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# The Disruptive Neuroscience of Judicial Choice

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*Scholars of judicial behavior overwhelmingly substantiate the historical presumption that most judges act impartially and independent most of the time. The reality of human behavior, however, says otherwise. Drawing upon untapped evidence from neuroscience, this Article provides a comprehensive evaluation of how bias, emotion, and empathy—all central to human decision-making—are inevitable in judicial choice. The Article offers three novel neuroscientific insights that explain why this inevitability is so. First, because human cognition associated with decision-making involves multiple, and often intersecting, neural regions and circuits, logic and reason are not separate from bias and emotion in the brain. Second, bias, emotion, empathy and other aspects of our cognition can be implicit, thereby shaping our behavior in ways that we are unaware. This challenges the longstanding assumption that a judge can simply put feelings aside when making judicial decisions. Third, there is no basis in neuroscience to support the idea that judges are exempt from these aspects of human cognition. These findings disrupt widespread faith in the unassailable rationality and impartiality of judges, and demonstrate how such views are increasingly at odds with evidence about how our brains work. By offering an original descriptive account of judicial behavior that is rooted in neuroscience, this Article provides a novel exposition of why bias, emotion and empathy have the capacity to influence the choices judges make. Doing so asks us to view judges as the humans they are.*

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## INTRODUCTION

Compassion. Anger. Bias. Empathy.<sup>1</sup> These aspects of human cognition are not attributes commonly discussed in the wide body of literature addressing judicial behavior.<sup>2</sup> Judges (and other adjudicators) are presumed impartial, unbiased, and unemotional in their role as arbiters of law and fact.<sup>3</sup> Despite recent examples of judicial bias and other misconduct<sup>4</sup> and the growth of social movements such as

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1. This Article employs a neuroscientifically informed definition of bias, emotion, and empathy. For definitions, see *infra* Sections III.A (bias), III.B (emotion), III.C (empathy).

2. RICHARD A. POSNER, HOW JUDGES THINK 5 (“Achieving a sound understanding of judicial behavior is thus of more than merely academic interest; it is a key to legal reform.”); see also *infra* Part I.

3. This Article uses the term “judges” to indicate a broader group of professional arbiters of law and fact, including judges and arbitrators. See, e.g., 28 U.S.C. § 144 (2012) (providing grounds upon which parties may file an affidavit alleging judicial bias and stating the available remedies); MODEL CODE OF JUD. CONDUCT r. 2.2 (AM. BAR ASS’N 2010) (“A judge shall uphold and apply the law, and shall perform all duties of judicial office fairly and impartially.”).

4. See, e.g., Jonah Engel Bromwich, *Meek Mill’s Lawyer Says Judge Showed ‘Enormous Bias’ in Sentencing*, N.Y. TIMES, Nov. 7, 2017, <https://www.nytimes.com/2017/11/07/arts/music/meek-mill-jail.html> [<https://web.archive.org/web/20180427192755/https://www.nytimes.com/2017/11/07/arts/music/meek-mill-jail.html>]; Neil Etienne, *Appeal Court Makes Rare Finding of Bias Against Judge*, L. TIMES (Feb. 1, 2016), <https://www.lawtimesnews.com/article/appeal-court-makes-rare->

#metoo,<sup>5</sup> #timesup,<sup>6</sup> and #blacklivesmatter<sup>7</sup> that recognize the prevalence of bias and inequality in society, the legal profession remains committed to a longstanding view that judges are largely exempt from such faults. Judges are viewed as exemplary citizens capable of answering Aristotle's call that the law is reason free from passion.<sup>8</sup>

Before accepting this axiom as truth, we must investigate how judges make decisions about law and consider what roles bias, emotion, and other factors play in those decisions.<sup>9</sup> In the extensive literature on judicial behavior from an array of legal subfields and across disciplinary methodologies, the foundational assumption that judges are capable of choosing to be rational and unbiased prevails.<sup>10</sup> In addition, legal scholarship on the role of emotion in judicial decision-making is

finding-of-bias-against-judge-12436/ [https://perma.cc/2DMT-H4U7]; Peter S. Green & John Mazor, *Corrupt Justice: What Happens When Judges' Bias Taints a Case?*, GUARDIAN, Oct. 18, 2015, <https://www.theguardian.com/us-news/2015/oct/18/judge-bias-corrupts-court-cases> [https://perma.cc/ST8N-G7ZY] (reporting the removal of just 19 judges in 12 states for judicial maleficence between 2010 and 2014 after approximately 7000 complaints were filed each year); *Judicial Bias: What Crosses the Line?*, NPR (Jul. 19, 2012, 1:00 PM), <https://www.npr.org/2012/07/19/157052848/laying-down-the-law-on-judicial-bias> (discussing the complaint of judicial bias filed by the attorneys representing George Zimmerman, who was accused of murdering Trayvon Martin); Natasha Robinson, *Federal Circuit Court Judge Alexander Street Accused of Bias After Rejecting Hundreds of Migration Cases*, ABC NEWS (Sept. 9, 2015, 11:22 PM), <http://www.abc.net.au/news/2015-09-10/federal-court-judge-alexander-street-accused-of-bias/6764704> [https://perma.cc/24X7-L28M]; Matt Zapotosky, *Prominent Appeals Court Judge Alex Kozinski Accused of Sexual Misconduct*, WASH. POST, Dec. 8, 2017, [https://www.washingtonpost.com/world/national-security/prominent-appeals-court-judge-alex-kozinski-accused-of-sexual-misconduct/2017/12/08/1763e2b8-d913-11e7-a841-2066faf731ef\\_story.html](https://www.washingtonpost.com/world/national-security/prominent-appeals-court-judge-alex-kozinski-accused-of-sexual-misconduct/2017/12/08/1763e2b8-d913-11e7-a841-2066faf731ef_story.html) [https://perma.cc/RUY5-AMQY].

5. Stephanie Zacharek, Eliana Dockterman & Haley Sweetland Edwards, *Time Person of the Year 2017: The Silence Breakers*, TIME, <http://time.com/time-person-of-the-year-2017-silence-breakers/> [https://perma.cc/G4JW-E78E] (last visited Sept. 18, 2018).

6. TIME'S UP, <https://www.timesupnow.com/home> [https://perma.cc/2YBW-93SP] (last visited Sept. 18, 2018) (stating that “[t]he clock has run out on sexual assault, harassment and inequality in the workplace”).

7. *About*, BLACK LIVES MATTER, <https://blacklivesmatter.com/about/> (last visited Sept. 18, 2018) (describing itself as an organization “whose mission is to build local power and to intervene in violence inflicted on Black communities by the state and vigilantes”).

8. 2 THE COMPLETE WORKS OF ARISTOTLE: THE REVISED OXFORD TRANSLATION 2042 (Jonathan Barnes ed., 1984) (“Therefore he who bids the law rule may be deemed to bid God and Reason alone rule, but he who bids man rule adds an element of the beast; for desire is a wild beast, and passion perverts the minds of rulers, even when they are the best of men. The law is reason unaffected by desire.”).

9. This Article uses the term “judicial choice” to refer to the set of cognitive processes (e.g., assessment, judgment, problem solving, decision-making) a judge or other adjudicator engages in to form judicial opinions, dissents and other decisions. For a helpful continuum of judicial to non-judicial functions, see NUNO GAROUPA & TOM GINSBURG, JUDICIAL REPUTATION: A COMPARATIVE THEORY 79 tbl.3.1 (2015).

10. See *infra* Section I.A; see also, e.g., LAWRENCE BAUM, JUDGES AND THEIR AUDIENCES: A PERSPECTIVE ON JUDICIAL BEHAVIOR (2008); LEE EPSTEIN, WILLIAM M. LANDED & RICHARD A. POSNER, THE BEHAVIOR OF FEDERAL JUDGES: A THEORETICAL AND EMPIRICAL STUDY OF RATIONAL CHOICE (2013); CASS R. SUNSTEIN ET AL., ARE JUDGES POLITICAL? AN EMPIRICAL ANALYSIS OF THE FEDERAL JUDICIARY (2006).

scant.<sup>11</sup> Even when scholars recognize the existence, and perhaps even the value of emotionally-aware judges, they often evince defensiveness, as if the very discussion of such matters demands justification.<sup>12</sup> These views manifest a central presumption rarely questioned by the prevailing literature on judicial behavior—that logical reasoning can occur absent bias, emotion, and empathy.

Judges, too, often adopt this presumption when they assert views about how they judge or how they think they ought to.<sup>13</sup> U.S. Supreme Court Justice Sonia Sotomayor acknowledges that judges have emotions, but cautions that “[i]t’s not the heart that compels conclusions in cases, it’s the law. [. . .] Recognize those feelings and put them aside.”<sup>14</sup> Chief Justice John Roberts, expressing his preference for judicial restraint, has stated that “[j]udges and justices are servants of the law, not the other way around. Judges are like umpires. Umpires don’t make the rules; they apply them.”<sup>15</sup> The late Justice Antonin Scalia advised that “good judges pride themselves on the rationality of their rulings and the suppression of their personal proclivities, including most especially their emotions.”<sup>16</sup>

11. See, e.g., Jamal Greene, *Pathetic Argument in Constitutional Law*, 113 COLUM. L. REV. 1389, 1391 (2013) (discussing emotional argument by judges and parties in constitutional law); *id.* (“And yet one detects an unexamined ambivalence toward the appropriate role of emotion in constitutional discourse. Taxonomists of constitutional argument, even those whose project is descriptive, typically ignore or dismiss emotional appeal as a standard mode of persuasion in constitutional law.”); *id.* at 1393 (“Still less has been written of the distinct role of a judge as a producer rather than a recipient of emotional appeals.”).

12. See, e.g., William J. Brennan, Jr., *A Tribute to Justice Harry A. Blackmun*, 108 HARV. L. REV. 20 (1994) (discussing Blackmun’s approach to judicial doctrine); Harold Hongju Koh, *Justice Blackmun and the “World Out There,”* 104 YALE L.J. 23, 27 (1994) (“Although detractors deemed him undisciplined, guided by ‘sentimentalism’ and ‘compassion’ over hard-headed reason, these critics confused emotionalism with candor, doctrinal wavering with maturing judgment.”); Laura Krugman Ray, *Judicial Personality: Rhetoric and Emotion in Supreme Court Opinions*, 59 WASH. & LEE L. REV. 193, 231 (2002) (“While Jackson questioned the existence of dispassionate judges, Blackmun found them all too real and insisted that human emotion can properly inform constitutional interpretation. He failed, however, to support his point with legal argument; instead, he illustrated it with a bluntness that makes the reader uncomfortably aware of its obvious pitfall, the overwhelming of reason by understandable but undisciplined sympathy.”). *But see* Adam N. Glynn & Maya Sen, *Identifying Judicial Empathy: Does Having Daughters Cause Judges to Rule for Women’s Issues?*, 59 AM. J. POL. SCI. 37, 38 (2015).

13. In neuroscience, the unit of analysis is the individual person and her brain. For purposes of this Article, I apply neuroscientific insights about individual decision-making behavior to judges and arbitrators in domestic, foreign and international courts and tribunals. Key differences related to judicial authority, function, and institutions become relevant in normative applications and are discussed in Part IV of this Article.

14. *Confirmation Hearing on the Nomination of Hon. Sonia Sotomayor, to Be an Associate Justice of the Supreme Court of the United States: Hearing Before the S. Comm. on the Judiciary*, 111th Cong. 26 (2009).

15. Roberts: ‘My Job Is to Call Balls and Strikes and Not to Pitch or Bat,’ CNN (Sept. 12, 2005 4:58 PM), <http://www.cnn.com/2005/POLITICS/09/12/roberts.statement/> [https://perma.cc/3EDA-GAYK].

16. ANTONIN SCALIA & BRYAN GARNER, MAKING YOUR CASE: THE ART OF PERSUADING JUDGES 32 (2008).

Many other judges around the world share similar views.<sup>17</sup> At the International Court of Justice, where judges are called upon to decide some of the most significant legal questions in the world, such as the legality of the use of nuclear weapons or genocide, there is a commonly-held belief that legal analysis can remain unaffected by bias and emotion. Former International Court of Justice Judge Thomas Buergenthal, in deciding the allegations of genocide in the Democratic of the Congo brought against Rwanda said, “I always felt that I would only write a separate opinion if there was a principle, a view I thought I had better put down. I didn’t feel so in this case. The human element challenged my extraneous notions, not my juridical ones.”<sup>18</sup> Taking a similar view, former International Court of Justice judge *ad hoc* Georges Abi-Saab amplifies that no matter one’s emotions or beliefs in a case, in determining judicial opinions, “one ought to do no violence to the law.”<sup>19</sup>

There are notable exceptions, of course, particularly in divisive cases involving core values such as the legality of abortion. In *Webster v. Reproductive Health Services*, Justice Blackmun expressed his emotion in his defense of his opinion in *Roe v. Wade* writing “I fear for the future. I fear for the liberty and equality of the millions of women who have lived and come of age in the 16 years since *Roe* was decided. I fear for the integrity of, and public esteem for, this Court.”<sup>20</sup> In *PA v. Casey*, Justice Scalia passionately disagreed with other members of the Court saying, “I must, however, respond to a few of the more outrageous arguments in today’s opinion, which it is beyond human nature to leave unanswered.”<sup>21</sup> U.S. Court of Appeals Judge and scholar, Richard Posner, believes that “an American judge, especially at the appellate level, is an occasional legislator, yet with no constituency to answer to, his judging is likely to be influenced by temperament, emotion, experience, personal background and ideology . . . .”<sup>22</sup> Beyond such occasional statements by judges themselves, we know little about how judges, as human beings prone to emotion and bias, actually make the legally complex and often morally challenging choices

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17. See, e.g., VITO BREDI, THE OBJECTIVITY OF JUDICIAL DECISIONS: A COMPARATIVE ANALYSIS OF NINE JURISDICTIONS 11 (2017) (discussing the widespread belief by judges and others in nine jurisdictions that “[o]bjectivity is an epistemic requirement of a judicial decision that considers the facts of the case as a truthful representation of past events and that evaluates the range of legal arguments submitted by the parties”).

18. Interview with Judge Thomas Buergenthal, Former Judge for the International Court of Justice, (date). See *Case Concerning Armed Activities on the Territory of the Congo* (Dem. Rep. of the Congo v. Rwanda), Judgment, 2005 I.C.J. (Wherein the DRC alleged that Rwandan forces had committed acts of genocide, the Court, after considering jurisdictional clauses in the Genocide Convention and the Convention on Discrimination against Women, determined that it lacked jurisdiction to decide the case on the merits).

19. Telephone Interview with Professor Georges Abi-Saab, Former Judge Ad Hoc, Int’l Court of Justice (Oct. 13, 2016).

20. *Webster v. Reprod. Health Servs.*, 492 U.S. 490, 537 (1989) (Blackmun, J., concurring in part and dissenting in part).

21. *Planned Parenthood of Se. Pa. v. Casey*, 505 U.S. 833, 981 (1992).

22. POSNER, *supra* note 2, at 174 (describing nine theories of judicial behavior and exploring judicial emotion and intuition in the context of the U.S. Supreme Court).

they make.<sup>23</sup> But we do know that the presumption that judges are to be impartial and dispassionate in exercising their judicial duties is nearly ubiquitous.<sup>24</sup>

This cardinal premise—that judges are impartial because they can choose to be so—is wrong. This Article invokes insights from neuroscience in three fundamental ways to reveal the limitations in this legal understanding of judicial choice. First, the neural activity in our brains associated with decision-making can be integrally interconnected with brain activity engaged in bias, emotion, and empathy. The rich complexity of neural connections means that multiple regions of the brain and neural circuits can participate sequentially or concurrently when producing thought that we understand to be a decision. These same regions and networks may also activate if a person is experiencing emotion or bias or empathy. Studies employing functional Magnetic Resonance Imaging (“fMRI”) evidence why this is so by showing how emotion intersects with areas in our brain that process judgment.<sup>25</sup> Second, when making a choice, people are subject to implicit, or hidden, cognition.<sup>26</sup> Although we know what our outcome or decision is, we can remain largely unaware of the complex process involved in accessing a distant memory or in determining a future risk that our brains employed to get there. This is why our choices can be influenced by implicit bias or other forms of implicit cognition.<sup>27</sup>

23. *Id.* at 2 (“The difficulty outsiders have in understanding judicial behavior is due partly to the fact that judges deliberate in secret, though it would be more accurate to say that they do not deliberate (by which I mean deliberate collectively) very much is the real secret.”). *See generally* LAWRENCE BAUM, *THE PUZZLE OF JUDICIAL BEHAVIOR* (2004) (exploring judicial goals and their impact on judicial decisions); DANIEL TERRIS, CESARE P.R. ROMANO & LEIGH SWIGART, *THE INTERNATIONAL JUDGE: AN INTRODUCTION TO THE MEN AND WOMEN WHO DECIDE THE WORLD’S CASES* (2007).

24. BENJAMIN N. CARDOZO, *THE NATURE OF THE JUDICIAL PROCESS* 168 (1921) (recognizing that this “ideal . . . [is] beyond the reach of human faculties to attain”); ROBERT E. KEETON, *KEETON ON JUDGING IN THE AMERICAN LEGAL SYSTEM* 15 (1999) (acknowledging that judges make “value-laden” rulings); William J. Brennan, *Reason, Passion and “The Progress of the Law,”* 10 *CARDOZO L. REV.* 3, 9 (1988) (describing passion as “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” and arguing that “passion” in judging is essential to “anchor judicial ruling to human realities, preventing the law from becoming sterile and bureaucratic”).

25. Neuroscientists ask, what is the task that the brain is engaging in and how can we best deconstruct that task into components that can be studied? *See* Antoine Bechara, *Human Emotions in Decision Making: Are They Useful or Disruptive?*, in *NEUROSCIENCE OF DECISION MAKING* 73, 74–76 (Oshin Vartanian & David R. Mandel eds., 2011).

26. *See* PATRICIA CHURCHLAND, *TOUCHING A NERVE: THE SELF AS BRAIN* 197–98, 201 (2013) (describing the concept of “hidden cognition” from a psychological perspective and discussing the distinctions between conscious, unconscious, subconscious, and nonconscious); RIAN E. MCMULLIN, *THE NEW HANDBOOK OF COGNITIVE THERAPY TECHNIQUES* 68 (2000) (“The third cognition between emotion and behavior is a belief I call the hidden cognition. It is hidden because most clients are not aware of its existence. The [hidden belief] occurs after clients feel an emotion, but immediately before they engage in a behavior. Most clients don’t notice this cognition because it is so rapid they experience it as a vague impression, an undigested conception often occurring before they can put it into words.”).

27. Joo-Hyun Song & Ken Nakayama, *Hidden Cognitive States Revealed in Choice Reaching Tasks*, 13 *TRENDS COGNITIVE SCI.* 360, 365 (2009) (concluding that “action is not always the final product of perception and cognition”). *See generally* *IMPLICIT MEMORY: NEW DIRECTIONS IN*

Third, these neuroscientifically informed understandings of human thought are generally applicable to most people. Although potential exceptions are known to occur in the brains of young people, people with addiction to drugs and those suffering from brain injury or mental disorders, no known exceptions exist for people on the basis of their work as judges. Judges are subject to the same cognitive realities of human thought that sustain and plague all of us.

This Article's findings disrupt the widely held view that judges are rational actors capable of putting bias and emotion aside in order to form decisions on the basis of law and fact. Here, I examine three aspects of implicit cognition relevant to judicial behavior and commonly studied in neuroscience research: bias, emotion, and empathy. Of course, any attempt to apply neuroscientific studies to legal scholarship is subject to important limitations and risks, which I discuss at length in Part II. However, the general inference that bias, emotion, and empathy have the capacity to influence the choices we make at the neural level is well evidenced. In applying that inference, this Article makes a novel contribution to the extensive literature on judicial behavior. It also calls for renewing the discourse in our field about both the desirable and the dangerous impacts associated with recognizing the reality of bias in the law as we aim to affirm the value of judges in society today.

