over time that makes emotional behavior seem irrational, but it is important to see that a person in an emotion state does not act irrationally given his temporary preferences.”).

approach of behavioral economics.¹⁸⁶ In this view, humans are not by default rational, but are irrational in consistent and patterned ways as a result of cognitively bound decisional heuristics.¹⁸⁷ Emotions, in this framework, are often characterized as a constant, predictable source of interference or bias with rational choice.¹⁸⁸

Behavioral law and economics, however, still suffers to the extent that it starts from a baseline of rationality and attempts to document how actual behavior differs from this baseline.¹⁸⁹ In fact, behavioral law and economics has been criticized for developing a catalogue of consistently observed behavioral phenomena without producing a coherent theory for explaining these patterns of irrationality or for predicting additional patterns.¹⁹⁰ An evolutionary viewpoint suffers no such handicap. The problem faced by behavioral law and economics, and avoided by an evolutionary approach, is summarized well by Leda Cosmides and John Tooby:

Rational behavior is not, in any sense, the state of nature. Not behaving at all is the state of nature . . . All departures from this state of inaction require explanation. . . . Humans and other animals reason, decide, and behave by virtue of computational devices embodied in neural tissue. Therefore, a complete causal explanation of any behavior—rational or otherwise—necessarily invokes theories about the architecture of these computational devices. The rationality of a behavior is irrelevant to its cause or explanation.¹⁹¹

Analyzing how and when emotions fit within the rational choice model is necessarily starting from a faulty assumption about the nature of human

186. See, e.g., JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (Daniel Kahneman et al. eds., 1982); Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *ECONOMETRICA* 263 (1979).

187. See Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 *STAN. L. REV.* 1471, 1488 (1998).

188. See, e.g., Sunstein, *supra* note 181, at 62–63 (describing the distorting influence of emotion on probability assessments).

189. For an in-depth discussion of some of the problems with Behavioral Economics that can be allayed with interdisciplinary insights, see Owen D. Jones, *Why Behavioral Economics Isn't Better, and How it Could Be*, in *RESEARCH HANDBOOK ON BEHAVIORAL LAW AND ECONOMICS* (J. Titelbaum & K. Zelier eds., 2015).

190. See Owen D. Jones, *Time-Shifted Rationality and the Law of Law's Leverage: Behavioral Economics Meets Behavioral Biology*, 95 *NW. U. L. REV.* 1141, 1142 (2001) (“Commentators argue that BLE is undertheorized. That is, it reasons from observations to implications without explanations.”); Jones & Goldsmith, *supra* note 2, at 445–46 (“There is as yet no satisfying theoretical framework that makes sense of the particular patterns of irrationalities, connects them together, and predicts as yet undiscovered patterns.”).

191. Cosmides & Tooby, *Better than Rational*, *supra* note 85, at 327. For in-depth analysis of this idea and its legal implications, see Jones, *supra* note 190, at 1141–87 and Jones & Goldsmith, *supra* note 2, at 443–54.

behavior. Crucially for the law, the key to understanding and predicting whether or not an emotion will produce a desired behavior or state of affairs requires an examination of its evolved function and mechanical properties. Whether an emotion motivates rational or irrational behavior is entirely incidental to its form and function.

As a result, the relationship between emotions and economically-rational behavior will vary widely between cases based on a host of factors, including how close the costs and benefits of the current situation mirror those of the ancestral condition that the emotion evolved to navigate, the level at which costs and benefits are calculated (i.e. at the level of the gene or the individual), and the temporal level of inquiry (i.e. isolated interactions or longer time courses). Without taking such factors into consideration, predictive models of behavior—such as the rational-choice model—attempting to account for emotions will produce seemingly stochastic, and potentially misleading, conclusions. Alternatively, below are two examples of how accounting for these evolutionarily-salient factors can help improve a rational-choice model of emotions.

1. The Example of One-Shot Games

Emotions were built to increase expected fitness in the ancestral environment over long time courses.¹⁹² Many emotionally-motivated behaviors can appear irrational when viewed in small slices, but become advantageous when viewed in a broader temporal context. Evidence for this phenomenon can be found in the seemingly irrational results of isolated interactions—what economists call ‘single-round’ or ‘one-shot’ games. Take for example, the well-documented results of one-shot ultimatum games, in which one player (the proposer) is given a sum of money and instructed to choose an amount to offer the other player (the responder). If the responder accepts the offer, both players keep the money. If the responder rejects the offer, neither player gets to keep the money. Both players are aware of the total amount of money in play, the players are usually not allowed to communicate outside of the offer/answer, and the players only play for a single round.