The Article demonstrates its claim in four parts. Part I identifies and describes the existing approaches in legal scholarship to understanding judicial decision-making, covering theoretical, empirical, and behavioral approaches. It shows how thought about judicial behavior in general, and judicial decision-making in particular, is rooted in the foundational presumption that law is not the product of bias or emotion. Part II counters the conventional scholarship by introducing a neuroscientifically driven framework for understanding and studying individual choice and the brain. In doing so, it describes what neuroscience is, how studies in this field are conducted, and why outcomes are subject to limitations that legal scholars need to understand. Part III deepens the neuroscientific analysis in order to describe how three aspects of our implicit cognition—bias, emotion, and empathy—affect our decision-making in ways in which we are not aware. I use this evidence to challenge the prevailing view that judges are capable of putting their emotions aside, even when they explicitly aim to do so, given modern understandings of our brains. Part IV emphasizes the Article's central claim—that bias, emotion, and empathy are inevitable in judicial decision-making—and advances a discourse about the contributions and controversies that follow. By providing a neuroscientifically driven account of judicial behavior, the Article aims to humanize our understanding of law. It offers a new foundational truth: that

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COGNITION, DEVELOPMENT AND NEUROPSYCHOLOGY (Peter Graf & Michael E.J. Masson eds., 1993); A. Clark, *What Reaching Teaches: Consciousness, Control, and the Inner Zombie*, 58 BRIT. J. PHIL. SCI. 563 (2007); S. Dehaene et al., *Conscious, Preconscious, and Subliminal Processing: A Testable Taxonomy*, 10 TRENDS COGNITIVE. SCI. 204 (2006); M.A. Goodale et al., *Dual Routes to Action: Contributions of the Dorsal and Ventral Streams to Adaptive Behavior*, 149 PROGRESS BRAIN RES. 269–83 (2005).



whatever else we believe law to be, it is also the product of human thought *and* feeling.

### I. DECODING JUDICIAL BEHAVIOR

How do judges decide? Why do we care? Let's consider the second question first. Judges hold great power in our society. They can sentence people to life in prison. They can choose which parent will have custody of a child. At the highest levels, they have the power to shape fundamental social battles over segregation, abortion, privacy, gay marriage, and more. Because of their power, judges remain a central pillar of our legal system in America and in other courts around the world. As such, judges symbolize the promise embodied in the pursuit of the rule of law, namely order, justice, and a world governed by rules, not by despotic rulers.

Since we care about the power judges have, we care about how they exercise that power. This is where the professional judicial duties of independence and impartiality show up most vividly. But they alone fail to describe and help us understand judicial behavior. For that, there is a vast arena of legal scholarship where ideas on the subject abound. Here, theoretical and methodological frames of reference matter because deep inquiries into understanding the phenomenon of how judges decide cases are also rooted in the perspective one takes. Analyzing judicial behavior in the American legal tradition is quite a different endeavor than doing so in international law (not to mention views in other countries and legal systems).<sup>28</sup> One could explore this subject through legal positivism or realism.<sup>29</sup> The answer might be found by applying a policy-oriented perspective following Hart and Sacks or invoking the New Haven Approach.<sup>30</sup> We might consider critical race theorists alongside Third World Approaches that rightly reveal theories others avoid about how law has contributed to racial injustice in many societies.<sup>31</sup> Or we can

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28. See generally THE ROUTLEDGE HANDBOOK OF JUDICIAL BEHAVIOR (Robert Howard & Kirk Randazzo eds., 2018) (providing American and comparative perspectives and covering the attitudinal model, ideology, strategic behavior, political influences, and more).

29. For a comprehensive take on the history, meaning and application of various international legal theories of law, see ANDREA BIANCHI, INTERNATIONAL LAW THEORIES (2016).

30. HENRY M. HART & ALBERT SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW (1995); HAROLD D. LASSWELL & MYRES S. MCDUGAL, JURISPRUDENCE FOR A FREE SOCIETY: STUDIES IN LAW, SCIENCE AND POLICY (1992); W. Michael Reisman et al., *The New Haven School: A Brief Introduction*, 32 YALE INT'L L.J. 757 (2007).

31. For critical race studies, see generally DEREK BELL, CONSTITUTIONAL CONFLICTS (1997); DEREK BELL, FACES AT THE BOTTOM OF THE WELL: THE PERMANENCE OF RACISM (1992); DEREK BELL, RACE, RACISM AND AMERICAN LAW (1973); KIMBERLE WILLIAMS CRENSHAW, CRITICAL RACE THEORY: THE KEY WRITINGS THAT FORMED THE MOVEMENT (1996); Angela Harris, *Foreword* to RICHARD DELGADO & JEAN STEFANCIC, CRITICAL RACE THEORY: AN INTRODUCTION (3d ed. 2017). For TWAIL approaches, see generally ANTONY ANGHIE, IMPERIALISM, SOVEREIGNTY AND THE MAKING OF INTERNATIONAL LAW (2005); MAKAU MUTUA, HUMAN RIGHTS STANDARDS: HEGEMONY, LAW AND POLITICS (2016); James Thuo Gathii, *TWAIL: A Brief History of Its Origins, Its Decentralized Network, and a Tentative Bibliography*, 3 TRADE & DEV. L. 26 (2011); Makau Mutua, *Critical Race Theory and International Law: The View of an Insider-Outsider*, 45 VILL. L. REV. 841, 852 (2000).

learn from feminist critiques of male-dominated judging methodologies.<sup>32</sup> McCandless, Enright, and O'Donoghue, for example, write in the context of Northern Ireland about adopting a “feminist judging methodology” that makes use of judges’ common knowledge of gender bias, exposes narratives that work against women in the courtroom setting, and identifies the need for increased feminism awareness in judicial decision-making.<sup>33</sup>

Part I organizes the literature on judicial behavior into three methodological areas—theoretical approaches, empirical approaches and behavioral approaches—while acknowledging that there is also overlap among these categories. This overview, while not comprehensive, illustrates the prevalence and persistence of the basic presumption that judges do and should decide impartially and on the basis of logical reasoning.

### A. Theoretical Approaches

The study of judicial behavior has a long history in legal thought, guided by ideas about legal formalism and other theories.<sup>34</sup> But whether you believe judges make law or merely interpret it, all judges, as scholar Karen Alter has said, have the “power to speak the law.”<sup>35</sup> Consequently, the study of judicial behavior is of interest to a variety of fields including law, economics, psychology, and sociology, each with their own methodologies. Scholarship is sometimes categorized by the type of decision maker, for example, the study of judges from that of arbitrators, noting their different legal mandates and judicial functions. An added level of complexity is that judicial behavior can be explored specifically within the judicial system of a certain geographic context distinguishing, for example, between courts in the United States, regional courts, international courts, and courts in different countries. This raises important questions about how a study of judges in one country should inform understandings about judges in another.

Much of the literature focusing on judges in the United States takes a positivist approach—seeking to describe and define the behavior of judges, arbitrators, and

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32. See, e.g., U.S. FEMINIST JUDGEMENTS: REWRITTEN OPINIONS OF THE UNITED STATES SUPREME COURTS (Kathryn Stanchi, Linda Berger & Bridget Crawford eds., 2016); Diana Majury, *Introducing the Women’s Court of Canada*, 18 CANADIAN J. WOMEN & L. 1 (2006).

33. NORTHERN/IRISH FEMINIST JUDGEMENTS 8 (Mairead Enright, Julie McCandless & Aoife O’Donoghue eds., 2017).

34. Brian Leiter, *Positivism, Formalism, Realism*, 99 COLUM. L. REV. 1138, 1145–46 (1999) (book review) (“[W]e may characterize formalism as the descriptive theory of adjudication according to which (1) the law is rationally determinate, and (2) judging is mechanical. It follows, moreover, from (1), that (3) legal reasoning is autonomous, since the class of legal reasons suffices to justify a unique outcome; no recourse to non-legal reasons is demanded or required.”).

35. Karen J. Alter, *The New Terrain of International Law: Courts, Politics, Rights*, EJIL: TALK! (Apr. 22, 2014), <https://www.ejiltalk.org/the-new-terrain-of-international-law-courts-politics-rights/> [<https://perma.cc/ZV9K-Z6EF>]; see also KAREN J. ALTER, *THE NEW TERRAIN OF INTERNATIONAL LAW: COURTS, POLITICS, RIGHTS* 32 (2014) (“International courts have the power to issue binding rulings in cases that are adjudicated.”).

other adjudicators.<sup>36</sup> Are judges biased?<sup>37</sup> Do apologies influence judges?<sup>38</sup> What role does reputation play?<sup>39</sup> How do arbitrators approach legal decision-making?<sup>40</sup> Those following this theoretical view intend to describe judicial behavior as it is, not as it should be. Among the many important scholarly voices in this area, former judge and legal scholar Richard Posner's recent book aims to provide a comprehensive positivist framework of nine approaches to judicial choice.<sup>41</sup> Attitudinal theory, for example, claims that judicial decisions are influenced by the judge's own political views.<sup>42</sup> Pragmatism is based on assumptions that judicial opinions are determined by a judge's own sense of the outcomes as compared to legalism, in which a judge's decisions are believed to be determined by the law.<sup>43</sup> Sociological theory draws upon social psychology and rational choice theory.<sup>44</sup> Strategic theory draws upon positive political theory.<sup>45</sup>

Scholars also advance normative views that impact the analysis of judicial decision-making. For example, Martha Nussbaum's work has advanced the view that emotion is an internally embedded influence in law, and Susan Bandes has written about why emotion should matter in law.<sup>46</sup> The normative concern extends

36. Richard A. Posner, *Judicial Behavior and Performance: An Economic Approach*, 32 FLA. ST. L. REV. 1259, 1261 (2005) ("We can expect, therefore, a tendency for arbitrators to 'split the difference' in their awards.").

37. Andrea Bianchi, *Choice and (the Awareness of) Its Consequences: The ICJ's "Structural Bias" Strikes Again in the Marshall Islands Case*, 111 AJIL UNBOUND 81, 84 (2017).

38. See Jeffrey J. Rachlinski et al., *Inside the Bankruptcy Judge's Mind*, 86 B.U. L. REV. 1227 (2006); see also Jeffrey J. Rachlinski, *Contribution in the Courtroom: Do Apologies Affect Adjudication?*, 98 CORNELL L. REV. 1189 (2013).

39. See generally GAROUPA & GINSBURG, *supra* note 9.

40. Tom Ginsburg, *The Arbitrator as Agent: Why Deferential Review Is Not Always Pro-Arbitration*, 77 U. CHI. L. REV. 1013, 1014 (2010) ("[A]rbitrators might deliver poor quality decisions that undermine the attractiveness of arbitration as a whole."); Sergio Puig, *Social Capital in the Arbitration Marketplace*, 25 EUR. J. INT'L L. 388 (2014); Joshua B. Simmons, *Valuation in Investor-State Arbitration: Toward a More Exact Science*, 30 BERKELEY J. INT'L L. 196, 200, 208–14 (2012) (identifying "perceptions that arbitrators merely 'split the baby' between the parties' proposed valuations, particularly when awards are poorly explained").

41. See generally POSNER, *supra* note 2.

42. See JEFFREY SEGAL & HAROLD SPAETH, *THE SUPREME COURT AND THE ATTITUDINAL MODEL REVISITED* (2002); Connor Raso & William Eskridge Jr., *Chevron as a Canon, Not a Precedent: An Empirical Study of What Motivates Justices in Agency Deference Cases*, 110 COLUM. L. REV. 1727 (2010). But see Barry Friedman, *Taking Law Seriously*, 4 PERSP. ON POL. 261 (2006).

43. POSNER, *supra* note 2, at 40.

44. *Id.*

45. See Daniel Rodriguez & Mathew McCubbins, *The Judiciary and the Role of Law*, in THE OXFORD HANDBOOK OF POLITICAL ECONOMY (Donald A. Wittman & Barry R. Weingast eds., 2008). For an early account, see J. Woodford Howard, *On the Fluidity of Judicial Choice*, 62 AM. POL. SCI. REV. 43–56 (1968).

46. See, e.g., Martha Nussbaum, *HIDING FROM HUMANITY: DISGUST, SHAME, AND THE LAW* (2004) (analyzing the role of emotion in criminal law, political liberalism and more); Martha Nussbaum, *POLITICAL EMOTIONS: WHY LOVE MATTERS FOR JUSTICE* 6 (2013) (describing "the ways in which emotions can support the basic principles of an aspiring yet imperfect society"); MARTHA NUSSBAUM, *UPHEAVALS OF THOUGHT: THE INTELLIGENCE OF EMOTIONS* (2001); THE PASSIONS OF LAW (Susan Bandes ed., 2000) (describing itself as the "first anthology to treat the role that emotions play,

beyond the positivist project of proving or documenting whether or not emotion influences judges. Instead, normative views seek to say something more; namely, that emotion should be a vital area of study in law.

Another vital area of normative discourse (which is, at times, also empirical) concerns racial bias.<sup>47</sup> In America, concerns about racial bias by judges and juries have a long history and a continuing impact that prompts scholarship that seeks to eradicate judicial behavior rooted in racism.<sup>48</sup> In the global context, Won Kidane's work has illuminated how certain identities have more influence in international arbitration due to the deeply held hierarchical beliefs about which cultural practices and values matter.<sup>49</sup> This inequity and the damage it causes are behind his call for diversification of judicial and arbitral institutions.

Normative concerns about gender bias have become more common in recent years. Nienke Grossman's work on sex representativeness on international courts, for example, is rooted in normative beliefs about the value of diversity and the legitimacy of these institutions.<sup>50</sup> Harlan Cohen adds a normative perspective,

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don't play, and ought to play in the practice and conception of law and justice"); Susan Bandes, *Emotion and Deliberation: The Autonomous Citizen in the Social World*, 53 NOMOS 189 (2013).

47. See Eileen Braman, *Cognition in the Courts: Analyzing the Use of Experiments to Study Legal Decision-Making*, in THE OXFORD HANDBOOK OF U.S. JUDICIAL BEHAVIOR 483, 493 (Lee Epstein & Stefanie A. Lindquist eds., 2017) (describing "recent experimental work on racial bias among judges"); Jeffrey J. Rachlinski & Sheri Lynn Johnson, *Does Unconscious Racial Bias Affect Trial Judges?*, 84 NOTRE DAME L. REV. 1195, 1221–26 (2009) (using the Implicit Association Test to study judges, concluding that judges have implicit biases regarding race and finding differences in judges' racial bias associated with their own racial identification that may result in leniency in sentencing in criminal trials under certain conditions).

48. See generally David S. Abrams, Marianne Bertrand & Sendhil Mullainathan, *Do Judges Vary in Their Treatment of Race?*, 41 J. LEGAL STUD. 347, 350 (2012) (analyzing racial disparities in sentencing); Ronald Chen & Jon Hanson, *Categorically Biased: The Influence of Knowledge Structures on Law and Legal Theory*, 77 S. CAL. L. REV. 1103, 1159 (2004) (analyzing research on racial bias and judicial behavior); Gregory S. Parks, *Judicial Recusal: Cognitive Biases and Racial Stereotyping*, 18 N.Y.U. J. LEGIS. & PUB. POL'Y 681 (2015); D. Wright & D.M. Taylor, *The Social Psychology of Cultural Diversity: Social Prejudice, Stereotyping and Discrimination*, in THE SAGE HANDBOOK OF SOCIAL PSYCHOLOGY 361 (M. Hogg & J. Cooper eds., 2006).

49. See generally WON KIDANE, THE CULTURE OF INTERNATIONAL ARBITRATION (2016); see also Alter, *supra* note 35 (observing domestic adjudicators may have different approaches than international courts and tribunals).

50. Nienke Grossman, *Sex on the Bench: Do Women Judges Matter to the Legitimacy of International Courts?*, 12 CHI. J. INT'L L. 647 (2012); Nienke Grossman, *Shattering the Glass Ceiling in International Adjudication*, 56 VA. J. INT'L L. 339 (2016) [hereinafter Grossman, *Shattering the Glass Ceiling*]; Telephone Interview with Nienke Grossman, Professor of Law, Univ. of Balt. (July 17, 2017); see also Amy Farrell, Geoff Ward & Danielle Rousseau, *Intersections of Gender and Race in Federal Sentencing: Examining Court Contexts and the Effects of Representative Court Authorities*, 14 J. GEN. RACE & JUST. 85, 91 (2010) (stating that authorities view women as less dangerous and perceiving that they "possess a generally greater potential for reform than men"); Lucy Greenwood & C. Mark Baker, *Is the Balance Getting Better? An Update on the Issue of Gender Diversity in International Arbitration*, 28 ARB. INT'L 413 (2015); Ilene H. Nagel & Barry L. Johnson, *The Role of Gender in a Structured Sentencing System: Equal Treatment, Policy Choices, and the Sentencing of Female Offenders Under the United States Sentencing Guidelines*, 85 J. CRIM. L. & CRIMINOLOGY 181, 186 (1994) ("Women are more likely than similarly situated men to receive suspended sentences or probation."); Mireze Philippe, *Speeding Up the Path for Gender Equality*, 1 TRANSNAT'L DISP. MGMT. 1 (2017).

informed by sociology, that law is ultimately best understood as relational and rooted in the community in which it operates.<sup>51</sup> The prevailing solutions advanced by many of these perspectives focus on reforming courts as institutions but say less about the need for individual reform of judges.

### B. Empirical Approaches

Empirical scholarship on judicial behavior aims to reveal new methodologies for understanding judicial behavior. Scholars are interested in what judges say about how they decide and about what influence their values or ideologies have in their decision-making practices.<sup>52</sup> Using empirical analysis, scholars survey judges and arbitrators and conduct interviews, which may reveal quantitative and qualitative data, often self-reported, about judicial behavior.<sup>53</sup>

Scholarly interest in empirical methodological approaches stems from the view that quantitative and qualitative data offer an evidence-based approach to understanding phenomena that theory does not.<sup>54</sup> Here, methodological design matters. Since empirical work is still sparse, scholars apply different models and assumptions to test general concepts about judicial behavior.<sup>55</sup> The value of any inferences a study may show are subject to factors such as an insufficient sample size or selection effects, since the subjects studied—judges and arbitrators—are not always available or willing participants.<sup>56</sup> Even where a study enjoys strong

51. Telephone Interview with Harlan Cohen, Author (July 17, (2017).

52. See BAUM, *supra* note 10; SUNSTEIN ET AL., *supra* note 10; William M. Landes & Richard A. Posner, *Rational Judicial Behavior: A Statistical Study*, 1 J. LEGAL ANALYSIS 775 (2009); Jeffrey A. Segal, Lee Epstein, Charles M. Cameron & Harold J. Spaeth, *Ideological Values and the Votes of U.S. Supreme Court Justices Revisited*, 57 J. POL. 812 (1995).

53. For empirical approaches to studying judicial and arbitrator behavior (some of which also employ a behavioral approach), see generally Linda A. Berger, *A Revised View of the Judicial Hunch*, 10 LEGAL COMM. & RHETORIC 1, 17–18 (2013); Susan Franck et al., *Inside the Arbitrator's Mind*, 66 EMORY L.J. 1115 (2017); Chris Guthrie et al., *Blinking on the Bench: How Judges Decide Cases*, 93 CORNELL L. REV. 1 (2007) [hereinafter Guthrie et al., *Blinking on the Bench*]; Chris Guthrie, Jeffrey J. Rachlinski & Andrew J. Wistrich, *Inside the Judicial Mind*, 86 CORNELL L. REV. 777, 778 (2001); Chris Guthrie, Jeffrey J. Rachlinski & Andrew J. Wistrich, *The "Hidden Judiciary": An Empirical Examination of Executive Branch Justice*, 58 DUKE L.J. 1477 (2009); Jeffrey J. Rachlinski, Andrew J. Wistrich & Chris Guthrie, *Can Judges Make Reliable Numeric Judgments? Distorted Damages and Skewed Sentences*, 90 IND. L.J. 695 (2015); Andrew J. Wistrich, Chris Guthrie & Jeffrey J. Rachlinski, *Can Judges Ignore Inadmissible Information? The Difficulty of Deliberately Disregarding*, 153 U. PENN. L. REV. 1251 (2005).

54. See, e.g., Rose McDermott, *New Directions for Experimental Work in International Relations*, 55 INT. STUD. Q. 503 (2011); Alex Mintz et al., *Experimental Approaches to International Relations*, 55 INT. STUD. Q. 493 (2011); Greg Shaffer & Tom Ginsburg, *The Empirical Turn in International Legal Scholarship*, 106 AM. J. INT'L L. 1, 1 (2012).

55. See, e.g., Franck et al., *supra* note 53, at 1115–18 (describing its “experimental method”); Rebecca Helm, Andrew J. Wistrich & Jeffrey J. Rachlinski, *Are Arbitrators Human?*, 13 J. EMPIRICAL LEGAL STUD. 666, 669–70 (2016) (suggesting that “arbitrators lack an inherent advantage over judges when it comes to making high-quality decisions”).

56. Sophie Nappert & Dieter Flader, *Psychological Factors in the Arbitral Process*, in THE ART OF ADVOCACY IN INTERNATIONAL ARBITRATION (Doak Bishop & Edward G. Kehoe eds., 2010) (surveying international arbitrators on aspects of persuasion and receiving a low response rate of 19 responses).

participation, analysis must be careful to distinguish between what judges say about their own behaviors from what third-parties observe. These limitations aside, empirical work on judicial behavior has advanced the awareness of the need for evidence-based approaches to describing judicial behavior.