The rational result is for the responder to accept any amount of money offered him. He has no control of the offer, there are no subsequent offers to influence, and even the smallest offer is better than nothing. In short, the

192. See Comsmides & Tooby, *supra* note 134, at 214 (“Economists assume that individuals assess incentives in the immediate situation and make decisions that will maximize their short-term profit. . . . Evolutionary game theory asks a different question: given the structure of ancestral environments, which decision rule . . . will best promote its own reproduction over generations?”).

responder has nothing to gain by rejecting the offer. And yet, responders routinely, and consistently across cultures, reject low offers, foregoing a benefit to punish the proposer out of the seemingly irrational impetus of spite.¹⁹³

For a real-world example, consider the phenomenon of tipping. People leave tips on vacation in restaurants they will never visit again, to waiters they will never see again, with no threat of repercussion for not leaving a tip or promise of future reward for leaving one. Where the purely rational response is to keep the money for yourself when the service has already been rendered and you have no expectation of future cooperation, guilt influences people to tip.¹⁹⁴

In these cases, the emotions of guilt and spite seem to motivate apparently irrational behaviors. The law is replete with its own examples, such as spite motivating the pursuit of litigation when the costs of litigation exceed any possible recovery, or guilt motivating apologies after car accidents that subject the apologist to potential tort liability for no tangible benefit in return. But understanding these seemingly irrational behaviors requires understanding that emotions are programs for long-term success; the behavior they motivate in the present moment may be one step backward in pursuit of two forward steps in the future. Because isolated interactions with potential cooperators were a rare occurrence in the ancestral environment, our cognitive architecture was constructed on the assumption of repeated social interactions.¹⁹⁵ Thus, we behave *as if* we may encounter the individual again, even though a modern human may engage in hundreds of isolated interactions with strangers.¹⁹⁶

When guilt motivates leaving a tip, it does so to avoid potential reputational repercussions based on the supposition that you will interact with that person again. The emotion is perfectly rational, it motivates you to forego

193. See Werner Güth & Martin G. Kocher, *More Than Thirty Years of Ultimatum Bargaining Experiments: Motives, Variations, and a Survey of the Recent Literature*, 108 J. ECON. BEHAV. & ORG. 396, 398 (2014); see also Max H. Bazerman et al., *Perceptions of Fairness in Interpersonal and Individual Choice Situations*, 4 CURRENT DIRECTIONS PSYCHOL. SCI. 39, 41–42 (1995) (discussing ultimatum game); Jones, *supra* note 190, at 1155 (explaining ultimatum game and an irrational taste for spite and citing several sources reviewing ultimatum game results).

194. See Ofer H. Azar, *Do People Tip Because of Psychological or Strategic Motivations? An Empirical Analysis of Restaurant Tipping*, 42 APPLIED ECON. 3039 (2010); see also Jones, *supra* note 190, at 1176–77 (discussing the phenomenon of tipping).

195. See Andrew W. Delton et al., *Evolution of Direct Reciprocity Under Uncertainty Can Explain Human Generosity in One-Shot Encounters*, 108 PROC. NAT'L ACAD. SCI. 13335, 13339–40 (2011) (explaining the ancestral conditions that built organisms to assume multiple interactions even when exposed to cues that they are in one-shot interactions).

196. *Id.*

a small gain now in order to receive a greater benefit in the long-run. In the ultimatum game, establishing that you will not accept dramatically low offers ensures that the proposer will make larger offers in future rounds if he wants any money for himself. In this light, a whole host of apparently irrational results in one-shot economic games become rational when viewed as first rounds of multiple round games.

2. Emotional Heuristics and Error Management Theory

Consider the adaptive problem of activation and transition between emotional states. As previously discussed, while an emotional program may situate an individual to effectively solve one problem, it also might, in doing so, vitiate the individual's ability to effectively and efficiently solve a different problem.¹⁹⁷ A moment's reflection reveals a potential complication: activating an emotion when it should not be activated (a false positive), or not activating an emotion when it should be activated (a false negative), could prove quite costly where the correct configuration was not produced in a situation that called for it.

Take, for example, sexual disgust. Sexual disgust motivates the avoidance of sexual behaviors with high-fitness cost partners such as siblings (who are more likely to share the same deleterious recessive alleles) or the elderly (who are no longer able to reproduce) via cognitive and physiological outputs such as down-regulating sexual drive or eliciting nausea.¹⁹⁸ This particular emotional program is effective when properly activated, but could be harmful if it is either erroneously activated in the face of a high-value mate, or if it is not activated in the presence of high-cost mate.¹⁹⁹

The optimal emotional system would be free from error, correctly integrating perfect information and deploying emotional programs exactly when they needed to be deployed, and never when they did not. This is, of course, impossible. The various problems faced by our ancestors—finding food, avoiding predators, building reputation, securing mates—had to be solved within a finite time period with some amount of imperfect information.²⁰⁰ Because it is impossible to perfectly assess all of the possible

197. *Supra* notes 124–28 and accompanying text.

198. *See* Tybur et al., *supra* note 129, at 72–73 (outlining the evolutionary origins and informational processing procedures of sexual disgust).

199. *Id.*

200. *See* Gerd Gigerenzer, *The Adaptive Toolbox*, in *BOUNDED RATIONALITY: THE ADAPTIVE TOOLBOX*, *supra* note 121, at 37, 37 (“Humans and animals make inferences about unknown features of their world under constraints of limited time, limited knowledge, and limited computational capacities.”).

contingencies for any given problem, each time the mind initiates an emotional program it is in essence making a *bet* that the current situation is best navigated by the specialized mental and physiological configuration orchestrated by that emotion.²⁰¹ Because some amount of inaccuracy in emotional deployment is inevitable, natural selection has equipped the mind with a system for minimizing the cost of these errors, a system that Martie Haselton and colleagues have dubbed “error-management.”²⁰²

Error-management is, in a nutshell, the brain’s calculation of what economists call *expected utility*—the probability of an event occurring multiplied by the net potential costs and benefits associated with that event.²⁰³ While emotions have historically been cast as the antithesis to rational procedures like expected utility calculations, there is now a great deal of evidence that the mind does precisely that in accounting for the potential costs of errors.²⁰⁴ Not all errors are created equal, and where probabilities are uncertain or the expected payoff of one particular contingency is much greater than another, we should expect emotions to play it safe when placing a bet under uncertainty.²⁰⁵ For example, incorrectly assuming a stick is a snake (a false positive) is much less costly than incorrectly assuming a snake is a stick (a false negative)—which is why we sometimes make the first mistake but rarely make the second.²⁰⁶ The overly-sensitive fear mechanism is taking into account the fact that if it is wrong in activating the emotion too quickly, the cost to the person is only a few minutes of discomfort, but if it is wrong in the other direction and does not activate the emotion in the presence

201. Tooby & Cosmides, *Psychology of Emotions*, *supra* note 112, at 117 (“Thus an emotion is a bet placed under the conditions of uncertainty: It is the evolved mind’s bet about what internal deployment is likely to lead to the best average long-term set of payoffs . . .”).

202. See generally Martie G. Haselton & David M. Buss, *Error Management Theory: A New Perspective on Biases in Cross-Sex Mind Reading*, 78 J. PERSONALITY & SOC. PSYCHOL. 81 (2000); Martie G. Haselton & Daniel Nettle, *The Paranoid Optimist: An Integrative Evolutionary Model of Cognitive Biases*, 10 PERSONALITY & SOC. PSYCHOL. R. 47 (2006); Dominic D.P. Johnson et al., *The Evolution of Error: Error Management, Cognitive Constraints and Adaptive Decision-Making Biases*, 28 TRENDS ECOLOGY & EVOLUTION 474 (2013).

203. See Haselton & Buss, *supra* note 202, at 81–82 (explaining the cost-benefit calculations of error-management theory). Legal scholars not familiar with the concept of expected utility may still recognize its logic from Judge Learned Hand’s test for negligence, where the burden of adequate precautions is compared against the cost of injury multiplied by the probability of injury occurring. See *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947) (elucidating the calculus of negligence); Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 32–33 (1972) (discussing the logic of the Hand test).

204. See Johnson et al., *supra* note 202, at 476–80 (reviewing interdisciplinary empirical findings of error-management).

205. See Haselton & Nettle, *supra* note 202, at 48 (“Whenever the costs of errors are asymmetrical, humanly engineered systems should be biased toward making the less costly error.”).

206. Johnson et al., *supra* note 202, at 474.

of an actual snake, the error could be fatal. In other words, it is better to err countless times in the former instance than even once in the latter. Falsely perceiving a snake (or being easily startled at night, etc.) may seem *irrational* at first blush (if it leads, for example, to needlessly costly avoidance behavior), but given the asymmetry of potential costs, this *better safe than sorry* approach may produce the greatest expected lifetime payoff.

As the foregoing examples illustrate, emotions are not rational or irrational within the classic definition of the word—they are *arational*. Emotions may generate behavior that sometimes results in substantively rational or irrational results, but they will vary on a case by case basis and are determined by processes wholly outside the traditional conception of rationality. The relevant descriptive questions for understanding and predicting an emotion are not about whether or not an emotion is rational, they are *what did this emotion evolve to do, what are the mechanisms it uses to accomplish this?* The normative questions similarly have nothing to do with rationality: the law is not trying to incentivize the rational, it is trying to incentivize the socially desirable. The rational (i.e. welfare maximizing) choice of action in a number of situations may be the very thing that a statute has been drafted to prevent. To the extent that law and emotions scholars (or law and economics scholars examining emotions) rely on a rationality assumption of behavior, or rational-choice model of analysis, they are adding an unnecessary level of inquiry.²⁰⁷

IV. APPLICATIONS AND INSIGHTS

Part III showed how an evolutionary perspective can shed light on some of the questions that continuously trouble law and emotions scholars. The goal of Part IV is to illustrate how those insights can be deployed to enhance the law's framework for emotions going forward. As I opened this Article, the business of the law is to influence behavior. For emotions, the crucial question for the law in crafting a behavioral model is: how do we get emotions from what they would ordinarily do, to what we deem as socially desirable? For researchers and legal scholars, an evolutionary account of emotions augments this inquiry in three ways: by sharpening predictive models of emotions, by updating the incentive structures that the law uses when dealing with emotions, and by informing the normative questions that underlie our determinations of socially-desirable behavior.