### C. Behavioral Approaches

A third approach to understanding judicial behavior is to apply insights about human behavior. Enter behavioral sciences. This term is often used as a succinct descriptor for multiple approaches advancing the so-called “behavioral revolution” in the social sciences.<sup>57</sup> The assumption underlying behavioral approaches is, very generally speaking, to draw inferences about human behavior by observing said behavior, largely in laboratory settings.<sup>58</sup> Social sciences such as psychology, economics, and sociology employ methodologies aimed at observing human behavior under controlled conditions.

Behavioral research, particularly in psychology and economics, has been at the forefront of investigating rationality in decision-making.<sup>59</sup> Scholars have problematized existing notions that rational choice theory provides an accurate descriptive model of human behavior,<sup>60</sup> as new research observes that people make choices that are not rational,<sup>61</sup> often in predictable ways.<sup>62</sup> One area of intense focus concerns cognitive biases such as positive illusions, where studies observe that people are primed to be systematically biased in positive ways.<sup>63</sup> Another well-

57. See generally Emilie M. Hafner-Burton et al., *The Behavioral Revolution and International Relations*, 71 INT’L ORG. S1 (2017).

58. See, e.g., Amos Tversky & Daniel Kahnemann, *Rational Choice and the Framing of Decisions*, in RATIONAL CHOICE (Robin M. Hogarth & Melvin W. Reder eds., 1987).

59. See, e.g., CASS R. SUNSTEIN, BEHAVIORAL LAW AND ECONOMICS (2000); Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998); Christine Jolls & Cass R. Sunstein, *Debiasing Through Law*, 35 J. LEGAL STUD. 199 (2006); Anne van Aaken, *Towards Behavioral International Law and Economics - A Comment on Enriching Rational Choice Institutionalism for the Study of International Law*, 2008 U. ILL. L. REV. 47, 60.

60. Gregory M. Herek et al., *Decision Making During International Crises*, 31 J. CONFLICT RESOL. 203, 204 (1987) (explaining why rational choice theory is descriptively and normatively inadequate for improving the quality of decisions); see Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, in JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES 3 (Daniel Kahneman, Paul Slovic & Amos Tversky eds., 1982) (explaining that the processes that individuals use to make decisions can sometimes lead to “severe and systematic errors”).

61. See Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism Is Not an Oxymoron*, 70 U. CHI. L. REV. 1159, 1167–70 (2003) (providing evidence that humans will commonly make decisions contrary to their own interests).

62. OREN BAR-GILL, SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS 2 (2012); see also GEORGE A. AKERLOF & ROBERT J. SHILLER, PHISHING FOR PHOOLS: THE ECONOMICS OF MANIPULATION AND DECEPTION 6–7 (2015) (explaining how marketers use well known psychological principles to encourage customers to make purchases contrary to their best interests).

63. DOMINIC JOHNSON, OVERCONFIDENCE AND WAR: THE HAVOC AND GLORY OF POSITIVE ILLUSIONS 6 (2004) (describing adaptive overconfidence as a widespread human trait; for examples, studies suggest that people who use more positive words than negative in their daily

established bias occurs as overconfidence, or overestimating one's knowledge.<sup>64</sup> If you see a relationship between two things that does not really exist, this is an illusory correlation.<sup>65</sup> Status quo bias shows that we tend to prefer an option framed as the status quo.<sup>66</sup> Many biases relate to how people interact with information. Anchoring, for example, shows up as the tendency to rely too heavily on the first information presented when making a decision.<sup>67</sup>

Another set of deviations from rationality are conceptualized as heuristics, which are cognitive strategies or mental shortcuts we use in the face of complex or incomplete information to make decision-making easier.<sup>68</sup> Stereotyping, for example, is an adaptive trait we evolved to process information quickly even though our determinations based on stereotypes are often inaccurate and deeply flawed. Herbert Simon introduced the term “satisficing” to describe the ways our minds process judgments that are “good enough.”<sup>69</sup> His insight was that although rational people intend to be rational, we often lack the information necessary to make a rationally optimal choice.<sup>70</sup> Both cognitive biases and heuristics can contribute to judgment errors and other decision-making pathologies. People may also choose to avoid making any decision in uncertain circumstances.<sup>71</sup>

Within this already complex web of scholarship are those scholars who blend behavioral approaches in their study of legal topics.<sup>72</sup> For some legal scholars, these

vocabulary recall positive memories more readily than negative ones, tend to be overly optimistic about the future, and are more likely to evaluate themselves more positively than others).

64. See *id.* (providing positive and negative examples of overconfidence).

65. See, e.g., Luciana Carraro et. al, *Implicit and Explicit Illusory Correlation as a Function of Political Identity*, PLOS ONE, May 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4018394/pdf/pone.0096312.pdf> [<https://perma.cc/VPC6-5NCQ>] (“Illusory correlation is the tendency to misperceive the covariation between two events, and, more specifically, the tendency to believe that two relatively infrequent events are associated with each other even though no such association is actually present.”)

66. Rob Henderson, *How Powerful Is Status Quo Bias*, PSYCHOL. TODAY (Sept. 29, 2016), <https://www.psychologytoday.com/blog/after-service/201609/how-powerful-is-status-quo-bias> [<https://perma.cc/Q34Z-KHNP>].

67. Tversky & Kahneman, *supra* note 60, at 14–18 (describing anchoring).

68. *Id.* at 79–88 (describing heuristics as a “machine for jumping to conclusions” that lead to overconfidence, framing effects, base-rate neglect, and other cognitive biases).

69. HERBERT SIMON, *MODELS OF MAN: SOCIAL AND RATIONAL* 204–05 (1957); see also Shelley E. Taylor, *The Availability Bias in Social Perception and Interaction*, in *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES*, *supra* note 60, at 190, 190–91 (explaining the meaning of “satisfice”).

70. See SIMON, *supra* note 69, at 256 (explaining the difference in rational decision-making ability between the “economic man” and a “choosing individual of limited knowledge and ability”).

71. See, e.g., Rosalind Dixon & Tom Ginsburg, *Deciding Not to Decide: Deferral in Constitutional Design*, 9 INT'L J. CONST. L. 636, 639 (2011) (“When the stakes are high, there is naturally some reluctance to making the wrong decision too early; when stakes are low but the probability of error is high, deferral also makes sense as a strategy.”).

72. See Tversky & Kahneman, *supra* note 60. See generally SUNSTEIN, *supra* note 59; CASS SUNSTEIN & RICHARD THALER, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH AND HAPPINESS* (2008). For the limited body of legal scholarship beginning to engage behavioral psychology and behavioral economics in the realm of government decision-making, see Ganesh Sitaraman & David Zions, *Behavioral War Powers*, 90 N.Y.U. L. REV. 516, 521–23 (2015) (applying insights from

insights lead to prescriptions about how to improve individual decision-making and normative arguments about whether law ought to do so. Cass Sunstein and Richard Thaler's work, rooted in behavioral law and economics, on choice architecture, aimed at altering one's external decision environment to encourage or "nudge" a person toward better choices, is a well-known example of this.<sup>73</sup>

Behavioral psychology has also been employed by scholars to advance theories about judicial behavior at the individual level.<sup>74</sup> For example, Chris Guthrie, a legal scholar specializing in behavioral law and economics, has been studying judicial decision-making for a long time.<sup>75</sup> His work, often co-authored with other experts, has addressed anchoring effects in criminal sentencing and civil trial damages awards.<sup>76</sup> More recently, he has proposed the "intuitive-override" model of judging based on psychological research, arguing that "intuition is more likely than deliberation to lead judges astray."<sup>77</sup> Linda Berger raises this in the context of

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behavioral psychology to the legal debate on presidential war powers). For international legal scholarship in this area, see Ryan Goodman et al., *Introduction: Social Science and Human Rights*, in UNDERSTANDING SOCIAL ACTION, PROMOTING HUMAN RIGHTS 6–8, 16 (Ryan Goodman et al. eds., 2012) (describing the new research in empirical economics and social psychology); Tomer Brode, *Behavioral International Law*, 163 PENN. L. REV. 1099 (2015); Jean Galbraith, *Treaty Options: Towards a Behavioral Understanding of Treaty Design*, 53 VA. J. INT'L L. 309 (2013) (discussing the link between individual cognitive errors and state-decision errors in consenting to treaties and arguing that international legal actors should incorporate insights from choice architecture into their decision-making); von Aaken, *supra* note 59, at 47 (describing the influence of the Law and Economics movements on international law); Andrew K. Woods, *A Behavioral Approach to Human Rights*, 51 HARV. INT'L L.J. 51, 52–56 (2010) (investigating the implications of recent insights from behavioral economics for international human rights).

73. SUNSTEIN & THALER, *supra* note 72, at 8.

74. See, e.g., THE PSYCHOLOGY OF JUDICIAL DECISION MAKING (David Klein & Gregory Mitchell, eds., 2008); Stephen M. Bainbridge & G. Mitu Gulati, *How Do Judges Maximize? (The Same Way Everybody Else Does—Boundedly)*, 51 EMORY L.J. 83 (2002); Braman, *supra* note 47, at 484 (identifying the need for "a unified understanding of legal decision-making in terms of several 'cognitively informed' theories developed by researchers doing experimental work."). But see DORON TEICHMAN & EYAL ZAMIR, JUDICIAL DECISION-MAKING: A BEHAVIORAL PERSPECTIVE 3 (2014) ("[T]he behavioral studies in this sphere do not relate to the economic perspective . . . . It would therefore be more useful to describe the contribution of the behavioral studies of judicial decision-making by referring to the three primary contrasts between the economic and the behavioral perspectives described in the opening chapters of this volume. These are deviations from the assumption of cognitive rationality . . . departures from the assumption of motivational rationality . . . and divergences from consequentialist morality.").

75. See generally sources by Chris Guthrie cited *supra* note 53.

76. Micheline Favreau & Norman S. Segalowitz, *Automatic and Controlled Processes in the First- and Second-Language Reading of Fluent Bilinguals*, 22 MEMORY & COGNITION 565 (1983) (theorizing foreign language evaluations require more deliberate processing and fewer intuitive assessments); Boaz Keysar, Sayuri L. Hayakawa & Sun Guy An, *The Foreign-Language Effect: Thinking in a Foreign Tongue Reduces Decision Biases*, 23 PSYCH. SCI. 551 (2012); Rachlinski, Wistrich & Guthrie, *supra* note 53, at 696–97 ("Our results suggest that anchoring is so persistent, unexpected, and widespread that the process of assigning awards and sentences might be pervasively unreliable, absent some remedial intervention.").

77. Guthrie et al., *Blinking on the Bench*, *supra* note 53, at 105 ("As we demonstrate below, judges are predominantly intuitive decision makers, and intuitive judgments are often flawed."). But see Braman, *supra* note 47, at 491 ("Guthrie et al. treat the propensity to engage in deeper reasoning as an individual characteristic by categorizing participants according to their scores on a Cognitive Reflection Task



judicial decision-making and argues that intuition's helpfulness or harmfulness changes depending on whether judges are making judgments about people as compared to engaging in problem solving.<sup>78</sup>

Dan Kahan's work applies psychology to the study of cognition in legal decision-making. He has argued that understanding cognitive models such as coherence-based reasoning or motivated reasoning can be useful for legal scholars, but cautions against applying them to the decision-making behavior of judges because, in his view, "[t]he study of cognition establishes that professional judgment is special."<sup>79</sup> This significant caveat aside, Kahan's approach aims to understand how decisions are made in the brain and his findings, such as "[c]ultural cognition' is a species of motivated reasoning that promotes congruence between a person's defining commitments . . . and his or her perceptions of risks and related facts," are illuminating.<sup>80</sup> This work provides important complexity to understanding the merits and the limitations of behavioral work.

Together, these studies have been incredibly important in launching a "behavioral" turn in a variety of areas of law.<sup>81</sup> At their core, they offer new grounds for understanding human behavior in the law and challenge longstanding assumptions in the legal profession, including rational choice theory.<sup>82</sup> Broadly speaking, research at the intersection of law and behavioral psychology is helpful because it explains *what* is going on and allows for new ways of observing legal behavior and new observations of legal behavior. But most behavioral approaches are not designed to explain *how* or what neuroscientists call the neural mechanism responsible for the observed behavior.<sup>83</sup>

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(CRT). This is somewhat problematic because while it is true that some people are more likely to engage in in-depth processing than others, the *characteristics of the decision task* can also influence the likelihood that someone will engage in deeper processing.<sup>79</sup>)

78. Berger, *supra* note 53, at 17–18 (investigating studies from cognitive psychology that suggests that intuition constrains judgment cognitive processes but may have an opposite influence on problem solving cognitive processes).

79. Dan M. Kahan, *Laws of Cognition and the Cognition of Law*, 135 COGNITION 56, 56–60 (2015).

80. Dan M. Kahan et al., *They Saw a Protest: Cognitive Illiberalism and the Speech Conduct Distinction*, 64 STAN. L. REV. 851, 859; *see also* Dan M. Kahan, Donald Braman, Paul Slovic, John Gastil & Geoffrey Cohen, *Cultural Cognition of the Risks and Benefits of Nanotechnology*, 4 NATURE & NANOTECHNOLOGY 87 (2009); Dan M. Kahan, Donald Braman, John Gastil, Paul Slovic & C.K. Mertz, *Culture and Identity-Protective Cognition: Explaining the White-Male Effect in Risk Perception*, 4 J. EMPIRICAL LEGAL STUD. 465 (2007).

81. Beyond psychology, scholars employ behavioral approaches from other fields. *See, e.g.*, LAWRENCE BAUM, *IDEOLOGY IN THE SUPREME COURT* (2017); LEE EPSTEIN & JACK KNIGHT, *THE CHOICES JUSTICES MAKE* 9–12 (1998) (describing a political science approach to studying judges and the central role of judicial attitudes).

82. Robert O. Keohane, *Rational Choice Theory and International Law: Insights and Limitations*, 31 J. LEGAL STUD. 307 (2002).

83. TEICHMAN & ZAMIR, *supra* note 74, at 2 (“[T]hese camps share some basic assumptions, including the belief that judges’ decisions are driven only by their goals, the primary goal being to make good legal policy . . . . These theories hardly take into account insights from cognitive and social psychology that cast doubt on these assumptions.”).

## II. THE NEUROLOGICAL BASIS OF INDIVIDUAL CHOICE

What does neuroscience bring to the study of judicial behavior? As many scholars have argued, there are certainly institutional and structural problems associated with judicial behavior where reform at those levels is advisable.<sup>84</sup> This might include adopting quotas or aspirational targets for diversifying courts and tribunals, making selection processes of judges more transparent, or adopting procedural reforms.<sup>85</sup> But judicial reform in these areas is not a substitute for reform at the individual level.<sup>86</sup> As I've argued before, sometimes the problem is structural or institutional, but sometimes a person is the problem.<sup>87</sup> In discussing the International Court of Justice, Andrea Bianchi explains

[t]o me the point is that the judges, not the Court—as the latter does not exist independently of human beings, regardless of our desire to attribute to it anthropomorphic features—made a deliberate choice not to entertain the case and to dismiss it right away, upholding the very first objection on jurisdiction.<sup>88</sup>

I strongly agree with his view. Judges shape the law, and judges are human beings. This is why a comprehensive and accurate understanding of judicial behavior must also account for the scientific realities of human behavior.

To do this, we must narrow the focus from the concept of judicial behavior to judicial choice. It is important to frame what I mean by this idea.<sup>89</sup> Studying judicial choice through the lens of neuroscience involves studying the cognitive processes that people use when they make decisions. “Choice” here refers to the set of internal processes by which a person reaches an outcome.<sup>90</sup> The cognitive activity inside a person’s brain may be framed externally in different ways such as decision, an act of judging, problem solving, making inferences, etc. The focus here is on what is happening inside of the mind of the judge. To investigate this central question, I analyze three subsidiary questions: (1) How do brains decide?; (2) What is the effect of certain cognitive aspects, such as emotion and empathy, on decision-making?; and (3) Are there cognitive processes that are implicit or hidden because we are unaware of them?

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84. See *supra* Section I.

85. See Franck et al., *supra* note 53, at 1171–72 (suggesting structural and procedural mitigation, such as group deliberation); Grossman, *Shattering the Glass Ceiling*, *supra* note 50, at 396–404 (calling for the adoption of aspirational targets or quotas).

86. Maggie Gardner, *Parochial Procedure*, 69 STAN. L. REV. 941 (2017).

87. Anna Spain Bradley, *Cognitive Competence in Executive Branch Decision Making*, 49 CONN. L. REV. 713 (2017).

88. Bianchi, *supra* note 37.

89. Tom Ginsburg & Nicholas Stephanopoulos, *The Concepts of Law*, 84 CHI. L. REV. (UNBOUND) 147 n.10 (2017) (“Concepts provide the mental architecture by which we understand the world and are ubiquitous in social science as well as law.”).

90. See generally PAUL BREST & LINDA HAMILTON KRIEGER, *PROBLEM SOLVING, DECISION MAKING AND PROFESSIONAL JUDGEMENT* (2010).

Neuroscience—a broad term covering different sub-approaches—explores what is happening in the brain. Studies can show mechanisms in the brain that help explain a behavior observed through a psychological study or reported through empirical research. These studies have been adopted and applied to legal scholarship spawning the new area of neurolaw,<sup>91</sup> which emerged as a field of study about a decade ago.<sup>92</sup> Scholars have applied neuroscience to questions regarding tort, dispute resolution, and philosophy.<sup>93</sup> The majority of neurolaw scholarship is in the area of criminal law.<sup>94</sup> Neuroscience informs legal questions about criminal

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91. For an overview of scholarship at the intersection of law and neuroscience, see A JUDGES GUIDE TO NEUROSCIENCE: A CONCISE INTRODUCTION (Michael Gazzaniga ed., 2010); MICHAEL S. PARDO & DENNIS PATTERSON, MINDS, BRAINS, AND LAW: THE CONCEPTUAL FOUNDATIONS OF LAW AND NEUROSCIENCE 47–78 (2013) (discussing neuroscience and legal theory); Oliver R. Goodenough, *Mapping Cortical Areas Associated with Legal Reasoning and Moral Intuition*, 41 JURIMETRICS 429 (2001) (arguing for re-conceptualizing law in response to neuroscience and recipient of the Jurimetrics Research Award).

92. See Michael Freeman, *Introduction to 13 LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES 5* (Michael Freeman ed. 2011); Owen D. Jones, Rene Marios, Martha J. Farah & Henry T. Greely, *Law and Neuroscience*, 33 J. NEUROSCIENCE 17624 (2013) (“[A] distinct field of Law & Neuroscience (sometimes called “neurolaw”) has emerged in barely a decade.”).

93. For legal scholarship discussing neuroscience in philosophy, dispute resolution, tort, and other areas, see Elizabeth E. Bader, *The Psychology and Neurobiology of Mediation*, 17 CARDOZO J. CONFLICT RESOL. 363 (2016) (exploring the connection “between psychological and neurobiological dimensions” in mediation); Richard Birke, *Neuroscience and Settlement: An Examination of Scientific Innovations and Practical Applications*, 25 OHIO ST. J. DISP. RES. 477 (2011) (discussing the effect of neuroscience in negotiations and mediations); Robert J. Condlin, *The “Nature” of Legal Dispute Bargaining*, 17 CARDOZO J. CONFLICT RESOL. 393 (2016) (discussing the social phenomenon of legal dispute bargaining); Jean Macchiaroli Eggen & Eric J. Laury, *Toward a Neuroscience Model of Tort Law: How Functional Neuroimaging Will Transform Tort Doctrine*, 13 COLUM. SCI. & TECH. L. REV. 235 (2012) (arguing that “tort law is likely to be the first areas of law impacted by the neuroscience revolution”); Oliver R. Goodenough & Michaela Tucker, *Law and Cognitive Neuroscience*, 6 ANN. REV. L. & SOC. SCI. 61, 63 (2010) (discussing the usefulness of intersections between law and neuroscience); Joshua D. Greene, *Beyond Point-and-Shoot Morality: Why Cognitive (Neuro)Science Matters for Ethics*, 124 ETHICS 695 (2015) (describing the implications cognitive science can have on ethics); Adam J. Kolber, *Will There Be a Neurolaw Revolution?*, 89 IND. L.J. 807 (2014) (discussing the neurolaw revolution due to new brain technologies); Michael S. Pardo & Dennis Patterson, *Philosophical Foundations of Law and Neuroscience*, 2010 U. ILL. L. REV. 1211 (noting the issues of neurosciences’ implications for the law); Jay Sterling Silver, *Intent Reconceived*, 101 IOWA L. REV. 371 (2015) (describing the effect of intent in tort cases).

94. For legal scholarship discussing the intersection of criminal law and neuroscience, see Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional Neuroimaging as Evidence of a Criminal Defendant’s Past Mental States*, 62 STAN. L. REV. 1119 (2010) (addressing the use of neuroimaging to support *mens rea* claims); Steven K. Erickson, *Blaming the Brain*, 11 MINN. J.L. SCI. & TECH. 27, 28–29 (2010) (describing the shift towards biological sciences in issues of criminal responsibility); Owen D. Jones et al., *Brain Imaging for Legal Thinkers: A Guide for the Perplexed*, 5 STAN. TECH. L. REV. 5, 5–6 (2009) (discussing the various uses of brain images in legal proceedings); Terry A. Maroney, *Adolescence Brain Science After Graham v. Florida*, 86 NOTRE DAME L. REV. 765, 766 (2011) (arguing the influence of neuroscience in a Supreme Court decision); Amanda C. Pustilnik, *Pain as Fact and Heuristic: How Pain Neuroimaging Illuminates Moral Dimensions of Law*, 97 CORNELL L. REV. 801, 804 (2012) (suggesting that neuroimaging will assist in achieving reliable quantification in cases); O. Carter Snead, *Neuroimaging and the “Complexity” of Capital Punishment*, 82 N.Y.U. L. REV. 1265 (2007) (noting that cognitive neuroscientists seek to invoke brain imaging research on the neurobiological roots of criminal violence).

culpability and intentionality, for example, by revealing the degree of choice or free will a person executes over her or his intentional acts. For instance, Gert-Jan Lokhorst has explored how neuroscience implicates what we know about logical reasoning and the implications of such for understanding legal concepts such as *mens rea*.<sup>95</sup> Information from neuroscience about adolescent brain development, for example, can be useful for legal scholars investigating criminal responsibility and punishment for juveniles.<sup>96</sup>

Despite the many advancements some criminal law scholars claim that neuroscience will provide, others remain cautious or skeptical.<sup>97</sup> Michael Pardo and Dennis Patterson, who have advanced the field of neurolaw with their research, also find fault with the way others apply inferences derived from neuroscientific studies to criminal law.<sup>98</sup> Walter Glannon identifies important limitations in applying neuroscience to matters of criminal intent arguing that

[e]ven in cases where imaging displaying brain dysfunction might be used to support the claim that an individual lacked the capacity to intend to kill and thereby change a conviction from first degree murder to second degree murder or manslaughter, behavioural evidence would be needed to confirm the neuroscientific findings.<sup>99</sup>

He finds that neuroscience may play a stronger role for criminal matters involving questions of impulse control as “the correlations between images of brain dysfunction and behavior are stronger.”<sup>100</sup> As this field advances its application of neuroscience to law, we can learn from the insights and limitations such studies have revealed.

95. Gert-Jan Lokhorst, *Mens Rea, Logic, and the Brain*, in *LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES*, *supra* note 92, at 29.

96. See, e.g., THE MACARTHUR FOUND. RESEARCH NETWORK ON LAW & NEUROSCIENCE, VANDERBILT UNIV., LAW + NEURO, NETWORK OVERVIEW, <http://www.lawneuro.org/networkoverview.pdf> [<https://perma.cc/EF5D-ASWK>] (last visited Sept. 18, 2018).

97. Stephen J. Morse, *Lost in Translation? An Essay on Law and Neuroscience*, in *LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES*, *supra* note 92, at 529, 541–43 (offering several ways neuroscience contributes to criminal law scholarship, including (a) confirming or challenging a central view that doctrine or practices rely upon, (b) indicating the need for new doctrine or practices, (c) using neural data as evidence in a trial or proceeding, and (d) enhancing accuracy of predictions that inform policy).

98. PARDO & PATTERSON, *supra* note 91, at 52–63 (discussing limitations of using neuroscience to make arguments about moral decision-making); Michael S. Pardo & Dennis Patterson, *The Promise of Neuroscience for Law: ‘Overclaiming’ in Jurisprudence, Morality, and Economics*, in *PHILOSOPHICAL FOUNDATIONS OF LAW AND NEUROSCIENCE* 231 (2016). See generally Michael S. Pardo & Dennis Patterson, *Minds, Brains, and Norms*, 4 *NEUROETHICS* 179 (2011) (critiquing neurolaw approaches by distinguishing between behavior and brain activity associated with rule-following, interpretation, knowledge and criminal responsibility); Michael S. Pardo & Dennis Patterson, *Neuroscience, Normativity, and Retributivism*, in *THE FUTURE OF PUNISHMENT* 133 (Thomas A. Nadelhoffer ed., 2013) (taking a cautious view of the influence of neurolaw in undermining criminal law).

99. Walter Glannon, *What Neuroscience Can (and Cannot) Tell Us About Criminal Responsibility*, in *LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES*, *supra* note 92, at 13, 17.

100. *Id.* at 21 (“A functional brain scan showing an underactive prefrontal cortex or overactive amygdala by itself will not be diagnostic of a loss of impulse control or cognitive control of one’s behaviour.”).

Part II introduces evidence and insights from neuroscience to the discourse on judicial behavior and decision-making.<sup>101</sup> Herein, I recognize that my novel use of this approach to study judicial choice is subject to further refinement as the work integrating law, neuroscience and judicial decision-making is emergent.<sup>102</sup>

#### A. On Neuroscience and How to Use It

Neuroscience is the study of the brain, its organization, and its functions.<sup>103</sup> Our brains are composed of neurons, which are nerve cells that form the basic unit of the brain and promote activity or inhibit activity.<sup>104</sup> Glial cells, or “glia,” support neurons structurally and assist in forming the fatty myelin that further support neurons.<sup>105</sup> The basic function of our neurons is to transmit information in our brains allowing for a wide array of cognitive functions that shape behavior. They do so through molecules called neurotransmitters, which are diverse and varied in their form and function.<sup>106</sup> Serotonin, the neurotransmitter known for aiding in sleep and histamines, the neurotransmitter known for its role in producing seasonal allergies, are two common examples.<sup>107</sup>

In terms of mapping regions within the brain, neuroanatomy has revealed that the frontal lobe is located behind our foreheads, the occipital lobe is behind the nape of our necks, and that there are regions of the brain that remain undiscovered.<sup>108</sup> The field of neuroscience employs various tools to study brain activity and function, from the older Electroencephalography (EEG), which measures electrical activity, to newer methods such as Transcranial Magnetic stimulation (TMS) for testing changes in brain activity.<sup>109</sup> Advances in neuroimaging

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101. For emergent scholarship taking such an approach, see Bradley, *supra* note 87; Paul S. Davies & Peter A. Alces, *Neuroscience Changes More than You Can Think*, 1 J.L. TECH. & POL'Y 141 (2017). For work in law and neuroscience on decision-making, see, e.g., LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES, *supra* note 92; Oliver R. Goodenough, *Mapping Cortical Areas Associated with Legal Reasoning and Moral Intuition*, 41 JURIMETRICS 429, 431 (2001) (arguing for reconceptualizing law in response to neuroscience).

102. Hafner-Burton et al., *supra* note 57, at S3 (“Also new are the efforts to anchor behavioral observations in a stronger neurological foundation through advances in brain science.”).

103. See generally MICHAEL S. GAZZANIGA ET AL., COGNITIVE NEUROSCIENCE: THE BIOLOGY OF THE MIND (3d ed. 2008) (providing a general overview of the field).

104. For an overview of the fundamentals of neurons, see Annabelle M. Belcher & Adina Roskies, *Neuroscience Basics*, in A PRIMER ON CRIMINAL LAW AND NEUROSCIENCE 4 (Stephen J. Morse & Adina L. Roskies eds., 2013); see generally GAZZANIGA ET AL., *supra* note 103; ERIC R. KANDEL, JAMES H. SCHWARTZ & THOMAS M. JESSELL, PRINCIPLES OF NEURAL SCIENCE (4th ed. 2000); LARRY SQUIRE, FUNDAMENTAL NEUROSCIENCE (3d ed. 2008).

105. Belcher & Roskies, *supra* note 104, at 4.

106. *Id.*

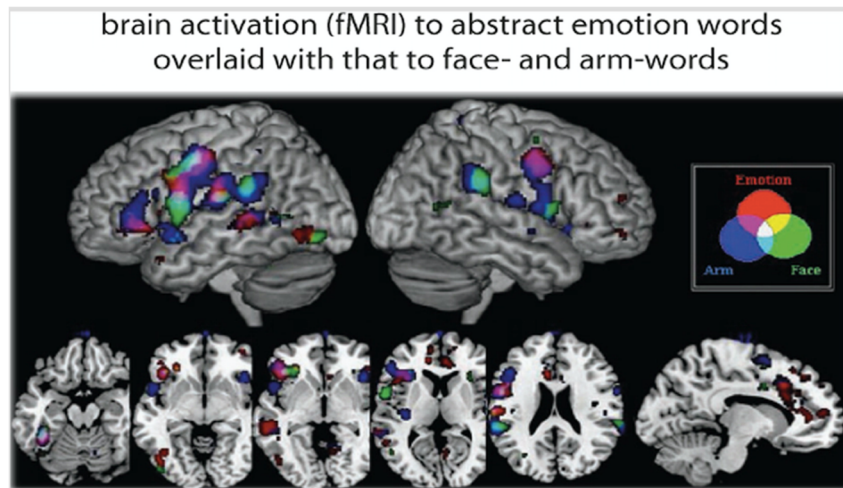
107. *Id.* at 10.

108. *The Brain and Its Functions*, NEUROLOGYCHANNEL, <http://thebrainlabs.com/brain.shtml> [<https://web.archive.org/web/20180201024558/http://thebrainlabs.com/brain.shtml>] (last visited Feb. 1, 2018).

109. See Maria de la Iglesia-Vaya et al., *Brain Connections – Resting State fMRI Functional Connectivity*, in NOVEL FRONTIERS OF ADVANCED NEUROIMAGING 51, 52–54 (Kostas N. Fountas ed., 2013) (describing the ways in which “exploring the neuroanatomy of the brain and the underlying connectivity of different functional areas [allow us to attain] new insights on the organization of the human brain.”).

allow us to observe anatomical connectivity (e.g., how different regions of the brain connect) and functional connectivity (e.g., how different cognitive processes interact), which permits the study of how structure and function are connected.<sup>110</sup>

Neuroscience research today relies heavily on fMRI brain scans to test and to study cognitive processes and behavior, such as how moving your finger to scroll through an app on your iPhone activates certain parts of your brain.<sup>111</sup> Studies utilizing fMRI provide evidence showing that anatomically distinct regions of the brain do more work during different types of reasoning.<sup>112</sup> For example, neural components accompany common decision-making biases such as framing effects.<sup>113</sup> This research highlights the complexity of our brains while also discrediting commonly held but erroneous ideas, such as the “left brain” or “right brain.”<sup>114</sup>



This study provides an example of fMRI research on “[b]rain activation (event-related fMRI) elicited by abstract emotion words (in red), which is compared with that to face-related (in green) and arm-related action words (in blue). Note that the inferior motor and premotor cortex also sparked by face and arm words is also activated by abstract emotion words.”<sup>115</sup>

110. *Id.*

111. See GAZZANIGA ET AL., *supra* note 103 (discussing how fMRI works, comparing it to PET scans, and discussing the reasons behind its popularity as a mechanism for scientists).

112. See Vinod Goel et al., *Disassociation of Mechanisms Underlying Syllogistic Reasoning*, 12 NEUROIMAGE 504, 512–13 (2000) (using an event-related fMRI study of syllogistic reasoning using sentences with and without semantic content and finding that the left-temporal system was recruited during content-based reasoning, but when performing the same reasoning task without semantic content, the parietal system was recruited).

113. Joshua A. Weller et al., *Neural Correlates of Adaptive Decision Making for Risky Gains and Losses*, 18 PSYCHOL. SCI. 958 (2007).

114. Interview with R. McKell Carter (Carston), Assistant Professor, Univ. of Colo. Boulder, in Boulder, Colo. (Jan. 19, 2016) (“There is no evidence of a strong bilateral bias in brain functioning. Language may prove an exception as it is left lateralized with subtle bias effects. Social processing occurs more frequently on the right side of the brain but the left side is still engaged, albeit minimally.”).

115. Image published with permission of authors. Friedemann Pulvermüller et al., *Motor Cognition-Motor Semantics: Action Perception Theory of Cognition and Communication*, 55 NEUROPSYCHOLOGIA 71 (2014).

Such complexities make applying neuroscience data to the field of law risky. In legal scholarship, we frequently aim to describe a phenomenon and then prescribe a solution to fix the problem or gap in understanding. Our claims are often precise and bold. Research in neuroscience however, is more cautious because it studies what the brain (or a set of brains) do under certain conditions.<sup>116</sup> For this reason, one particular study cannot claim to represent the workings of brains in general. Where enough studies, or a meta-analysis, confirm similar findings, the specific inferences gain confidence in what they say about many or most brains.<sup>117</sup> Responsible use of the data requires seeking multiple verifications that confirm a central insight. This is the approach used in neuroscience. Thus, in the sections that follow, I do not advance claims about all judges or people and their brains but, instead, provide insights about why a person may behave a certain way based on general inferences from brain-behavior research.

### B. *How Brains Decide*

The behavior that we commonly understand as decision-making involves a variety of cognitive functions in our brains. Neuroscience has produced exciting evidence-based understandings about these functions.<sup>118</sup> From this perspective, your mind and your brain are functionally the same.<sup>119</sup> Thus, decisions are made in your brain, not by a separate mind.<sup>120</sup> By measuring which parts of the brain become active during different types of activity and thought, neuroscientists have added to these understandings in important ways.

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116. See, e.g., Oshin Vartanian & David R. Mandel, *Introduction to NEUROSCIENCE OF DECISION MAKING*, *supra* note 25, at 1, 3 (“We endeavor to show that current behavioral and neural evidence supports the assertion that the field has entered a stage in which context-dependence of choice must be seen as central to decision theory and as something that cannot be ignored without incurring a severe loss of explanatory completeness.”).

117. For books that gather insights in neuroscience and across cognitive sciences, see, e.g., *THE CAMBRIDGE HANDBOOK OF HUMAN AFFECTIVE NEUROSCIENCE* (Jorge Armony & Patrik Vuilleumier eds., 2013) (providing, as described in the preface, “a comprehensive, up-to-date, and authoritative survey of knowledge and topics investigated” in the field of affective neuroscience or the cognitive neuroscience of human emotion).

118. See generally EBEN ALEXANDER, *PROOF OF HEAVEN: A NEUROSURGEON’S JOURNEY INTO THE AFTERLIFE* 8 (2012) (stating how neuroscience helps to learn more about the modern brain as well as helping heal people); NORMAN DOIDGE, *THE BRAIN THAT CHANGES ITSELF* (2007) (discussing how the neuroplastic revolution has implications on different aspects of human life); MICHIO KAKU, *THE FUTURE OF THE MIND* 4 (2014) (noting the movement to understand how the human brain functions); TARA SWART ET AL., *NEUROSCIENCE FOR LEADERSHIP: HARNESSING THE BRAIN GAIN ADVANTAGE* 2 (2015) (describing how the brain and decision-making processes work together); MATTHEW WILCOX, *THE BUSINESS OF CHOICE: MARKETING TO CONSUMERS’ INSTINCTS* 11–12 (2015) (detailing the three trends of decision science which resulted in an “explosion of learning from behavioral and social sciences . . .”).

119. PARDO & PATTERSON, *supra* note 91, at 20 (cautioning that the two differ conceptually, and identifying a “mereological fallacy” defined as the conflation of a whole person with a part of the brain).

120. Patricia Smith Churchland, *Moral Decision-Making and the Brain*, in *NEUROETHICS: DEFINING THE ISSUES IN THEORY, PRACTICE, AND POLICY* 4–5 (Judy Illes ed., 2006).

First, there is no unitary process in the brain for making decisions.<sup>121</sup> Instead, when our brains engage in decision-making, they invoke multiple regions and circuits, often in sequence or at the same time to engage in judgment and choice.<sup>122</sup> This idea was popularized by psychologist Daniel Kahneman in his description of two systems of thought in the human brain: System 1 is quick and automatic, and System 2 is slow and more complex.<sup>123</sup>

Neuroscience has taken the story further.<sup>124</sup> Cognitive functions that develop decisions occur at the same time as those that inform emotions and interactions between the two influence the choices one makes.<sup>125</sup> This approach, theorized as non-linear systems analysis, holds that internal states of cognition can activate at the same time and coexist.<sup>126</sup> Thus, under this view, human cognition is a dynamic interaction between internal brain processes.<sup>127</sup> The brain has the capacity to engage in parallel cognitive processes such as perceiving and choosing at the same time, and such processes can interact with each other in the brain.<sup>128</sup> For example, if you

121. Vartanian & Mandel, *supra* note 116, at 2.

122. *Id.*

123. DANIEL KAHNEMAN, THINKING, FAST AND SLOW 21–23 (2011); *see also* Daniel Kahneman, *A Perspective on Judgment and Choice: Mapping Bounded Rationality*, 58 AM. PSYCHOLOGIST 697, 698–99 (2003) (“The operations of System 1 are typically fast, automatic, effortless, associative, implicit . . . . The operations of System 2 are slower, serial, effortful, more likely to be consciously monitored and deliberately controlled . . . .”); Amos Tversky & Daniel Kahneman, *Judgments of and by Representativeness*, in JUDGEMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES, *supra* note 60, at 84, 85–98.

124. Cognition is not easily defined as automatic versus non-automatic as many processes feature some aspects of both. *See* Jan De Houwer & Dick Hermans, *Do Feelings Have a Mind of Their Own?*, in COGNITION & EMOTION: REVIEWS OF CURRENT RESEARCH AND THEORIES 28 (Jan De Houwer & Dick Hermans eds., 2010) (“Evidence from Stroop studies, for instance, suggests that the processing of word meaning is automatic in that it does not depend on intention, resources or time, but at the same time occurs only when attention is directed toward the word. An important implication of this conclusion is that one cannot simply characterise a process as automatic or non-automatic.”).

125. *See, e.g.*, Antoine Bechara et al., *Different Contributions of the Human Amygdala and Ventromedial Prefrontal Cortex to Decision-Making*, 19 J. NEUROSCIENCE 5473, 5473 (1999) (discussing how the ventromedial prefrontal cortex and the amygdala affect different processes).

126. De Houwer & Hermans, *supra* note 124, at 43 (“Automatic affective processing (not mediated by controlled cognitive processing) can occur independently of automatic cognitive processes challenging the view that there were two systems of processing in the brain – the non-automatic and the automatic.”).

127. Song & Nakayama, *supra* note 27, at 360.

128. For studies investigating parallel cognitive processes, *see* Alon Fishback & F.A. Mussa-Ivaldi, *Seeing Versus Believing: Conflicting Immediate and Predicted Feedback Lead to Sub-Optimal Motor Performance*, 28 J. NEUROSCIENCE 14140 (2008) (“Under normal conditions, perceptual and motor criteria for movement optimization coincide. However, when vision is perturbed adapted trajectories can be used to uncover the influence of perceptual criteria on movement planning . . . .”); Hongbao Li et al., *Prior Knowledge of Target Direction and Intended Movement Selection Improves Indirect Reaching Movement Decoding*, BEHAVIORAL NEUROLOGY, 2017, at 1 (“Recruiting prior knowledge about target direction and intended movement selection extracted from the Dorsal Pre-Motor Cortex could enhance the decoding performance of hand trajectory in indirect reaching movement.”); Song & Nakayama, *supra* note 27 (“[T]his line of research provides new opportunities to integrate information across different disciplines such as perception, cognition and action, which have usually been studied in isolation.”); Michael Spivey et al., *Do Curved Reaching Movements Emerge from Competing Perceptions?*, 26 J. EXPERIMENTAL PSYCHOL. 251 (2009) (referring to a quantitative simulation of reaching



are reaching for a hamburger but a yellowjacket lands on top of it, your brain now has to redirect its thought to account for action (reaching) and perception (seeing a threat) at the same time. This kind of research revises the earlier view that the brain processed information sequentially and demonstrates the complexity of cognitive processes involved in decision-making. It also challenges the traditional view in law that we can make decisions using only logical reasoning.

Second, decision-making often occurs with the explicit aim of achieving a pre-set goal. When faced with making an important decision, we try to focus on the objective and stay on task. From a neuroscience perspective, this activity is called goal-directed thought.<sup>129</sup> When we engage in it we are utilizing our pre-frontal cortex, which optimizes its ability to focus attention on relevant stimuli, and this is a process called cognitive control.<sup>130</sup> In a crude sense, focusing on making a decision helps our brains reduce the influence of distracting stimuli.