207. See Jones & Goldsmith, *supra* note 2, at 443 (explaining the perils of incorporating a rationality-based model into the law's assumptions of human behavior).

A. Sharpening Predictive Models

By and large, the law's analysis of emotions has consisted of inductive reasoning—gathering large sets of observations and attempting to form explanations and subsequent predictions by generalizing from those observations. This approach has been undeniably successful in a great number of contexts.²⁰⁸ But an unfortunate consequence of this type of analysis is that it can also generate an unwieldy number of divergent explanatory theories. Depending on the size of the set of observations and how broadly or narrowly the behavioral theory is defined, any given set of phenomena might be equally explained by multiple behavioral theories—regardless of such theories' long-term accuracy or universal applicability. Conversely, an evolutionary account of emotions allows legal theorists to work deductively, formulating predictions based on a unified behavioral framework—one that adds a deeper layer of understanding to existing sets of observations and has the potential to uncover hidden patterns of behavior that might otherwise go uninvestigated.

To illustrate the difference between these approaches, consider the quintessential heat of passion homicide, that of a jealous husband killing his spouse after witnessing or learning of her infidelity. One evolutionary framework for wife-killings proposes that, because of the asymmetric risk of investing resources in someone else's offspring, in certain circumstances it may have been adaptive for males to kill a spouse that has either been unfaithful or irrevocably broken off the relationship.²⁰⁹ For our ancestors, in most instances killing a wife would have been maladaptive: it entails the loss of a cooperative partner, a contributor of resources, and a potential source of future reproduction. However, a wife's certain infidelity is unique in that it entails the potential incurrence of extreme costs for the husband. These costs include the loss of the wife's reproductive capacity, a devotion of resources to a rival's offspring, and reputational damage within the community and with polygynous co-wives (i.e. as the type of person who 'tolerates' infidelity).²¹⁰ Consequently, in cases where infidelity or the loss of the relationship is certain, the fitness benefits of killing an unfaithful wife (e.g., depriving a rival of access to a reproductive source, killing the potential child

208. Cf. STEVEN PINKER, *THE BETTER ANGELS OF OUR NATURE: WHY VIOLENCE HAS DECLINED* (2011) (providing a general account of how an institutionalized legal system has contributed to a steady, overall reduction in violent crime).

209. Todd K. Shackelford et al., *Wife Killing: Risk to Women as a Function of Age*, 15 *VIOLENCE & VICTIMS* 273, 274 (2000) (citing David M. Buss & Joshua D. Duntley, *Evolved Homicide Modules*, presented at the 10th Annual Meeting of the Human Behavior and Evolution Society, University of California at Davis (July 10, 1998)).

210. *See id.*

of the rival, and deterring other wives from cheating) could have outweighed the potential fitness costs for cuckolded partners.²¹¹ In turn, an adaptation for jealousy-induced homicide is hypothesized to have evolved disproportionately in men.²¹²

Such a view of uxoricide generates several predictions about the types of patterns we should expect to see in cases of spousal homicide. First, because of the asymmetric reproductive risks, we should expect a much greater number of men killing their wives than wives killing their husbands—which is indeed the case. In the United States, roughly 35% of all female murder victims are killed by an intimate partner, as opposed to just 3% of males.²¹³

Second, because infidelity-related killings are one of the few instances in which killing a spouse may have resulted in net positive fitness benefits, we should expect that—of the number of cases in which husbands kill their wives—infidelity-related cases should make up a substantial proportion of the total. And again we can observe this pattern in the real world. The Federal Bureau of Investigation maintains a database of Supplementary Homicide Reports from each state. The database contains data on every homicide reported for the years 1976 to 1994. Amongst cases of uxoricide in the database for which there was some information available as to the circumstances of the killing, cases in which a man suspected or discovered wifely infidelity accounted for 41% of the total murders—the largest category by a significant margin.²¹⁴

Finally, because the husband's jealousy is tied to the reproductive fecundity of his wife, an evolutionary framework for wife-killings posits that the chances of an unfaithful wife being killed by her husband should increase as the wife's age approaches peak fertility. And again, this is what we observe: in a study of uxoricides in the United States, Todd Shackelford and colleagues found that the probability of a woman being murdered by a jealous husband in the context of suspected or discovered infidelity increases with the *decreasing* age of the woman—that is, the closer the wife is to peak fertility, the higher the risk she is killed by a jealous husband.²¹⁵

Some might argue that there are non-evolutionary explanations for these observations. For instance, they might posit that the large disparity between

211. *See id.*

212. *See id.*

213. James A. Fox & Marianne W. Zawitz, *Homicide Trends in the United States*, BUREAU OF JUST. STAT. 91 (2007), <http://www.bjs.gov/content/pub/pdf/htius.pdf>.