However, as is true with most findings in neuroscience, the story about thought and the brain is more complex. Who hasn't had their mind wander during a meeting, no matter its importance? Understanding why this happens requires inquiring about what happens inside the brain. Known as spontaneous thought, our brains tend to prefer the "default network"<sup>131</sup> when we are not engaging in attention-demanding activities. Many of us experience this network as our thoughts drift right before we fall asleep at night. One possible benefit of such de-focused thought is its potential for maximizing memory consolidation due to the brain's increased capacity to access long-term memories during spontaneous thought.<sup>132</sup>

A third complexity involves how brains process creative thought. The current understanding is that such thought is associated with activity in the prefrontal cortex, the "default network," and memory networks.<sup>133</sup> Studies about creative thought work to identify how to improve creative problem-solving capacity. For example, in a 2005 study, people solved anagrams more quickly when they were lying down than when they were standing up.<sup>134</sup> In another study from 2002, people who were awakened from rapid eye movement (REM) sleep were better able to

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movements "that stands as an existence proof that a discrete-processing speech perception system can feed into a continuous-processing motor movement system to produce reach trajectories").

129. Kalina Christoff et al., *The Role of Spontaneous Thought in Human Cognition*, in NEUROSCIENCE OF DECISION MAKING, *supra* note 25, at 261.

130. *Id.* at 261–63.

131. *Id.* at 263 (attributing the findings of the brain's "default network" to Marcus E. Raichle et al., *A Default Mode of Brain Function*, 98 PROC. NAT'L ACAD. SCI. 676 (2001)).

132. *Id.* at 264 ("These findings suggest that long-term memory processes contribute strongly to the phenomenon of spontaneous thought . . . memory consolidation may be one of the main functions of spontaneous thought.").

133. *Id.* ("Divergent thinking tasks produce decreased beta range synchrony and increased alpha range synchrony over the frontal cortex . . . providing evidence for loosened cognitive control and lower prefrontal cortical arousal during creative thought.").

134. *Id.* at 264–65 (attributing the study by D.M. Lipnicki & D.G. Byrne, *Thinking on Your Back: Solving Anagrams Faster when Supine than when Standing*, 24 COGNITIVE BRAIN RES. 719 (2005)).

solve anagrams than those awakened from non-REM sleep.<sup>135</sup> As such studies evolve, so do the applicable findings. However, there is enough evidence to suggest that creative problem-solving and goal-directed decision-making recruit different brain processes and regions.<sup>136</sup> Asking people to do both at the same time may not be recommended. Furthermore, the prescription for optimal decision-making just might mean more naps and more daydreaming. Recognizing the various types of thought from a neurological perspective allows for a deeper appreciation of how memory, emotion, motivation, and other factors work in complex and diverse ways to influence decision-making.

Imagine a case in which the judge must engage in information assessment *and* problem-solving in order to settle the dispute. We might assume that the judge engages in the same type of thought process for both. A judge may think she or he does as well. However, neuroscientists are beginning to study the timeline of cognitive processes associated with decision-making activity in the brain thanks to advances in new techniques.<sup>137</sup> Directing oneself to think about solving a problem can involve a series of steps.

For example, one fMRI study where participants were trying to solve a math problem, identified four stages of cognitive processes: encoding, planning, solving and responding.<sup>138</sup> But a brain engaged in assessing information and thinking about how valid the facts are, for example, might engage in a different order of cognitive processes. This study advanced a new method for identifying the cognitive stages a person engages when they are planning or problem-solving. Though one study is not indicative of a unified theory of cognitive thought, it does illustrate an important point. The ability to study decision-making activity in the brain in stages reveals that the brain can invoke different regions and different networks that may differ depending on whether a person is trying to assess information or solve a problem.

### III. IMPLICIT COGNITION IN HUMAN CHOICE

Teaching leaders, companies, and students how to make smart decisions is a multi-billion-dollar industry.<sup>139</sup> From TED Talks to guru-led training seminars to best-selling books, there are many self-designated experts on decision-making in the professional world. The dominant focus is on aspects of our decision-making behavior of which we are aware (or after taking the seminar, can become aware). But not all the ways in which we behave are knowable. Sometimes we do not know why we behave the way we do, such as engaging in mimicry or mirroring another's

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135. *Id.* at 265 (attributing the study of REM sleep versus non-REM sleep to M.P. Walker et al., *Cognitive Flexibility Across the Sleep-Wake Cycle: REM-Sleep Enhancement of Anagram Problem Solving*, 14 *COGNITIVE BRAIN RES.* 317 (2002)).

136. *Id.*

137. John Anderson et. al, *Hidden Stages of Cognition Revealed in Patterns of Brain Activation*, 27 *PSYCHOL. SCI.* 1215 (2016).

138. *Id.*

139. See, e.g., Michael Maccoby, *Can Leadership Be Taught?* OUPBLOG (Jul. 15, 2015), <https://blog.oup.com/2015/07/can-leadership-be-taught/> [https://perma.cc/ERL7-BJAE].

body language.<sup>140</sup> Because our mental activity is connected to our neurobiological brain and we are just beginning to understand the brain's complexity, much remains hidden. This means our brains can weave together assessments of information and memories that shape our judgment and our emotions to produce a decision without us being aware of it. Although we are aware of our decision or choice, we are not aware of the way our brain reached that choice because aspects of our cognition, such as memory, perception, knowledge, and emotion, can be implicit, meaning that their influence on our behavior occurs at the unconscious level.<sup>141</sup> There are "hidden internal events" that indicate that "human action is not always the final product of perception and cognition."<sup>142</sup> This is implicit cognition.<sup>143</sup>

Implicit cognition in our memory, judgement, and perception influences the choices we make in ways in which we are not aware.<sup>144</sup> To better understand decision-making we need to account for many kinds of implicit cognition that can influence our choices.<sup>145</sup> Part III explores three: bias, emotion, and empathy.<sup>146</sup>

#### *A. Bias-Cognition Interactions*

Aspects of our higher cognition include the mental activity we engage in when we formulate decisions, make choices, assess information, and judge. It is now clear among neuroscientists who study such subjects that various regions of our brain, and neural circuitry that connects them, engage in cross-talk when we decide, make

140. See, e.g., M. EARLS ET AL., I'LL HAVE WHAT SHE'S HAVING: MAPPING SOCIAL BEHAVIOR (2011); J.L. Laking and T.L. Chartrand, *Using Nonconscious Behavioral Mimicry to Create Affiliation and Rapport*, 14 PSYCHOL. SCI. 334 (2003).

141. IMPLICIT MEMORY: NEW DIRECTIONS IN COGNITION, DEVELOPMENT AND NEUROPSYCHOLOGY (Peter Graf & Michael E.J. Masson eds., 1993).

142. Song & Nakayama, *supra* note 27, at 364–65; see also Andy Clark, *What Reaching Teaches: Consciousness, Control, and the Inner Zombie*, 58 BR. J. PHIL. SCI. 563–94 (2007); Stanislas Dehaene et al., *Conscious, Preconscious, and Subliminal Processing: A Testable Taxonomy*, 10 TRENDS COGNITIVE SCI. 204 (2006); Melvyn A. Goodale et al., *Dual Routes to Action: Contributions of the Dorsal and Ventral Streams to Adaptive Behavior*, 149 PROGRESS BRAIN RES. 269 (2005).

143. See PATRICIA CHURCHLAND, TOUCHING A NERVE: OUR BRAINS, OUR SELVES 197–98 (2013) (describing the concept of "hidden cognition" from a psychological perspective and discussing the distinctions between conscious, unconscious, subconscious, and nonconscious); TIAN E. McMULLIN, THE NEW HANDBOOK OF COGNITIVE THERAPY TECHNIQUES 68 (2000) ("The third cognition between emotion and behavior is a belief I call the hidden cognition. It is hidden because most clients are not aware of its existence. The [hidden belief] occurs after clients feel an emotion, but immediately before they engage in a behavior . . . . Most clients don't notice this cognition because it is so rapid. They experience it as a vague impression, an undigested conception often occurring before they can put it into words.").

144. CHURCHLAND, *supra* note 26, at 224 ("The more I learned about nonconscious processes in the brain and how they seamlessly interweave with conscious processes, the more I began to realize that to understand consciousness, we need to understand more about those nonconscious processes.").

145. DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS 23–38 (rev. and expanded ed. 2009); Daniel Kahneman & Gary Klein, *Conditions for Intuitive Expertise: A Failure to Disagree*, 64 AM. PSYCHOLOGIST 515, 525 (2009); Gary Klein, *Sources of Power: How People Make Decisions* 4–6, 15–30 (1998).

146. One could explore the hidden cognition of perception, learning, comprehension, and many other features, which are beyond the scope of this Article.

a choice or change our mind.<sup>147</sup> Generally speaking, this is the reason why our biases can influence our cognition at the neural level.

In generic terms, a bias is a preference for or aversion against something. We can be aware of such preferences or explicit bias, and we can have them unknowingly as implicit bias.<sup>148</sup> This includes the so-called cognitive biases such as confirmation bias, anchoring, and hindsight bias.<sup>149</sup> These biases are often identified and evidenced through behavioral science observations about how people behave under specific conditions.

In the context of judicial behavior, I focus on the biases that people often understand as being related to racism, sexism, homophobia, and other forms of discrimination. These are particularly concerning biases for a judge to acknowledge because judges take an oath to perform their judicial function impartially. Therefore, acknowledging that one's decision-making is prone to bias based on race, gender, sexual orientation, and other aspects of identity conflicts with the notion of judicial impartiality.

The impact of bias in the legal profession is widespread yet poorly understood and acknowledged. Recent scholarship on bias in law aims to change that. For example, biases related to a judge or jury's views about a defendant are believed to increase the risk for wrongful convictions.<sup>150</sup> Take cases where people report a criminal act such as robbery with black men or demonstrate a "shooter bias."<sup>151</sup> Studies in social psychology, notably from the Implicit Association Test, support a general inference that racial bias is real.<sup>152</sup> This builds upon earlier work showing the prevalence of racial profiling in police stops.<sup>153</sup> Despite the sustained evidence

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147. Kitty Xu et al., *Neural Basis of Cognitive Control over Movement Inhibition: Human fMRI and Primate Electrophysiology Evidence*, 96 NEURON 1447 (2017); see also Bret Stetka, *The Neuroscience of Changing Your Mind*, SCI. AM. (Dec. 7, 2017), <https://www.scientificamerican.com/article/the-neuroscience-of-changing-your-mind/> [<https://perma.cc/H27C-2KF7>].

148. Jerry Kang et al., *Implicit Bias in the Courtroom*, 59 UCLA L. REV. 1124, 1127–31 (2012); see also Anthony G. Greenwald & Linda Hamilton Krieger, *Implicit Bias: Scientific Foundations*, 94 CALIF. L. REV. 945 (2006); Jerry Kang & Kristin Lane, *Seeing Through Colorblindness: Implicit Bias and the Law*, 58 UCLA L. REV. 465 (2010); Linda Hamilton Krieger & Susan T. Fiske, *Behavioral Realism in Employment Discrimination Law: Implicit Bias and Disparate Treatment*, 94 CALIF. L. REV. 997 (2006).

149. KAHNEMAN, *supra* note 123; Jeffrey J. Rachlinski, *A Positive Psychological Theory of Judging in Hindsight*, 65 U. CHI. L. REV. 571 (1998).

150. John T. Jost et al., *The Existence of Implicit Prejudice Is Beyond Reasonable Doubt: A Refutation of Ideological and Methodological Objections and Executive Summary of Ten Studies that No Manager Should Ignore*, 29 RES. ORGANIZATIONAL BEHAV. 39, 41 (2009); Justin D. Levinson & Danielle Young, *Different Shades of Bias: Skin Tone, Implicit Racial Bias, and Judgments of Ambiguous Evidence*, 112 W. VA. L. REV. 307, 319–26 (2010).

151. Jennifer L. Eberhardt et al., *Seeing Black: Race, Crime, and Visual Processing*, 87 J. PERSONALITY & SOC. PSYCHOL. 876 (2004); B. Keith Payne, *Prejudice and Perception: The Role of Automatic and Controlled Processes in Misperceiving a Weapon*, 81 J. PERSONALITY & SOC. PSYCHOL. 181 (2001) (identifying "shooter bias").

152. See generally Jost et al., *supra* note 150, at 39, 41; Levinson & Young, *supra* note 150, at 319–26; PROJECT IMPLICIT, <http://projectimplicit.org/index.html> [<https://perma.cc/KAM8-D63M>] (last visited Sept. 18, 2018) (providing a prominent dataset on implicit bias).

153. Patricia G. Devine & Andrew J. Elliot, *Are Racial Stereotypes Really Fading? The Princeton Trilogy Revisited*, 21 J. PERSONALITY & SOC. PSYCHOL. 1139 (1995).

of bias in the courtroom and in the legal profession, serious acknowledgment and redress are, still, lacking.<sup>154</sup>

This is where neuroscience may provide an invaluable contribution to the discourse. No one wants to be labeled racist, sexist, or homophobic yet the biases connected to such discriminatory behavior are real. In order to move from description to prescription and remedy, people need to understand why bias of this sort occurs and what to do about it. Neuroscience helps us understand bias as a form of implicit cognition that can influence our thought without us realizing it. In other words, neural mechanisms in our brains can help explain what occurs in a case of racial bias, for example.

Using brain imaging techniques, neuroscience researchers have long studied the amygdala for its importance in activity associated with fear and other human emotions.<sup>155</sup> Studies on racial bias, the most frequently studied type of bias, have linked amygdala activity to racial prejudice.<sup>156</sup> A 2014 review of fMRI studies on emotion and prejudice suggests, once again, that the amygdala is of high importance.<sup>157</sup> The study goes further to argue that activity in this area of the brain may be attributed to a person perceiving a threat that arises from negative cultural associations with black men and other groups.<sup>158</sup> One early, yet important, implication of this work is the significance of neural activity associated with in-group and out-group behavior.<sup>159</sup> Here, race, sex, gender, age, and more all become factors in how we perceive and assess a person. Where his or her identity is of an out-group and one that has historically or culturally been associated with negative traits, we process such perceptions and biases in our amygdala, which is where we also process fear.<sup>160</sup>

The implications of studies like these, which continue to evolve, are relevant to the discourse taken up in this Article about evidencing judicial bias through

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154. Ralph Richard Banks & Richard Thompson Ford, *(How) Does Unconscious Bias Matter?: Law, Politics, and Racial Inequality*, 58 EMORY L.J. 1053 (2009); Stephen M. Rich, *Against Prejudice*, 80 GEO. WASH. L. REV. 1 (2011).

155. Joseph LeDoux, *The Amygdala*, 17 CURRENT BIOLOGY 868 (2007).

156. For a review of recent studies, see generally Jennifer T. Kubota, Mahzarin R. Banaji & Elizabeth A. Phelps, *The Neuroscience of Race*, 15 NATURE NEUROSCIENCE 948 (2012); Chris Bergonzi, *Understanding Bias and the Brain*, KORN FERRY INST. (May 11, 2015), <https://www.kornferry.com/institute/understanding-bias-and-brain> [<https://perma.cc/D3ZT-TU9V>]; Joshua Gowin, *The Neuroscience of Racial Bias*, PSYCHOL. TODAY (Aug. 20, 2012), <https://www.psychologytoday.com/blog/you-illuminated/201208/the-neuroscience-racial-bias> [<https://perma.cc/MCU5-DRRA>].

157. Melike M. Fourie et al., *Neural Correlates of Experienced Moral Emotion: An fMRI Investigation of Emotion in Response to Prejudice Feedback*, 9 SOC. NEUROSCIENCE 203 (2014).

158. Adam Chekroud, Jime Evertt, Holly Bridge & Miles Hewstone, *A Review of Neuroimaging Studies of Race-Related Prejudice: Does Amygdala Response Reflect Threat?*, 8 FRONTIERS HUM. NEUROSCIENCE 179 (2014) (arguing “that differential amygdala activity may best be considered in terms of threat, arising through culturally-learned associations between black males and potential threat” and departing from earlier findings associating increased amygdala activity with racial bias).

159. See generally Kubota, Banaji & Phelps, *supra* note 156.

160. We may also process such activity in other regions of the brain, simultaneously or sequentially.

neuroscience. First and foremost, evidence of neural activity that explains bias further advances the reality that bias is real and present in society and in the legal profession. Second, there is no evidence to suggest that certain legal professionals, such as judges, are cognitively exceptional and therefore not prone to such bias. Third, neuroscientific studies can lead the way in bringing about evidence-based solutions for reform.

### B. *Emotion-Cognition Interactions*

In addition to bias, emotion has neural mechanisms in the brain that help us understand its role in decision-making and other higher cognitive functions. Emotions interact with other aspects of our cognition in ways that are complex and multi-faceted.<sup>161</sup> Various fields of study have begun to reveal interesting links between how we feel and how we think, with “thinking” being a term that I use to loosely represent memory, perception, attention, and other aspects of our cognition for purposes of readability.<sup>162</sup> Researchers face a preliminary challenge of how to define emotion. It was long thought by neuroscientists and psychologists that emotion could be described categorically.<sup>163</sup> In psychology, for example, emotion is connected to a broader notion of an emotional episode, which tracks one’s cognition to feelings, motivation, and somatic physiological responses.<sup>164</sup> Today you feel happy. Tomorrow you may feel sad. But neuroscientists have begun to think about emotion differently.<sup>165</sup> Instead of categories, the prevailing approach describes emotion as a state between (a) high or low arousal (e.g., awake or asleep); (b) high or low positive or negative affect (e.g., pleasant and engaged or unpleasant and disengaged); (c) high or low activation; and (d) tense or calm and energetic or tired.<sup>166</sup> This new definitional framework challenges older definitions that described emotion as feelings or experiences.

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161. See Antonio Damasio & Gil Carvalho, *The Nature of Feelings: Evolutionary and Neurobiological Origins*, 14 NATURE REVIEWS NEUROSCIENCE 14 (2013) (arguing that emotions are the foundation for the evolution of human consciousness).

162. For a general overview of theories and studies on the emotion-cognition connections, see generally, COGNITION & EMOTION: REVIEWS OF CURRENT RESEARCH AND THEORIES, *supra* note 124.

163. See ELAINE HATFIELD ET AL., EMOTIONAL CONTAGION 3 (1994) (proposing that emotions may be categorized such as in a hierarchy).

164. Agnes Moors, *Theories of Emotion Causation: A Review*, in COGNITION & EMOTION: REVIEWS OF CURRENT RESEARCH AND THEORIES, *supra* note 124, at 1, 3 (offering a definition of emotion that tracks the “number of components that they consider being a part of a prototypical emotional episode” and acknowledging that “emotion theorists disagree about the exact number and nature of the component they include”); see also David Sander, *Models of Emotion: The Affective Neuroscience Approach*, in THE CAMBRIDGE HANDBOOK OF HUMAN AFFECTIVE NEUROSCIENCE, *supra* note 117, at 5, 32 (“Until the 20<sup>th</sup> century, most theories of emotion . . . were in fact theories of feeling . . . Many theories still equate emotion with feeling, but major efforts have been made to distinguish the two.”).

165. Interview with R. McKell Carston, *supra* note 114.

166. Sander, *supra* note 164, at 33 (including a figure showing “[f]our types of affective circumplex models of emotion as described by Russel and Barret”).

The study of emotion in neuroscience, the cognitive neuroscience of emotion, is called affective neuroscience. Years ago, it began with studying how basic human emotions, such as fear, functioned in the brain.<sup>167</sup> The classic example involves snakes. When you encounter a real snake, your brain processes this as a primary inducer in the amygdala. But if you worried about encountering a snake or see an image of a snake in a movie, this is processed as a secondary inducer in your Ventral Medial Pre-frontal (“VM”) cortex.<sup>168</sup> The VM cortex works to couple knowledge about what something will feel like with real experiences.<sup>169</sup> In contrast, the amygdala triggers emotions from the actual cause of a fear inducer,<sup>170</sup> such as seeing something that appears to be a snake moving through tall grass. The amygdala works to connect aspects of a representation or an object with one’s emotions about its presence.<sup>171</sup> If someone’s amygdala is not functioning properly, the connection between associations of loss and choice development becomes disrupted.<sup>172</sup> As a result, a person may fail to avoid behaviors that lead to repeat negative emotions, such as losing money at a casino.<sup>173</sup> The core insight is this: if people have underlying neurobiological abnormalities, they may be prone to behaviors that demonstrate repeated and persistent failure to learn from previous mistakes.<sup>174</sup>

Today, affective neuroscience is blessed with new functional neuroimaging techniques including magnetoencephalography (MEG) and fMRI. With these evolved neuroimaging techniques, studies can illustrate relationships between a behavior and an area of the brain that activates to say, for example, that “increased amygdala reactivity predicts trait anxiety.”<sup>175</sup> Then a researcher can “identify the underlying mechanisms driving variability in brain circuit function.”<sup>176</sup> This allows neuroscientists to identify the neural substrates associated with certain cognitive processes and to begin to account for the neurobiological basis that may explain why individuals differ in our personalities and behavior.<sup>177</sup> Here, I focus on the

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167. Bechara, *supra* note 25.

168. *See id.* at 87–89 (explaining that the VM cortex “couples knowledge to representations of ‘what it feels like’ to be in certain situations”).

169. *See id.* at 88 (explaining how the VM prefrontal cortex couples information to emotional representations, with one function serving as a “trigger structure for somatic/emotional states from secondary inducers”).

170. *See id.* at 85 (“The function of the amygdala is to couple the features of the object with its emotional attribute. For example, a snake is simply an object with certain features. However, this object is linked to some emotional attribute such as fear . . .”).

171. *See id.* at 86 (explaining that the amygdala embraces the “fight or flight” response).

172. *See id.* (explaining that when the amygdala is damaged, the patient can no longer signal pain).

173. *See id.* (“[B]oth emotional parts of the brain, the amygdala and the VM cortex, help people make rational decisions.”).

174. *See id.* at 91 (explaining the effects that neurobiological disabilities have on one’s ability to learn from mistakes).

175. Ahmad R. Hariri, *Mapping Neurogenetic Mechanisms of Individual Differences in Affect*, in THE CAMBRIDGE HANDBOOK OF HUMAN AFFECTIVE NEUROSCIENCE, *supra* note 117, at 575.

176. *Id.*

177. *Id.* at 584.

following emotion-cognition interactions that influence choice and decision-making.<sup>178</sup>

### 1. *Does Emotion Change Cognition?*

Studies about the neurobiology of emotion are complex and have lagged behind other studies of mind and brain.<sup>179</sup> But there is data to support the following claims that “decision making is a process critically dependent on neural systems important for the processing of emotions, conscious knowledge alone is not sufficient for making advantageous decisions, and . . . emotion is not always beneficial to decision making. Sometimes it can be disruptive.”<sup>180</sup> How, then, does emotion influence our decision-making?

The somatic marker hypothesis, for example, provides neurobiological support for the notion that people make judgments by evaluating consequences and the probability of them occurring, and sometimes, at a gut or emotional level.<sup>181</sup> Emotion intersects with memory, judgment, and other cognitive functions in ways that are beneficial and detrimental to decision-making. A foundational study underpinning this hypothesis found that patients with normal intellect who suffered from trauma to their frontal lobes demonstrate abnormalities in emotion and feeling as well as in decision-making.<sup>182</sup> Patients often decided against their self-interests and were unable to learn from previous mistakes.<sup>183</sup> The study concluded that such patients had mostly intact neuropsychological tests but were compromised in their

178. See Bechara, *supra* note 25, at 73 (“This mechanism for selecting good from bad options is referred to as decision-making, and the physiological changes occurring in association with the behavior selection constitute part of *somatic states* (or somatic signals).”); Samuel M. McClure et al., *Conflict Monitoring in Cognition-Emotion Competition*, in HANDBOOK OF EMOTION REGULATION 204, 222 (James J. Gross ed., 2007) (concluding that there are at least three types of decision-making where emotions discernibly influence behavior).

179. Bechara, *supra* note 25, at 73–74; see also Isabelle Blanchette & Anne Richards, *The Influence of Affect on Higher Level Cognition*, in COGNITION & EMOTION: REVIEWS OF CURRENT RESEARCH AND THEORIES, *supra* note 124, at 276, 310.

180. Bechara, *supra* note 25, at 74.

181. Antonio R. Damasio, *The Somatic Marker Hypothesis and the Possible Functions of the Prefrontal Cortex*, 351 PHIL. TRANSACTIONS 1413, 1413 (1996); George Loewenstein & Jennifer S. Lerner, *The Role of Affect in Decision Making*, in HANDBOOK OF AFFECTIVE SCIENCES 619, 619–20 (Richard J. Davidson et al. eds, 2003); Norbert Schwartz & Gerald L. Clore, *Mood, Misattribution, and Judgments of Well-Being: Informative and Directive Functions of Affective States*, 45 J. PERSONALITY & SOC. PSYCHOL. 513, 513 (1983); R.B. Zajonc, *On the Primacy of Affect*, 39 AM. PSYCHOLOGIST 117, 122 (1984).

182. Bechara, *supra* note 25, at 75–77. This led to Damasio’s 1994 somatic marker hypothesis, which posits that “the neural basis of the decision-making impairment characteristics of patients with VM prefrontal lobe damage is defective activation of somatic states (emotional signals) that attach value to given options and scenarios.” *Id.* at 77.

183. GARY G. BERNITSON & JOHN T. CACIOPPO, HANDBOOK OF NEUROSCIENCE FOR THE BEHAVIORAL SCIENCES 751 (2009) (“The choices they make are no longer advantageous—the patients often decide against their best interests—and are remarkably different from the kinds of choices they were known to make in the pre-morbid period. They are unable to learn from previous mistakes . . .”).



abilities regarding expression of emotion and feeling.<sup>184</sup> Without functioning emotional signals, a person had to rely on cost-benefit analysis for determining conflicting choices, which takes the brain more time to do.<sup>185</sup>

What evidence exists to support a claim that emotions *guide* decisions? A first set of studies supports the notion that decision-making impairments are linked to a failure in a person's somatic (emotional) signaling.<sup>186</sup> A subsequent group of studies supports the notion that decision-making is guided by emotional signals (gut signals) that are generated in anticipation of future events.<sup>187</sup> An additional study found that emotional signals need not be perceived consciously for them to impact decision-making.<sup>188</sup> These and other studies provide strong support for the concept that activation of parts of the brain that process emotion—such as the amygdala and the Ventro-medial Prefrontal Cortex—help people make more rational decisions.<sup>189</sup> Just as addicts or psychopaths are aware of the consequences of their actions but go ahead with their choices, disassociation at the neurological level can lead to the same result.<sup>190</sup>

## 2. *How Does Emotion Interact with Higher Level Cognition?*

What do we know about the effect of emotion on specific areas of cognition associated with memory, executive function, and perception?<sup>191</sup> Studies have shown that emotion can change neural circuits, neural activity, and molecular or genetic pathways.<sup>192</sup> Here, I consider the interplay between emotion and four areas of cognitive function: (1) interpretation, (2) judgment (3) decision-making, and (4) reasoning.<sup>193</sup>

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184. Bechara, *supra* note 25, at 75 (“As noted, the patients have normal intellect, as measured by a variety of conventional neuropsychological tests . . .”).

185. *Id.* at 76 (“Deprived of these emotional signals, patients must rely on a slow cost-benefit analysis of various conflicting options.”).

186. *Id.* at 77–80 (describing a series of studies investigating links between emotion and decision-making). The first study was conducted by Antoine Bechara, Daniel Tranel, and Hanna Damasio in 1996.

187. *Id.*

188. *Id.* (referencing a second study conducted by Antoine Bechara, Hanna Damasio, Daniel Tranel, and Antonio R. Damasio in 1997).

189. *Id.* at 86 (“[T]he results provide strong support for the notion that decisionmaking is guided by emotional signaling (or somatic states) generated in anticipation of future events. Without the ability to generate these emotional/somatic signals, the patients fail to avoid the [choices] that lead to painful losses.”).

190. *Id.*

191. *Id.* at 73, 74, 76 (“This mechanism for selecting good from bad options is referred to as decision-making, and the physiological changes occurring in association with the behavior selection constitute part of *somatic states* (or somatic signals).”).

192. See, e.g., Carolyn M. Johnson et al., *Rule Learning Enhances Structural Plasticity of Long-Range Axons in Frontal Cortex*, NATURE COMM., Mar. 7, 2016, at 1.

193. Blanchette & Richards, *supra* note 179, at 276 (“Until recently, these processes were studied in a vacuum, separately from the affective system, as if they were immune from such influence. This partition may have stemmed from early conceptual distinctions between reason and passion, with its implicit hierarchical distinction.”).

Interpretation is how we take meaning from information to form a mental impression.<sup>194</sup> Anxiety influences interpretation.<sup>195</sup> But when? Some research indicates that anxiety impacts our interpretive bias or our ability to select “one meaning rather than initial generation of possible interpretations.”<sup>196</sup> There may be a link between experiencing anxiety and focusing selectively on information one finds threatening.<sup>197</sup>

Judgment is how we evaluate information and use it to make assessments about the likelihood of future outcomes.<sup>198</sup> So, for example, if you have interpreted that the law has changed, your judgment is the process you employ to deal with your interpretation. Your judgment determines whether you will decide in favor of the old law or adopt the new one.

An array of emotions can impact judgment in different ways, particularly with regard to the way our minds access and process memories.<sup>199</sup> People who are highly anxious are more prone to believe that negative events are more likely to occur than those with low or no anxiety.<sup>200</sup> Why might mood influence judgment? The availability heuristic suggests that it is easier to access memories associated with negative feelings more quickly than other memories.<sup>201</sup> The mood-as-information hypothesis suggests that we use our feelings as a shortcut to produce a judgment.<sup>202</sup> Notably, when people are aware of their feelings or are asked to make judgments based on facts and not feelings, they may mitigate this pathway.<sup>203</sup>

Decision-making is how we chose, select, or avoid a particular outcome over others.<sup>204</sup> Positive and anxious moods can influence decision-making, making people more risk-averse.<sup>205</sup> For example, fear has been shown to increase how we estimate the likelihood of a negative outcome and the severity of its consequences.<sup>206</sup> Do emotions hinder or help desirable decision-making behavior? In this area, work on somatic markers has led to a general conclusion that “affect is

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194. *Id.* at 277.

195. *Id.* at 280.

196. *Id.* at 284.

197. *Id.* at 289 (noting the need for future research to differentiate true interpretation bias from response bias).

198. *Id.*

199. *Id.* at 295.

200. *Id.* at 291 (noting other findings that indicate that this finding may be restricted to judgments that are self-relevant).

201. *Id.*

202. *Id.*

203. *Id.* at 292.

204. *Id.*

205. *Id.* at 298.

206. Jon K. Maner & Mary A. Gerend, *Motivationally Selective Risk Judgments: Do Fear and Curiosity Boost the Boons or the Banes?*, 103 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 256, 263–66 (2007) (“At a broader theoretical level, the current research adds to a growing literature suggesting that selective patterns of higher-order cognition are shaped by fundamental motives designed to help people navigate the opportunities, challenges, and choices present in everyday life.”).

beneficial for normatively correct decision making.”<sup>207</sup> Upon further research, a general finding still stands that one’s capacity to embrace an emotional reaction to stimuli is typically more beneficial than not for decision-making.<sup>208</sup>

Reasoning, often understood to produce rational thought, is how we use available information to form inferences.<sup>209</sup> Emotion influences capacities for reasoning and logic (deductive thought, etc.) in both positive and negative ways. There is strong indication that this is due to the interplay as “deductive reasoning is highly reliant upon working memory.”<sup>210</sup> Being in a negative mood or having high anxiety can negatively impact capacity to engage working memory due to its depletion.<sup>211</sup> One hypothesis as to why is that incidental emotion may focus attention away from task relevant information. But where the emotion you experience is relevant to the decision you are making may focus your attention toward task relevant information.<sup>212</sup>

### 3. *Does Emotion Inhibit Logical Reasoning?*

There is a common assumption that emotion negatively affects a person’s ability to think clearly and with reason. In his 1946 seminal work on emotion and logical reasoning, psychologist Arthur Lefford asserted,

The disastrous effects of emotional thinking . . . [are far reaching]. The problem is especially acute today, in a war-torn world, where only action based on objectivity of analysis and rationality of thought can lead to a successful solution of the social and economic problems which gave rise to it and consequences which will result from it.<sup>213</sup>

This view has prevailed.

However, further studies refute and complicate this view by finding that emotion is integral to decision-making.<sup>214</sup> The central question is how. Emotion that is related to what you are deciding can benefit your decision-making cognition.<sup>215</sup> Emotion that is unrelated can become a distraction.<sup>216</sup> A hypothetical that illustrates this has you driving a car on the highway. Imagine you have to decide whether or not to speed on the highway to make it to your destination. If you have emotions related to your choice to speed or not, such as a fear of being late or fear

207. Blanchette & Richards *supra* note 179, at 299.

208. *Id.*

209. *Id.*

210. *Id.* at 303.

211. *Id.* (“[A]nxiety leads to task-irrelevant processing of affective information, which depletes resources available for the primary task.”); *id.* at 302 (“[Laboratory research] has shown robust and consistent detrimental effects of emotion on logicality in deductive reasoning . . .”).

212. *Id.* at 303.

213. Arthur Lefford, *The Influence of Emotional Subject Matter on Logical Reasoning*, 34 J. GEN. PSYCHOL. 127, 127 (1946) (“This study is an attempt to analyze some of the factors which deleteriously influence logical thinking.”).

214. Bechara, *supra* note 25, at 76.

215. *Id.* at 76–77.

216. *Id.*

of getting in an accident, they may enhance your decision-making capacity. However, if you have an emotion unrelated to driving, perhaps learning that your loved one died, it can be disruptive. This distinction does not always hold. Sometimes integrally related emotions can be disruptive, too.<sup>217</sup>

A recent study conducted in three different cities in the United Kingdom on British war veterans and survivors of terrorist attacks in London found that those in London, who had the highest levels of emotion, were more accurate in reasoning about syllogisms than those living elsewhere, who had lower reported levels of emotion.<sup>218</sup> The authors of this study explain, there is a “[g]rowing body of evidence suggesting that using intrinsically emotional materials, participants are not necessarily reasoning less logically about emotional contents . . . in some cases, they may actually provide more normatively correct responses when reasoning about emotional materials.”<sup>219</sup> An earlier study suggests that people with direct emotional experiences about a topic may have advanced reasoning in matters invoking similar context.<sup>220</sup>

#### 4. *Do Different Kinds of Emotions Change the Way We Reason?*

If we accept the two aforementioned possibilities, (a) that emotion is linked to other parts of our cognition we use to make decisions and, (b) that emotion can hinder *or* help logical reasoning, we reach a third question. Does the kind of emotion matter? Here, the research is more incongruent, and there are few general inferences upon which we can rely. Cognitive science explores this question by asking how affect (or mood) influences cognitive processes at a deeper, systematic level and at a more superficial, heuristic level.<sup>221</sup> These two areas of research—social cognition studies on incidental affect and clinical psychology literature on integral emotion—offer views that are not always integrated.<sup>222</sup> Findings range from the possibility that positive moods seem to result in increased heuristic processing, perhaps because feeling “good” depletes certain cognitive areas of processing.<sup>223</sup> Negative moods seem to result in more systematic information processing but doesn’t always

217. There are many studies exploring the relationship between emotion and decision-making. See, e.g., Baba Shiv et al., *The Dark Side of Emotion in Decision-Making: When Individuals with Decreased Emotional Reactions Make More Advantageous Decisions*, 23 COGNITIVE BRAIN RES. 85 (2005).

218. Blanchette & Richards, *supra* note 179, at 302; see also Isabelle Blanchette, Anne Richards, Laura Melnyk & Anastasia Lavda, *Reasoning About Emotional Contents Following Shocking Terrorist Attacks: A Tale of Three Cities*, 13 J. EXPERIMENTAL PSYCHOL. 47 (2007) (examining reasoning following terrorist attacks in London in 2005 on three groups).

219. Blanchette & Richards, *supra* note 179, at 302.

220. Isabelle Blanchette et al., *Conditional Reasoning About Highly Emotional Events: Victims of Sexual Abuse* (2008) (unpublished manuscript) (examining sexual abuse as the area of study).

221. See Diane M. Mackie & Leila T. Worth, *Processing Deficits and the Mediation of Positive Affect in Persuasion*, 57 J. PERSONALITY & SOC. PSYCHOL. 27 (1989) (providing evidence “that reduced cognitive capacity to process the message contributes to the decrements shown by positive mood”).

222. Olga Klimecki & Tania Singer, *Empathy from the Perspective of Social Neuroscience*, in THE CAMBRIDGE HANDBOOK OF HUMAN AFFECTIVE NEUROSCIENCE, *supra* note 117, at 533, 534.

223. Blanchette & Richards, *supra* note 179, at 304.

improve normatively correct reasoning and judgment.<sup>224</sup> One conclusion the authors do make from this research is that “[e]motion can both enhance and impair normatively correct responses” and may improve ability to adapt responses.<sup>225</sup>

### C. Empathy-Cognition Interactions

Empathy is the capacity to understand and experience another person’s emotions.<sup>226</sup> It is a cognitive skill essential for pro-social behavior.<sup>227</sup> However, as a term, empathy describes many responses, not just one. It identifies related, but distinct phenomena of cognitive capacities and behaviors that occur when a person responds with “sensitive care” to another’s suffering.<sup>228</sup> Varied responses that demonstrate this capacity include coming to know what someone else is feeling internally, feeling what he or she feels, and/or matching another’s neural responses.<sup>229</sup>

Research on empathy attempts to understand why, as a matter of cognitive functioning, the observations and indications found in behavioral studies might be occurring. As previously described, the brain has many pathways for processing choices, risk, judgment, and decisions. The question from a neuroscience perspective is what cognitive processes are activated when a person experiences empathy. Evolutionary biologists have shown that this cognitive capacity developed in our species over millions of years.<sup>230</sup> In the field of neuroscience, empathy research has only taken off with significance in the last decade. However, this research is shedding new light on old ideas. Advances in brain mapping have led to the ability to map the “physiological correlates of the process of empathy, describe its neuronal architecture, and specify empathy circuits in the brain.”<sup>231</sup>

From a neurological perspective, empathy involves three distinct neural processes when the brain engages in (a) empathy, (b) mentalizing, and (c) action

224. *Id.*

225. *Id.* at 304–08.

226. Klimecki & Singer, *supra* note 222, at 534 (“Empathy is commonly defined as the human capacity to share another person’s emotion without confusing it with one’s own emotional state.”).

227. C. Daniel Batson, *These Things Called Empathy: Eight Related but Distinct Phenomena*, in *THE SOCIAL NEUROSCIENCE OF EMPATHY* 3, 4–11 (Jean Decety & William Ickes eds., 2009) (discussing how to define empathy and identifying “eight distinct phenomena that have been called empathy”).

228. In other words, there is no single controlling definition of empathy from a neuroscientific perspective. *See id.* at 3–15 (describing eight concepts for understanding the phenomenon of one person’s caring response to another’s suffering).

229. *Id.* at 3–5.

230. *See* Frans de Waal, *The Evolution of Empathy*, U.C. BERKELEY (Sept. 1, 2005), [http://greatergood.berkeley.edu/article/item/the\\_evolution\\_of\\_empathy](http://greatergood.berkeley.edu/article/item/the_evolution_of_empathy) [<https://perma.cc/2VFZ-2YE7>] (reporting that empathy was critical to survival as a species and summarizing studies performed on animals and other mammals).

231. Jeanna C. Watson & Leslie S. Greenberg, *Empathetic Resonance: A Neuroscience Perspective*, in *THE SOCIAL NEUROSCIENCE OF EMPATHY*, *supra* note 227, at 126; *see also* Katherine P. Rankin et al., *Structural Anatomy of Empathy in Neurodegenerative Disease*, 129 *BRAIN* 2945, 2945–47 (2006) (summarizing research study to determine the degree to which regional differences in brain volumes correspond to real-life empathic behavior).

understanding.<sup>232</sup> From this we learn that there seems to be a distinction between empathy and personal distress at the neurological level.<sup>233</sup> In other words, our brains process pain we see another experiencing quite differently from pain we undergo ourselves. An important recent study has shown that empathy is not an automatic or inherent reaction, but a cognitive skill that requires deliberation.<sup>234</sup> One potential implication of this is that empathy may be something that must be taught because it is skill acquired by learning.

Empathy is a “multi-faceted construct” wherein compassion, pro-social behavior, self-other distinctions, and affect sharing each result from cognitive processes.<sup>235</sup> These processes also have the potential to interact with those associated with decision-making. For example, if a judge is deciding a child custody case and is assessing whether the facts in the case meet the best interests of the child standard and the judge empathizes with the child, both cognitive activities may intersect when the brain accesses memories. In this way, empathy and decision-making can become cognitively connected.

Studies in neuroscience on empathy have revealed the following findings. One study showed how distinct regions of brain activity are associated with empathic face processing.<sup>236</sup> Another study indicates links between activation in the emotional memory structures of the brain and empathy processing.<sup>237</sup> Studies also indicate a link in the brain between processing pain and processing empathy. In children, for example, one study indicates that prosocial behavior, such as working together and being polite, corresponds with a child’s ability to recognize pain.<sup>238</sup> In another study, adults who believed they had taken painkiller medication noticed an observable decrease in their pain level and in their empathy for other people who were still

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232. Klimecki & Singer, *supra* note 222, at 534.