214. Todd K. Shackelford et al., *Wife Killings Committed in the Context of a Lovers Triangle*, 25 BASIC & APPLIED SOC. PSYCHOL. 137, 139 (2003). The next closest category was “brawl due to alcohol” which accounted for 30% of the total; the other twelve categories combined accounted for the remaining 29%. *Id.*

215. *See id.* at 141.

husbands killing their wives and wives killing their husbands may be due to other factors, such as a patriarchal infrastructure or an American culture that celebrates violence—particularly male violence. But such explanations do not account for the fact that the American intimate partner homicide statistics are merely reflective of a worldwide tendency. Globally, across a vast range of cultures and legal systems, intimate partner homicides account for just 6% of males killed each year, but 47% of females.²¹⁶

Scholars might also argue that the predictive value of the victim's age in these killings has less to do with her reproductive capabilities, and more to do with the fact that young women are more likely to be married to younger, and more violent, men. However, Shackelford and colleagues accounted for this in their model, and found that younger wives were likely to be killed in cases of suspected or discovered infidelity, *even when controlling for* the husband's age. Moreover, they also found that the husband's age *did not* uniquely predict the probability of uxoricide in such cases.²¹⁷

Here, an evolutionary point of view succeeds where other behavioral models might fail in adding a layer of deeper understanding to existing observations, and in generating new, non-obvious predictions about emotional behavior. Of course, explanation does not equal justification, and a biologically-based account of any behavior—especially one as heinous as spousal homicide—is never in and of itself normatively determinant.²¹⁸ But whereas the characteristic heat of passion analysis has heretofore treated the defendant's emotion as an enigmatic “dethronement of the reasoning faculty”²¹⁹ or a cause to act “not out of rational thought but out of unconsidered reaction”²²⁰—an evolved conception of the mind allows us to disentangle such vague descriptions and construct a clearer and more useful predictive model. It slices through ambiguities about whether or not the actor is thinking, reasoning, or acting rationally by uncovering the cognitive mechanics that underlie the behavior. And it provides a heuristic for identifying asymmetric risk probabilities and generating future predictions

216. *Global Study on Homicide 2013*, UNITED NATIONS OFF. ON DRUGS & CRIME 14 (Mar. 2014), http://www.unodc.org/documents/gsh/pdfs/2014_GLOBAL_HOMICIDE_BOOK_web.pdf.

This figure, representing a worldwide average, holds more or less constant across individual geographic regions as well. In fact, in the Americas intimate partner homicides only account for 38% of total female homicides, as compared to 42% in Africa, 55% in Asia, 55% in Europe, 73% in Oceania, and 47% globally. *Id.* at 53.

217. Fox & Zawitz, *supra* note 213, at 139.

218. It can be, however, informative for normative analysis, as discussed in Section C of this Part.

219. *Johnson v. State*, 108 N.W. 55, 62 (Wis. 1906)

220. *People v. Beltran*, 301 P.3d 1120, 1125 (Cal. 2013).

about jealousy-induced intimate partner homicides. If the law's ability to effectively and efficiently influence conduct depends on its ability to accurately predict behavior, it should utilize every available asset—including an evolutionary framework—in doing so.

B. Updating Incentive Structures

Even if the law possessed a perfect predictive model, it would still face the subsequent challenge of influencing the predicted behavior. An evolutionary framework can contribute to such an endeavor by honing in on those incentives that might move emotions from their evolved function towards a more socially-desirable state of affairs. As other legal scholars have noted, the ability to move actors towards any given behavior in today's world can depend crucially on how that behavior deviates from what was adaptive in the ancestral environment.²²¹ An evolutionary perspective not only informs *how much* of an incentive is needed, but also *what kind*. Decisions about balancing the various tools at the law's disposal—e.g., tax incentives, police presence, prison sentence lengths, fine amounts, statutory proof requirements, public exposure (i.e. shaming), or rehabilitative treatments—can be enlightened by an account of the types of incentives that would have served as cognitive inputs to emotional programs in the ancestral environment.

For example, consider race-based discrimination. Regrettably, we, as a species, use race as a proxy for classifying, forming inferences about (i.e. stereotyping), and even hating other members of society.²²² It is a pernicious and pervasive problem, one that our nation has fought to curb through such sweeping measures as the Civil Rights Acts of 1866²²³ and 1964,²²⁴ and the Thirteenth, Fourteenth and Fifteenth Amendments to the United States Constitution.²²⁵ It is a clear-cut case in which society has identified a

221. See Jones, *supra* note 190, at 1190 (“The magnitude of legal intervention necessary to reduce or to increase the incidence of any human behavior will correlate positively or negatively, respectively, with the extent to which a predisposition contributing to that behavior was adaptive for its bearers, on average, in past environments.”).