233. THE SOCIAL NEUROSCIENCE OF EMPATHY, *supra* note 227, at viii.

234. Anjali Krishnan et al., *Somatic and Vicarious Pain Are Represented by Dissociable Multivariate Brain Patterns*, *eLIFE*, June 14, 2016, at 1, 3; *see also Empathy for Others’ Pain Rooted in Cognition Rather than Sensation, CU-Boulder Study Finds*, U. COLO. BOULDER (June 14, 2016), <http://www.colorado.edu/today/2016/06/14/empathy-others-pain-rooted-cognition-rather-sensation-cu-boulder-study-finds> [<https://perma.cc/FH2L-HM2T>] (“The research suggests that empathy is a deliberative process that requires taking another person’s perspective rather than being an instinctive, automatic process.”).

235. Claus Lamm et al., *Imaging Empathy and Prosocial Emotions*, *NEUROSCIENCE LETTERS*, June 29, 2017, at 1.

236. Antonio Del Casale et al., *Neural Functional Correlates of Empathic Face Processing*, *NEUROSCIENCE LETTERS*, July 1, 2017, at 68, 73 (“Our ALE meta-analysis of studies of empathetic face processing suggested that exposure to emotional *vs.* neutral (or control) faces correlates with activations in the context of a bilateral neural network . . . These data reflect the possibility that empathy for emotional faces is a complex process correlating with brain activations consistently involved in emotional cue processing, self-other/same-different discrimination, perspective-taking, theory of mind, emotional arousal, and decision-making.”).

237. *Id.* at 68.

238. Markus Paulus & Miriam Leitherer, *Preschoolers’ Social Experiences and Empathy-Based Responding Relate to Their Fair Resource Allocation*, 161 *J. EXPERIMENTAL CHILD PSYCHOL.* 202 (2017).

experiencing pain.<sup>239</sup> There is emergent evidence that how a brain processes emotion, contagion, mimicry, sympathy, and compassion is closely linked to how the brain processes empathy.<sup>240</sup> There is also evidence that individuals differ in their capacity for empathy.<sup>241</sup>

Within empathy research is the study of the relationship between empathy and group behavior. Being aware of what someone thinks and what they feel provides two essential, but distinct means for gaining information about the expressive behaviors of people around us.<sup>242</sup> Studies have identified two separate but connected processes for how the brain processes empathy. The first experience, sharing, occurs when you experience another's pain experience, which may produce an array of emotional responses ranging from empathy to disengagement.<sup>243</sup> The second experience, mentalizing, occurs when, after reflecting upon another's pain experience, one chooses an empathetic response.<sup>244</sup> The cognition of empathy may be best understood as a system of flexible conceptual representations that translate thought into feelings.<sup>245</sup>

Empathy physically manifests through our mirror neurons, which reflect our own ability to observe and to react to the behaviors of others.<sup>246</sup> The Mirror Neuron System ("MNS") was first theorized in 1996 by studying the neural activity in the brains of macaque monkeys.<sup>247</sup> The presence of such a system in humans has not been confirmed but we do know that canonical neurons link one's perception with action.<sup>248</sup> Mirror neurons activate when you watch another person engage in an

239. Lamm et al., *supra* note 235.

240. Klimecki & Singer, *supra* note 222, at 534.

241. Watson & Greenberg, *supra* note 231, at 126.

242. See Ullrich Wagner et al., *The Relationship Between Trait Empathy and Memory Formation for Social vs. Non-Social Information*, 7 BMC PSYCHOL. 1, 1 (2015) (clarifying the distinction between cognitive empathy where one mentally represents another's thoughts, and affective empathy where one aligns with another's emotional state).

243. See, e.g., Paula M. Neidenthal, *Embodying Emotion*, 316 SCI. 1102, 1104 (2007) (explaining a study that examined the brain activity of a participant watching another participant experience pain in an attempt to prove that an individual can feel another's emotions).

244. Jamil Zaki et al., *The Neural Bases of Empathic Accuracy*, 106 PROC. NAT'L ACAD. SCI. 11382, 11384 (2009).

245. Wagner et al., *supra* note 242, at 1; see also Kevin A. Keay & Richard Bandler, *Parallel Circuits Mediating Distinct Emotional Coping Reactions to Different Types of Stress*, 25 NEUROSCIENCE & BIOBEHAVIORAL REVIEWS 669, 669 (2001) (establishing that emotional coping strategies to different types of stress arise through "distinct, longitudinal neuronal columns of the midbrain periaqueductal gray (PAG) region"); Clifford B. Saper, *The Central Autonomic Nervous System: Conscious Visceral Perception and Autonomic Pattern Generation*, 25 ANN. REV. NEUROSCIENCE 433, 453–61 (2002) (describing patterns of autonomic responses in the central nervous system).

246. James D. Duffy, *What Hobbes Left Out: Neuroscience of Compassion and Its Implications for a New Common-Wealth*, in LAW AND NEUROSCIENCE: CURRENT LEGAL ISSUES, *supra* note 92, at 433, 439.

247. Watson & Greenberg, *supra* note 231, at 187. The existence of the MNS in humans is debatable and has not been confirmed at this time.

248. PERSPECTIVES ON IMITATION: FROM NEUROSCIENCE TO SOCIAL SCIENCE 3 (Susan Hurley & Nick Chater et al. eds., 2005).

act.<sup>249</sup> It is thought these two neural circuits account (at least in part) for the cognitive capacity for empathy.<sup>250</sup> The centers of neural activity linked to empathy include the right inferior parietal lobe (found to process our capacity to identify with others) and the anterior cingulate cortex, insula, thalamus, and somatosensory cortices (which process emotion).<sup>251</sup> When your mirror neurons fire, your brain activates different areas depending on whether you take a first-person or a third-person perspective.<sup>252</sup> Research on how gender, race or other aspects of identity may influence how neurons function is also emerging.<sup>253</sup> Studying these brain functions has also led to widespread recognition in social psychology, sociology, neuroscience, and other fields of the phenomenon of emotional contagion, where people literally catch each other's feelings.<sup>254</sup> This is true for touch, sound, and emotion.<sup>255</sup>

How does empathy, as variously defined, play a role in decision making? Although the question is straightforward, the answer is not. Psychologists have sought to understand the link through behavioral studies. One study showed that parents who more frequently reported feeling distress in response to a crying infant as opposed to feeling sympathy or compassion had a high risk of abusing a child.<sup>256</sup> Another study found that husbands who were violent to their wives had a significantly lower capacity for what is called "empathy accuracy," or, the ability read other people's feelings and thoughts accurately.<sup>257</sup> A third study on emotional contagion indicated that what you feel is influenced by nonverbal cues of those around you, whereas what you think others are feeling is heavily influenced by what they have said.<sup>258</sup>

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249. David Dobbs, *How Babies Know What You're Up To (or Not)*, SCI. AM. (Nov. 26, 2007), <https://blogs.scientificamerican.com/news-blog/how-babies-know-what-youre-up-to-or/> [<https://perma.cc/GNL8-5SD9>].

250. Marco Iacoboni, *Understanding Others: Imitation, Language and Empathy*, in PERSPECTIVES ON IMITATION: FROM NEUROSCIENCE TO SOCIAL SCIENCE, *supra* note 248, at 77; *see also* R.J.R. Blair, *The Amygdala and Ventromedial Prefrontal Cortex in Morality and Psychopathy*, 11 TRENDS COGNITIVE SCI. 387 (2007); Luigi Cattaneo & Giacomo Rizzolatti, *The Mirror Neuron System*, 66 ARCHIVES NEUROLOGY 557 (2009); Valeria Gazzola, Lisa Aziz-Zadeh & Christian Keysers, *Empathy and the Somatotopic Auditory Mirror System in Humans*, 16 CURRENT BIOLOGY 1824 (2006).

251. Argye E. Hillis, *Inability to Empathize: Brain Lesions That Disrupt Sharing and Understanding Another's Emotions*, 137 BRAIN 981 (2014).

252. Watson & Greenberg, *supra* note 231, at 127.

253. Elizabeth A. Reynolds Losin et al., *Race Modulates Neural Activity During Imitation*, 59 NEUROIMAGE 3594 (2012).

254. For a survey of this research, see HATFIELD ET AL., *supra* note 163, at 1–7 (discussing emotional contagion and its effects on social and developmental psychology).

255. Watson & Greenberg, *supra* note 231, at 126.

256. Joel S. Milner et al., *Empathic Responsiveness and Affective Reactivity to Infant Stimuli in High- and Low-Risk for Physical Child Abuse Mothers*, 19 CHILD ABUSE & NEGLECT 767 (1995).

257. Kahni Clements et al., *Empathic Accuracy of Intimate Partners in Violent Versus Nonviolent Relationships*, 14 PERS. RELATIONSHIPS 369 (2007).

258. Christopher K. Hsee et al., *Assessments of the Emotional States of Others: Conscious Judgments Versus Emotional Contagion*, 11 J. SOC. & CLINICAL PSYCHOL. 119, 119–21 (1992).



Although the study of empathy remains ongoing, two early implications emerge. First, empathy involves cognitive processes and brain structures that are also invoked during different kinds of decision-making.<sup>259</sup> Thus, to believe that empathy is irrelevant to decision-making is erroneous and problematic. Second, empathy is learned, not innate.<sup>260</sup> As new work continues to emerge, it will challenge some of these insights and strengthen others. For legal scholars and those interested in judicial reform, the important proposition is to recognize the existence of the potential for intersection between an experience of empathy (or lack thereof) and the cognition involved in making choices.

#### IV. ACKNOWLEDGING BIAS IN JUDICIAL CHOICE AND SOME CONSEQUENCES

Judicial bias is real. Judges are susceptible to the implicit cognitive traits inherent in human decision making. By providing evidence for why bias, emotion, and empathy have the capacity to influence the choices we make at the neural level, this Article has established a new basis for understanding judicial decision-making.

Consequently, this disruptive claim raises a number of uncomfortable questions. How (and how much) do factors of implicit cognition influence a judge's judgments and choices? Is it possible to lessen or eliminate one's biases? What types of emotions enhance or inhibit logical reasoning? Recognizing that, at present, available research does not definitively confirm or deny many of these details and that new work is emerging, answering these questions in detail is beyond the scope of this Article.<sup>261</sup> Instead, I examine why the lack of impartiality and objectivity in judicial decision making is concerning from theoretical and normative perspectives. I also consider how acknowledging implicit cognition in judicial behavior may impact, advance and disrupt three important discourses in law: judicial selection, judicial function, and judicial opinions as a source of law.<sup>262</sup>

##### *A. On Judges, Selection, and Discourse*

Accepting that judges are shaping law through their personal beliefs and feelings demands reimagining the role judges should play in shaping law. Because judges, unlike a legislative body composed of numerous people, enjoy a heightened capacity to shape the law in their individual capacity, concerns about undue

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259. McClure et al., *supra* note 178, at 205.

260. See Wagner et al., *supra* note 242, at 7 (refuting earlier studies arguing empathy is innate); see also, e.g., Jean Decety & Philip L. Jackson, *The Functional Architecture of Human Empathy*, 3 BEHAV. & COGNITIVE NEUROSCIENCE REVIEWS 71, 73–75 (2004) (proposing empathy as an “innate ability to recognize that the self and the other can be the same”).

261. This Article does not employ neural data in support of its normative investigations, which are admittedly nascent and subject to further refinement and reform. I also acknowledge that the use of empirical and/or behavioral data in support of normative legal claims is, itself, an area of scholarly controversy, which I briefly address *infra* note 262.

262. I recognize the view of some that drawing normative implications from empirical, or behavioral, studies is, itself, problematic. See, e.g., Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211, 225–36 (1995); Robert A. Hillman, *The Limits of Behavioral Decision Theory in Legal Analysis: The Case of Liquidated Damages*, 85 CORNELL L. REV. 717 (2000).

influence and bias are more acute. This Section considers the potential consequences this implication has on judicial selection and discourse.

### 1. *Judicial Selection*

The thesis of the inevitability of bias, emotion, and empathy in judicial decision-making challenges common practices in judicial selection. One way to ensure excellence in judicial function is by ensuring excellence among judges. Here, how we think about who should be elected, appointed, or otherwise selected to serve as a judge matters. Judging is an elite club and within every legal tradition there are norms and conventions about who is sufficiently qualified to join. Each court and adjudicatory institution sets its own selection process.<sup>263</sup> To become a judge at the U.S. Supreme Court, for example, a candidate must be nominated by the President and approved by two-thirds majority of the U.S. Senate, per the Appointments Clause.<sup>264</sup> Yet, the precise nature and process of these confirmation hearings differ over time. Conduct of a Supreme Court Justice candidate deemed unethical is not always questioned or considered during the process. At the International Court of Justice (“ICJ”), a candidate advances to judge only after successfully making it through the majority vote of both the U.N. General Assembly and the U.N. Security Council.<sup>265</sup> Much attention has been paid to selection of judges and to terms of tenure to ensure that courts employ quality people given the importance of the work.<sup>266</sup>

These selection processes ensure that the path to becoming a judge is a rigorous one. Once selected, most judges take an oath or otherwise agree to undertake their judicial duties with independence and impartiality.<sup>267</sup> Beyond the right education and experience, historically, these two criteria have mattered immensely.<sup>268</sup> The ICJ, for example, requires that “[t]he Court shall be composed

263. See Chiara Giorgetti, *Who Decides Who Decides in International Investment Arbitration*, 35 U. PA. J. INT’L L. 431, 438–54 (2013).

264. U.S. CONST. art. II, § 2, cl. 2 (“[H]e shall nominate, and by and with the Advice and Consent of the Senate, shall appoint . . . Judges of the supreme Court . . .”).

265. Statute of the International Court of Justice art. 4, cl. 3, June 26, 1945, 59 Stat. 1055, 33 U.N.T.S. 933 [hereinafter ICJ Statute]; see also PHILIPPE SANDS, *SELECTING INTERNATIONAL JUDGES* (2012).

266. Robert O. Keohane et al., *Legalized Dispute Resolution: Interstate and Transnational*, in *LEGALIZATION AND WORLD POLITICS* 73, 75–78 (Judith Goldstein et al. eds., 2001).

267. INTERNATIONAL LAW ASSOCIATION, *THE BURGH HOUSE PRINCIPLES ON THE INDEPENDENCE OF THE INTERNATIONAL JUDICIARY* art. 1.1 (2004); see also *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding S.C. RES. 276, Advisory Opinion*, 1971 I.C.J. 16, 23 (June 21) (stating that judicial independence is acting “independently of all outside influence or interventions whatsoever, in the exercise of the judicial function entrusted to it alone by the Charter and its Statute”).

268. Ruth Mackenzie & Phillippe Sands, *International Courts and Tribunals and the Independence of the International Judge*, 44 HARV. J. INT’L L. 271, 271 (2003) (“Judicial independence is recognized to be a significant factor in maintaining the credibility and legitimacy of international courts and tribunals.”); See also, e.g., L.E. Petteti, *Independence of International Judges*, in *JUDICIAL INDEPENDENCE* 496 (Shimon Shetreet & Jules Deschenes eds., 1985); Eric A. Posner & John C. Yoo, *Judicial Independence in International Tribunals*, 93 CAL. L. REV. 1, 7 (2005); Dinah Shelton, *The Independence of*

of a body of independent judges, elected regardless of their nationality, from persons of high moral character, who possess the qualifications required . . . .<sup>269</sup>

At issue are two concerns. First, the desire for impartiality is linked to the desire to prevent (or at least to reduce) bias in judging. At the International Criminal Tribunal for the Former Yugoslavia (“ICTY”), “a judge may not sit on a trial or appeal in any case in which the Judge has a personal interest or concerning which the Judge has or has had any association which might affect his or her impartiality.”<sup>270</sup> In 1995, the Commission on Global Governance issued a report making similar arguments for a “system of screening for potential members of the Court for both jurisprudential skills and proven objectivity.”<sup>271</sup> This may include financial interests in the outcome of the case, an arbitrator who has previously appeared as counsel, or counsel who have previously served as ad hoc judges, or where a judge’s outside activities are perceived to suggest impartiality. The sense is that bias of this sort will unduly influence a judge’s decision making in a way that prioritizes other factors above logical, reasoned analysis of the law and facts.

Second, the independence requirement is meant to safeguard against undue political influence. To have a politicized judiciary cuts against Madisonian ideals that government is best situated where separation of powers exist.<sup>272</sup> Grounds for dismissal are often predicated upon a failure to be independent. In International Centre for Settlement of Investment Disputes (“ICSID”) arbitration proceedings, for example, arbitrators are defined as persons “who may be relied upon to exercise independent judgment” and failure to do so can become grounds for dismissal.<sup>273</sup>

However, this Article’s thesis problematizes the idea that these two principles—*independence* and *impartiality*—can, in fact, mitigate against bias. And, if accepted by the legal profession, it also calls into question the view that these two criteria should play a central role in judicial selection.

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*International Tribunals*, in THE MODERN WORLD OF HUMAN RIGHTS: ESSAYS IN HONOR OF THOMAS BUERGENTHAL 299 (Antonio Augusto Cancado Trindade ed., 1996); Detlev Vagts, *The International Legal Profession: A Need for More Governance?*, 90 AM. J. INT’L L. 250 (1996). For a useful summary of critiques of the view that judges are simply agents of the litigants, see José E. Alvarez, *What are International Judges for? The Main Functions of International Adjudication*, in THE OXFORD HANDBOOK OF INTERNATIONAL ADJUDICATION 158, 163–66 (Cesare P.R. Romano, Karen J. Alter & Chrisanthi Avgerou eds., 2013).

269. ICJ Statute, *supra* note 265, art. 2.

270. International Tribunal for the Prosecution of Persons Responsible for Serious Violations of International Humanitarian Law Committed in the Territory of the former Yugoslavia Since 1991, Rule 15(A), July 8, 2015, IT/32/REV.50, [http://www.icty.org/x/file/Legal%20Library/Rules\\_procedure\\_evidence/IT032Rev50\\_en.pdf](http://www.icty.org/x/file/Legal%20Library/Rules_procedure_evidence/IT032Rev50_en.pdf) [https://perma.cc/6QQ8-GGNM].

271. COMM’N ON GLOB. GOVERNANCE, OUR GLOBAL NEIGHBOURHOOD 315 (1995).

272. *See generally* THE FEDERALIST NO. 51, at 323 (James Madison) (Clinton Rossiter ed., 1961); THE FEDERALIST NO. 47, at 298 (James Madison) (Clinton Rossiter ed., 1961) (“The accumulation of all powers, legislative, executive, and judiciary, in the same hands, whether of one, a few, or many, and whether hereditary, self-appointed, or elective, may justly be pronounced the very definition of tyranny.”).

273. Convention on the Settlement of Investment Disputes Between States and Nationals of Other States (ICSID Convention) art. 14, Mar. 18, 1965, 575 U.N.T.S. 159.

Instead, we should ask what are the qualities of an excellent judicial decision maker. Sociologist John Gerring, for example, has proposed a methodology for good decision making, arguing that the following criteria must be present: (a) a good decision has resonance (makes sense); (b) consistency; (c) fecundity (richness and depth); (d) causal utility (useful); and is (e) measurable.<sup>274</sup> Brest and Krieger offer important guidance on the comparative benefits of deductive reasoning and inductive reasoning, on making a nomothetic (general case) as compared to an idiographic (individual case) and why validity matters.<sup>275</sup> These and other frameworks aim to improve decision outcomes by enhancing the process through which decisions are reached.

In addition to such guidance, judicial institutions should also take a cognitive view of decision making into consideration to account for factors of implicit cognition discussed here. Doing so will raise new questions that require new answers. Does the identity of the judge matter? Is experience or education the right proxy for excellence in judicial choice? The more we learn about judicial choice the more we can critically evaluate which criteria produce excellent judges. Engaging with and integrating insights from neuroscience helps to advance this discourse.

## 2. *Judicial Discourse*

Another way to safeguard judicial decision-making is by structuring judicial discourse. Although procedural rules on judicial discourse are not quite at the level of choice architecture,<sup>276</sup> they do provide a basic framework for the procedural matters of judging. We wonder about what judges think. We also wonder about what judges think about what other judges think. We see this in precedent, the act of following a prior decision of the same court. Even where courts are not bound by precedent, at the ICJ for example, judges prioritize consistency with the prior holdings of their court. We also see it in other forms of judicial discourse. Justice Breyer, for example, discussed his reasons for referring to a decision by the Supreme Court of Zimbabwe saying:<sup>277</sup>

Look, let me be a little bit more frank. . . . [I]n some of these countries, there are institutions—courts—that are trying to make their way in societies that didn't used to be democratic. And they are trying to protect human rights, they are trying to protect democracy, they have a document

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274. JOHN GERRING, *SOCIAL SCIENCE METHODOLOGY: A UNIFIED FRAMEWORK* 177 (2d ed. 2012) (offering a social scientific view).