222. Aside from the numerous, manifest historical examples, there is also a robust empirical research to support this contention. See, e.g., Miles Hewstone et al., *Social Categorization and Person Memory: The Pervasiveness of Race as an Organizing Principle*, 21 EUR. J. SOC. PSYCHOL. 517 (1991); C. Neil Macrae & Galen V. Bodenhausen, *Social Cognition: Thinking Categorically About Others*, 51 ANN. REV. PSYCHOL. 93 (2000); Shelley E. Taylor et al., *Categorical and Contextual Bases of Person Memory and Stereotyping*, 36 J. PERSONALITY SOC. PSYCHOL. 778 (1978).

223. Civil Rights Act of 1866, Pub. L. No. 39-26, 14 Stat. 27 (1866).

224. Civil Rights Act of 1964, Pub. L. No. 88-352, 78 Stat. 241 (1964).

225. U.S. CONST. amend. XIII; U.S. CONST. amend. XIV; U.S. CONST. amend. XV.

persistent behavior, condemned it, and desires to change it. But to move individuals away from racial-discrimination, it would be helpful to first understand the mental machinery at work in making race-based classifications, and subsequently identify the kinds of incentives that can move this machinery into an alternate direction.

So what can an evolutionary framework offer to this analysis? First, it offers an explanation for the behavior—i.e. why we make race-based classifications. According to one group of evolutionary psychologists, there is no part of the human cognitive architecture that is specifically designed to encode race.²²⁶ Instead, our tendency to make race based categorizations and inferences is a byproduct of computational machinery that evolved for tracking coalitions and alliances.²²⁷ Because hunter-gatherers lived in nomadic bands that often came into conflict with other neighboring bands, our ancestors would have benefited from cognitive programs that tracked coalitional alliances and predisposed humans to favor their ingroup and discriminate against their outgroup in allocating resources and evaluating conduct.²²⁸ Kurzban et al. propose that this machinery uses shared appearance cues—such as dress or tattoos—to predict coalitional allegiances.²²⁹ In turn, they hypothesize that because we live in modern societies in which races are mixed but not completely integrated, race is being used as a shared appearance cue and mapped onto the cognitive variable *coalition* to signal possible association and cooperation.²³⁰

Second, by identifying the mechanisms by which we make these classifications, they have also honed in on at least one way to influence this behavioral phenomenon: by creating alliances uncorrelated with race. Because ancestral coalitions were fluid structures, the various cues used by a cognitive coalitional tracker (including race) would need to be computed and revised dynamically.²³¹ This means that, to the extent race ceases to carry predictive value for coalitional membership, it can, in essence be “erased” as

226. See generally Robert Kurzban et al., *Can Race be Erased? Coalitional Computation and Social Categorization*, 98 PROC. NAT'L ACAD. SCI. U.S. 15387 (2001).

227. Leda Cosmides et al., *Perceptions of Race*, 7 TRENDS IN COGNITIVE SCI. 173, 175 (2003). Race-based classification is a bit of an evolutionary puzzle. Because our hunter-gatherer ancestors traveled primarily by foot, the typical individual would almost never have encountered people genetically distant enough to qualify as being from a different race. *Id.* at 174. Because inter-racial encounters would have been so rare, there could be no selection for cognitive adaptations designed specifically to encode race. *Id.* As a result, this well-documented phenomenon of race-based classification must be a side-effect of a program designed for a different purpose. *Id.* at 175.

228. See Kurzban et al., *supra* note 226, at 15387.

229. *Id.* at 15387–88.

230. *Id.* at 15388.

231. See Cosmides et al., *supra* note 227, at 177.

a cue used by the coalition-tracking mechanism and replaced by a stronger predictor.²³² To show this, Kurzban et al. conducted an experiment that used errors in recall to surreptitiously document whether subjects are categorizing individuals into groups, and, if they are, across what dimensions they are doing so.²³³ When a shared appearance cue of jersey color was used to suggest allegiance with one of two antagonistic coalitions, it dramatically diminished the extent to which participants categorized by race, and substituted the mechanism for categorization with jersey color.²³⁴ Surprisingly, less than four minutes of exposure to an alternate social world was enough to override a lifetime's experience of race as a social predictor.²³⁵

In the law's search to implement its desired reform of ending race-based discrimination and the emotions that engender such discrimination, an evolutionary point of view generates one concrete method for doing so: find new and alternate ways of forming cooperative groups. Kurzban et al.'s findings can be marshaled as evidence to support existing programs—such as desegregation busing for diversity, or affirmative action—as well as new or novel ones that work to diffuse race across housing, employment, education, and other potential coalitional markers. Setting aside any additional arguments for or against such measures, Kurzban et al.'s finding suggest that citizens' ability to use their neighborhood, vocation, school, or even their local sports team as a means for identification with other individuals can attenuate their reflexive encoding of race and the prejudicial emotions that accompany it. Though evolutionary theory may not be necessary to understand the merits of racial integration, it provides a model of the cognitive mechanics at work in the process, and a deeper layer of understanding of why such a remedy might be effective.

232. *Id.*

233. Kurzban et al., *supra* note 226, at 15388. They used a memory confusion protocol that was a standard method in the literature, used previously to show that humans do indeed use race as a dimension to categorize individuals into groups. *Id.* They describe the method and logic of the experiment:

Subjects are asked to form impressions of individuals whom they will see engaged in a conversation. They then see a sequence of sentences, each of which is paired with a photo of the individual who said it. Afterward, there is a surprise recall task: the sentences appear in random order, and subjects must attribute each to the correct individual. Misattributions reveal encoding: subjects more readily confuse individuals whom they have encoded as members of the same category than those whom they have categorized as members of different categories.

Id.

234. *Id.* at 15391.

235. *Id.*

C. Informing Normative Choices

Recently, law and emotions scholars have placed an increased emphasis on providing normative recommendations to concrete legal questions.²³⁶ The insights of the evolutionary sciences—the theoretical framework, the causal explanations of behavior, the approach for identifying the computational procedures governing decision making—should again be considered a powerful set of tools for deriving these normative recommendations. But one of the most significant contributions from evolutionary science—and the one that I will argue here has the greatest potential implication for normative analysis—is its general demystification of the origins of our moral emotions.

As I discussed in the previous Part, one of the great capacities of an evolutionary framework is its potential to reverse engineer subconscious cognitive processes that have heretofore defied explanation. Scholars utilizing an evolutionary perspective have offered several potential natural explanations for what our moral emotions are, including: a dynamic coordination system for avoiding costly conflicts,²³⁷ a mechanism used to recruit and solidify alliances,²³⁸ and an internal regulator designed to ensure a good reputation as a co-operator.²³⁹ And though scholars have yet to reach a consensus on the precise computational procedures at work, the separate (and not necessarily mutually exclusive) theories each provide a sound explanation for why different groups tend to coalesce around distinct moral codes.²⁴⁰

For our purposes, the key insight to be gleaned is that our having moral emotions can be explained in terms of gene-plus-environment interactions occurring in neural tissue. Though the exact moral norms may differ from group to group, the architecture that generates affect-driven moral responses appears, based on available evidence and theory, to have been naturally selected because it helped us navigate a highly-social world—a world in

236. See *supra* notes 69–70 and accompanying text.

237. Peter DeScioli & Robert Kurzban, *A Solution to the Mysteries of Morality*, 139 PSYCHOL. BULL. 477, 492 (2013) (“We propose that moral condemnation is caused by an evolved suite of computational devices that are designed to implement dynamic coordination strategy for choosing sides in other people’s conflicts.”).

238. See John Tooby & Leda Cosmides, *Groups in Mind: The Coalitional Roots of War and Morality*, in HUMAN MORALITY & SOCIALITY: EVOLUTIONARY & COMPARATIVE PERSPECTIVES 191, 213–14 (Henrik Høgh-Olesen ed., 2010) (discussing morality as a natural extension of the adaptations underlying coalitional psychology).

239. See Dan Sperber & Nicolas Baumard, *Moral Reputation: An Evolutionary and Cognitive Perspective*, 27 MIND & LANGUAGE 495, 495 (2012) (introducing the idea of morality as an evolved reputation-building mechanism).

240. See generally JOSHUA GREENE, MORAL TRIBES: EMOTION, REASON, AND THE GAP BETWEEN US AND THEM (2013).

which shared intuitions of right and wrong, fair and unfair, led in some way to increased chances of survival and reproduction.

The importance of this insight is that it excavates our moral intuitions from the black box. It permits them to be examined for their usefulness and evaluated by objective principles instead of categorizing them as beyond scrutiny based on their subconscious origins.²⁴¹ Consider, for example, morality-based legislation such as Justice Scalia's parade of horrors from his *Lawrence v. Texas* dissent—laws prohibiting “bigamy, same-sex marriage, adult incest, prostitution, masturbation, adultery, fornication, bestiality and obscenity” that, by Scalia's own admission, “are sustainable only in light of *Bowers*' validation of laws based on moral choices.”²⁴² Consider conceptions of a higher, unwritten, natural law that derive their legitimacy from shared moral intuitions of good and bad²⁴³ or, as Justice Black termed them, “subjective considerations of ‘natural justice.’”²⁴⁴ Consider retributive rationales for punishment that are maintained: (i) by their origins as “part of the nature of man,”²⁴⁵ (ii) as attempts to “express the

241. For a similar promise about the potential of neuroscience, see Greene & Cohen, *supra* note 77, at 1775. They state: “[c]ognitive neuroscience, by identifying the specific mechanisms responsible for behavior, will vividly illustrate what until now could only be appreciated through esoteric theorizing: that there is something fishy about our ordinary conceptions of human action and responsibility, and that, as a result, the legal principles we have devised to reflect these conceptions may be flawed.” *Id.*

242. 539 U.S. 558, 590 (2003) (Scalia, J., dissenting) (“State laws against bigamy, same-sex marriage, adult incest, prostitution, masturbation, adultery, fornication, bestiality, and obscenity are likewise sustainable only in light of *Bowers*' validation of laws based on moral choices.”).

243. See, e.g., Robert P. George, *Natural Law, the Constitution, and the Theory and Practice of Judicial Review*, 69 *FORDHAM L. REV.* 2269, 2269 (2001) (explaining the traditional concept of natural law).

244. *Griswold v. Connecticut*, 381 U.S. 479, 522 (1975) (Black, J., dissenting) (lamenting the Court's finding of a right to privacy within the “penumbras” of the Bill of Rights and commenting that the “formula [of *Lochner*], based on subjective considerations of ‘natural justice,’ is no less dangerous when used to enforce this Court's views about personal rights than those about economic rights.”). The parameters of the due process clause of the Fourteenth Amendment is the most prominent contemporary example of the debate surrounding natural law. See John S. Baker, Jr., *Natural Law and Justice Thomas*, 12 *REGENT U.L. REV.* 471, 49295 (2000) (discussing the defeat and subsequent revival of natural law through substantive due process); see also *Planned Parenthood v. Casey*, 505 U.S. 833, 848 (1992) (“Neither the Bill of Rights nor the specific practices of States at the time of the adoption of the Fourteenth Amendment marks the outer limits of the substantive sphere of liberty which the Fourteenth Amendment protects.”); *Id.* at 851 (“At the heart of liberty is the right to define one's own concept of existence, of meaning, of the universe, and of the mystery of human life. Beliefs about these matters could not define the attributes of personhood were they formed under the compulsion of the State.”).

245. *Furman v. Georgia*, 408 U.S. 238, 308 (1972) (Stewart, J., concurring) (explaining that retribution is a legitimate basis for the imposition of a death sentence: “[t]he instinct for retribution is part of the nature of man, and channeling that instinct in the administration of criminal justice serves an important purpose in promoting the stability of a society governed by law.”).

community's moral outrage,"²⁴⁶ and (iii) as a reflection of "society's and the victim's interests in seeing the offender is repaid for the hurt he caused."²⁴⁷ Each of these concepts was justified (either explicitly or implicitly) at least partly through a conception of our moral intuitions as something ethereal, axiomatic, or beyond the type of inspection that the law might otherwise require.

By deconstructing the functions and operations of moral intuitions such as these, we avoid being wooed by their subconscious origins and falling prey to the naturalistic fallacy.²⁴⁸ That is, we avoid making the assumption that what is natural is per se good, and avoid committing the logical fallacy of assuming *ought* from *is*. Legal concepts based on the different moral emotions that might be shared within groups—e.g. disgust at the thought of certain sexual relationships, or a vengeful thirst to see an offender "get what they deserve"—should hold no special status simply because they are engineered rapidly, automatically, and unconsciously. They should be subject to the same rigors of analysis that conscious, deliberative conclusions are subjected to. If our moral sentiments are to be institutionalized by the legal system, let them be so on their merits, not out of deference to their enigmatic origins.

V. CONCLUSION

Law and emotions, though already an exemplar of academic exchange, has been largely devoid of any insight from the evolutionary sciences. The contribution of evolutionary theory is not trivial: it provides the only coherent, unifying framework advanced to date for (in the law and emotions tradition) illuminating how emotions operate within the legal domain, investigating the underlying nature and characteristics of each emotion, and informing the normative decisions that must be made regarding such emotions. As I have attempted to show, this framework not only helps explain some of the phenomena that have troubled scholars for decades, but also provides a valuable outline for predicting and analyzing behavior going forward. It holds great explanatory potential, and should be a continuing

246. *Roper v. Simmons*, 543 U.S. 551, 571 (2005) (describing retribution as "an attempt to express the community's moral outrage").

247. *Kennedy v. Louisiana*, 554 U.S. 407, 442 (2008) (describing the goal of retribution as a reflection of "society's and the victim's interests in seeing that the offender is repaid for the hurt he caused.") (citations omitted).

248. For an interesting discussion of the naturalistic fallacy and the origins of the term, see Jones & Goldsmith, *supra* note 2, at 485 n.234 and accompanying text.

source of insight for law and emotions, a field that has, heretofore, been an archetype of interdisciplinary legal analysis.