275. See BREST & KRIEGER, *supra* note 90, at 366. Brest and Krieger consider the following: Is there a relationship between the two variables being tested? Is it a causal one (internal validity)? Assuming there is a causal relationship, can it claim that the outcome reflects the construct and that the measure reflects the idea of the construct (construct validity)? Assuming the other parts, can we generalize this effect to other people/times/etc. (external validity)?

276. See SUNSTEIN & THALER, *supra* note 72, at 66.

277. See *Knight v. Florida*, 528 U.S. 990, 996 (1999) (Breyer, J., dissenting from denial of certiorari) (citing *Catholic Comm'n for Justice & Peace in Zimb. v. Attorney-Gen.*, [1993] 1 ZIMB. L. REP. 239, 240, 269(S)).

called a constitution, and they want to be independent judges. And for years people all over the world have cited the Supreme Court, why don't we cite them occasionally? They will then go to some of their legislators and others and say, "See, the Supreme Court of the United States cites us." That might give them a leg up, even if we just say it's an interesting example. So, you see, it shows we read their opinion. That's important to them.<sup>278</sup>

Judicial discourse is, indeed, important.<sup>279</sup> Both judicial selection and judicial discourse are gatekeepers of judicial legitimacy. However, we cannot presume that the existing safeguards on judicial selection and discourse are enough. The sufficiency argument only works if the factual premise it is based upon is accurate. The theory of emotion in judicial choice advanced here and the idea of implicit cognition present two barriers to these longstanding markers of excellence in judging. Requiring a judge to act impartially and with independence doesn't work if a person is incapable of controlling for such factors in her or his decision making. Furthermore, even where judges intend to be impartial or independent, cognitively speaking, they lack complete control over the impact of their feelings, past experiences, or values on their decision-making processes.

Given the uncertainty, I advocate for an approach that embraces subsidiarity, or the principle of solving a problem at the level in which it occurs.<sup>280</sup> Each court or tribunal should take upon itself the initiation of a regular judicial dialogue about best decision making and deliberation practices. Here, judges could invite experts to present on relevant topics and engage in a robust discussion about how they decide and what they believe makes for excellent decision making in the context of a legal case. It is for judges to say if they believe that professional judicial discourse should include previously forbidden topics on emotion, empathy, bias and more. But they should at least choose whether or not to engage in such topics willingly, knowingly and well-informed.

### *B. On Judicial Function*

It is well-established that the central judicial function of any court or tribunal is to adjudicate legal disputes in accordance with the relevant law and facts. But scholars have often debated whether or not courts should do more. Some believe that certain courts, typically high courts, ought to play a social function in addition

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278. *Constitutional Relevance of Foreign Court Decisions*, C-SPAN (Jan. 13, 2005), <https://www.c-span.org/video/?185122-1/constitutional-relevance-foreign-court-decisions> [<https://perma.cc/M592-TT7C>].

279. JUDICIAL DIALOGUE AND HUMAN RIGHTS 1 (Amrei Muller ed., 2017) ("What sort of judicial dialogue do courts engage in when protecting human rights?"); Laurence Helfer & Anne Marie Slaughter, *Toward a Theory of Effective Supranational Adjudication*, 107 YALE L.J. 273 (1997); Anne Marie Slaughter, *A Global Community of Courts*, 44 HARV. INT'L L.J. 191 (2003).

280. ANNE MARIE SLAUGHTER, A NEW WORLD ORDER 30 (2004) (defining subsidiarity as "a principle of locating governance at the lowest possible level—that closest to the individuals and groups affected by the rules and decisions adopted and enforced").

to the practical one of settling disputes. This is because such courts can, and often do, set norms for society. They also have symbolic value as guardians of justice. Others take a less adventurous view, arguing that social functions of courts pose a risk to the legitimacy of courts and judges. Worries about judicial overreach clash with concerns that courts are not objective. They can and do reinforce notions of justice embedded with bias, racism, sexism, homophobia, and more.

This debate has been ripe in international law for a long time.<sup>281</sup> As international courts and tribunals settle the legal disputes put before them on the basis of applicable law and fact, many wonder if they do or should serve other functions. Among these are the role of finding facts, as the ICJ did in the *Hostages* case where it played a fact-finding role when it labeled the people who seized the U.S. Embassy in Tehran an “armed group.”<sup>282</sup> Second, the opinions of international courts form a subsidiary source of international law pursuant to the ICJ Statute and this lawmaking function may continue whereby in developing the law, law is made.<sup>283</sup> Third, international courts reinforce norms embedded in international law where the ICJ, for example, reaffirmed the undesirability of genocide in the *Armed Activities* case.<sup>284</sup> Fourth, international courts promote justice both directly and indirectly through their symbolic influence. Formation of these institutions has been accompanied by a public hope that they will serve as symbols of justice, especially when public trust in other governance bodies is compromised. Fifth, some (myself included) view the role of international courts as one of promoting peace and security by providing nations with an alternative to war.<sup>285</sup> This was the central vision, for example, behind the formation of the Permanent Court of Arbitration in

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281. See LAWRENCE BAUM, *SPECIALIZING THE COURTS* 228 (2011); Allison Orr Larsen, *Judicial Factfinding in an Age of Rapid Change: Creative Reforms from Abroad*, 130 HARV. L. REV. F. 316 (2017); David D. Caron, *Remarks By David D. Caron*, 111 ASIL PROC. 231 (2018), <https://www.cambridge.org/core/journals/proceedings-of-the-asil-annual-meeting/article/remarks-by-david-d-caron/B514FC1DF2B433A1CAE36464BC20DF77> [https://perma.cc/4APL-M7CG] (framing the discourse in international law).

282. United States Diplomatic and Consular Staff in Tehran (United States of America v. Iran), Judgment, 1980 I.C.J. Rep. 10, ¶ 14 (May 24).

283. ICJ Statute, *supra* note 265, art. 38, ¶ 1.d.

284. *Armed Activities on the Territory Congo (New Application: 2002) (Dem. Rep. Congo v. Rwanda)*, Jurisdiction & Admissibility, 2006 ICJ Rep. 6, 71 (Feb. 3) (joint sep. op. Higgins, Kooijmans, Elaraby, Owada & Simma, JJ.) (“It is a matter for serious concern that at the beginning of the twenty-first century it is still for States to choose whether they consent to the Court adjudicating claims that they have committed genocide. It must be regarded as a very grave matter that a State should be in a position to shield from international judicial scrutiny any claim that might be made against it concerning genocide. A State so doing shows the world scant confidence that it would never, ever, commit genocide, one of the greatest crimes known.”).

285. See YUVAL SHANY, *ASSESSING THE EFFECTIVENESS OF INTERNATIONAL COURTS: A GOAL-BASED APPROACH* (2014); Anna Spain Bradley, *Examining the International Judicial Function: International Courts as Dispute Resolvers*, 34 LOYOLA L.A. INT’L COMP. L. REV. 5 (2011); Armin Vondandy & Ingo Venzke, *On the Functions of International Courts: An Appraisal in Light of Their Burgeoning Public Authority*, 26 LEIDEN J. INT’L L. 49 (2013).

1899 in The Hague and behind Hans Kelsen's call to design the ICJ to allow nations to pursue peace through law.<sup>286</sup>

Despite this creative and vast array of benefits an international court might provide to society at large, there is little consensus about what its proper social function, if any, should be.<sup>287</sup> This ambiguity rests a heavy responsibility on the judges themselves who are left to balance their roles independently in the opinions they reach and the judgments they write. At all times, they must keep in mind their authority and the importance of not taking views that risk their professional reputation or the legitimacy of the court they serve.

Here, I posit that the recognition of the centrality of bias and emotion in decision making might influence judicial practice and the broader social function of a court in one of two ways. The first possibility is that it would jeopardize judicial institutions.<sup>288</sup> This view rests on the presumption that if adjudicators begin to explicitly explore their emotions and values, they might be more inclined to accept a role in advancing social functions. This would, in turn, result in a reduction of judicial impartiality and jeopardize the integrity and legitimacy of the particular court in question.

However, a second possibility is that advanced knowledge about decision making might enhance and even improve judicial decision-making. The march of self-awareness due to advancement in cognitive science is upon us. The legal profession cannot insulate itself. The project for judges, courts, and scholars alike is to consider how neuroscience helps us ascertain the nature and risk of emotionally-aware judges and the social functions they might serve.

This debate connects with a rich and varied, yet often underemphasized, tradition in constitutional law scholarship recognizing the human feature of the law and of jurists in their role as arbiters of legal disputes. The late constitutional law scholar, Robert Burt, wrote many works advancing his perspective that constitutional jurists should imagine themselves as shaping the complexities involved with interpersonal and intergroup conflict, not settling impersonal legal disputes between parties.<sup>289</sup> In referencing the seminal Supreme Court decision in *Brown v. Board of Education* in 1955, Burt proclaims that the “Court wields an authority deeper than its practical capacity to enforce its will. That authority is the ability to force into conscious awareness aspects of our relationship to scorned groups that are easily shut away from acknowledgement, often because of unease and even guilt.”<sup>290</sup> And yet such societal need for judicial intervention should not

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286. See generally HANS KELSEN, PEACE THROUGH LAW (1944).

287. See generally SHANY, *supra* note 285.

288. Caron, *supra* note 281, at 40–41 min. (referencing “corrupt the court”).

289. For his last work, published posthumously, see ROBERT A. BURT, JUSTICE AND EMPATHY 4 (2017) (describing his path along a “richer, more deeply rooted and humane reading of the law”).

290. *Id.* at 25.

have to rise to the most public or the most dire of indignities before such judicial recognition is reached.<sup>291</sup>

Conceptualizations of judicial function ought to account not only for the institutional actor, but also for the individual actor. This, in turn, reframes questions about the role of courts. Instead of just asking do courts care about people, we must also ask do judges care about people? Certainly, any judge has the capacity to care or exhibit empathy and emotional concern about people the court affects. But *should* judges care about people?

Harvard Law professor Lani Guinier and Cornell Law professor Gerald Torres, speaking about a variety of elected and public officials, argue in the affirmative in their powerful conceptualization of “demosprudence.” They write:

Unlike jurisprudence, which analyzes the work of judges acting in formal sites such as courts, or legisprudence, which produces a secondary literature about how the work of elected representatives is an important source of lawmaking, demosprudence focuses on the ways that ongoing collective action by ordinary people can permanently alter the practice of democracy by changing the people who make the law and the landscape in which that law is made. Scholars of jurisprudence focus on the collection of rules imposed by authority and interpreted by jurists; scholars of legisprudence see the legislator or elected official as the pivotal actor. Scholars of demosprudence, by contrast, draw attention to the “dynamic constituencies” who call power to account through their participation in “contentious” politics and other forms of legal meaning making that also call democracy to account.<sup>292</sup>

Elsewhere, Guinier describes Justice Ginsburg’s dissent in *Ledbetter v. Goodyear Tire and Rubber Co.*<sup>293</sup> as a form of this demosprudence wherein Justice Ginsburg was “courting the people.”<sup>294</sup> As Justice Ginsburg later revealed to then Harvard Law School Dean (and now Supreme Court colleague) Elena Kagan, her intent was to speak to Congress telling them, “You did not mean what the Court said. So fix it.”<sup>295</sup>

Guinier uses this example to illustrate her normative beliefs about why demosprudence matters, arguing that it “builds on the idea that lawmaking is a collaborative enterprise between formal elites—whether judges, legislators, or lawyers—and ordinary people.”<sup>296</sup> The push for such collaboration is rooted in

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291. See, e.g., CHRIS EISGRUBER, *CONSTITUTIONAL SELF-GOVERNMENT* (2001) (discussing the need for increased Supreme Court participation in order to achieve meaningful democracy).

292. Lani Guinier & Gerald Torres, *Changing the Wind: Notes Toward a Demosprudence of Law and Social Movements*, 123 *YALE L.J.* 2740, 2750–51 (2014) (original citations omitted).

293. *Ledbetter v. Goodyear Tire & Rubber Co.*, 550 U.S. 618, 644 (2007) (Ginsburg, J., dissenting).

294. Lani Guinier, *Courting the People: Demosprudence and the Law/Politics Divide*, *Essays in Honor of Justice Ruth Bader Ginsburg*, 89 *B.U. L. Rev.* 539 (2009).

295. *Id.* at 542.

296. Martha Minnow, *Essays in Honor of Justice Ruth Bader Ginsburg*, 127 *HARV. L. REV.* 423, 442 (2013) (“The foundational hypothesis of demosprudence is that the wisdom of the people should



democratic principles that, as Guinier claims, “courts do not end democratic debate about the meaning of rights and law; they are participants within that debate.”<sup>297</sup>

A democratically-inspired view of the law is aligned with the search for representation and legitimacy. It is inspired by the belief that law made ‘by the people, for the people’ is better than law that is formed by elite groups. How this happens from the expected (e.g., voters electing legislatures and the President) to the unexpected (e.g., the highest court of the land upholding justice of the people) may differ but the underlying interest is the same.<sup>298</sup> By being representative of peoples’ interests, law upholds a sense of self-determination. This normative view speaks to the divide between legal formalists and realists. Its answer is that judges ought to make the law in alignment with the best interests of the people. It also treats judges as people. That contribution is one that this Article’s investigation advances. By understanding judges less as unbiased, rational legal minds devoid of messy human emotions, and more as complex individuals subject to the promise and limits of human cognition, we can begin to see the judges who shape the law as the people they really are.

### C. *On the Value of Judicial Opinions as Law*

Understanding the human limitations of judicial choice invigorates positivist discourse about the concept of judicial opinions as a source of law. When public trust in judges is high, their judicial opinions enjoy higher legitimacy. With this new understanding of the inevitability of judicial bias, we might now imagine that judges hide their biases and emotions instead of believing that judges simply don’t have any. Alternatively, if judges were to describe such in their judicial opinions, the legal interpretations they offer might lose credence and prestige in public opinion. Either way, the dilemma is significant.

Here, it may be wise to revisit the discourse between legal formalists and realists about whether judges make law, interpret it, or otherwise shape it. Herein, we reach a foundational question about what law is, recalling H.L.A. Hart’s views on the concept of law. In his seminal work, *The Concept of Law*, Hart famously launched the origins of legal positivist thought, wherein he argues that since law is made by humans, it is more than mere rules.<sup>299</sup> His work contributed to the move away from natural law. If law is made not by God or nature but by humans, we must consider if morality is present in law. John Austin, for example, distinguished legal

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inform the lawmaking enterprise in a democracy. From a demosprudential perspective, the Court gains a new source of democratic authority when its members engage ordinary people in a productive dialogue about the potential role of ‘We the People’ in lawmaking.”)

297. *Id.* at 444.

298. EISGRUBER, *supra* note 291, at 3 (“I argue that [judicial review] should be treated as a practical mechanism that implements a subtle form of democratic rule.”).

299. See H.L.A. HART, *THE CONCEPT OF LAW* (3d ed. 2012); ROSALYN HIGGINS, *PROBLEMS AND PROCESS: INTERNATIONAL LAW AND HOW WE USE IT* (1994).

rules with enforceable obligations from law derived from a sense of “honour” or “fashion.”<sup>300</sup>

In determining what law is, one might consider its sources and their validity. Under English law, the two recognized sources of law were statute and precedent. Statutes derived their legitimacy and authority from their being created, vetted, and explicitly adopted by a legislative body, thus forming the *lex scripta* (“written law”).<sup>301</sup> The value of precedent, forming the *lex non scripta* (“unwritten law”), rested on the legitimacy of the courts and the judges.<sup>302</sup> In the U.S., precedent came to be viewed as what judges wrote up as judicial opinion, but it still derives authority as a source of law in the common law tradition.<sup>303</sup>

The idea that judges make law is troubling to legal formalists who view that judges ought to constrain their decisions by following applicable precedent and should not place their will above that of the law. But even if one believes that judges interpret law rather than make it, the act of interpretation is filled with the capacity to shape law through a series of decisions and choices.

Here, legal positivism and legal realism both agree that law cannot only be rules but must also be understood as the product of human thought. For positivists, law is that which humans order, posit, or otherwise decree; thus, law is a social construct.<sup>304</sup> But law does not derive its validity from morals.<sup>305</sup> For example, a government can have a law restricting freedom of speech by banning access to certain Internet sites. For positivists that is law, regardless of whether or not it should be because it is morally questionable. What makes it law is the legitimacy of the law-authorizing source, the government. Legitimacy of the law stems from the legitimacy of the institution. Herein, what an individual judge decides is not of paramount concern unless such decisions take hold institutionally and create social practices followed by other institutions.

A similar tension arises in international law where three sources of law—treaty, custom, and general principle—are recognized.<sup>306</sup> ICJ judges are to apply judicial decisions not as a primary source of law but “as a subsidiary means for the determination of rules of law.”<sup>307</sup> Here, we might understand judicial decisions not

300. JOHN AUSTIN, *THE PROVINCE OF JURISPRUDENCE DETERMINED* 9 (David Campbell & Philip Thomas eds., 1998).

301. Peter Tiersma, *The Textualization of Precedent*, 82 NOTRE DAME L. REV. 1187 (2007).

302. *Id.*

303. *Id.* at 1188.

304. For a discussion of positivism, see LESLIE GREEN, *Legal Positivism*, STANFORD ENCYCLOPEDIA PHILOS. ARCHIVE (Jan. 3, 2003), <https://plato.stanford.edu/archives/spr2018/entries/legal-positivism/>.

305. JEAN D’ASPROMONT, *FORMALISM AND THE SOURCES OF INTERNATIONAL LAW* 215 (2011) (“[A]s far as the ascertainment of international legal rules is concerned, the social thesis makes the question of the validity of the international legal order as a whole utterly vain.”).

306. ICJ Statute, *supra* note 265, art. 38.

307. *Id.* art. 38, ¶ 1.d.; see also IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* (2003); Samantha Besson, *Theorizing the Sources of International Law*, in *PHILOSOPHY OF INTERNATIONAL LAW* 163, 164 (2010) (“Interestingly, the question of sources is often met with

as law, per se, but as means by which to understand the law.<sup>308</sup> But the practice of doing so is not uncomplicated, as judges on the Court often disagree about what the law is.<sup>309</sup> Thus, while the ICJ Statute does not explicitly authorize judges to create new international law, the act of interpreting law is a form of law creation. If international judges are making international law, then recognizing their broader cognitive aspects of judicial choice requires examining their role as law-makers.<sup>310</sup> Understanding judges as real participants in law creation requires reevaluating what weight their judicial opinions should have. It also requires considering if recognizing their human cognitive qualities makes their decisions less valid.

My critique is this: what if positivism doesn't explain what is happening? Even asking this question invites contrasting views that any diligent exploration of would require another article. But here I focus on something distinct. Let me rephrase the critique. What if positivism doesn't explain what is happening because it, as a descriptive matter, cannot. It cannot if one understands that positivism is built on a foundational premise that legal decision makers are capable of making law without involving bias or emotion. By showing that this is a false premise, this Article has endeavored to test the foundations upon which positivism stands.

But out of the ashes of critique, new meanings can emerge. Perhaps, in discrediting the foundational premise behind positivism, neuroscience is perfectly aligned with Hart's idea that the theory of law should be based on what we can observe—we just need better tools of observation.<sup>311</sup> In this light, the Article's approach advances Hartian aims of understanding law through what we can observe about human behavior. It falls to us to update the methods by which we do so.

Overall, the evidence presented in this Article provides new grounds for considering the human actor behind positivism. Whereas the Hartian view of law offers an internal view, the concept of hidden cognition offers an *internal* internal view.<sup>312</sup> It conceptualizes the difference between what judges think informs their choices and what actually does. In this way, a neuroscientific approach to understanding judicial behavior advances the already present turn away from legal

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placative confidence among international legal scholars. It is usually solved by reference to the formal sources of international law, and in particular to the now largely obsolete but still venerated triad of sources one finds in Article 38 of the 1945 International Court of Justice (ICJ) Statute . . . .").

308. Harlan Grant Cohen, *Finding International Law: Rethinking the Doctrine of Sources*, 93 IOWA L. REV. 65, 70–71 (2007) (arguing that we should deemphasize a law's form (treaty, custom, or principle) in favor of finding its opinion juris or belief that a rule is an obligation; here, source of law would be ascertained by the strength of their norms—core, legitimated, and aspirational).

309. A. MARK WEISBURD, FAILINGS OF THE INTERNATIONAL COURT OF JUSTICE 27 (2016) (asserting his view that "it is not the rule's qualities that make it law, but the rather the authority of the persons who announce that the rule is law that give it that status").

310. See, e.g., ALAN BOYLE & CHRISTINE CHINKIN, THE MAKING OF INTERNATIONAL LAW (2007); Besson, *supra* note 307, at 164 ("[I]nternational law-makers are of a collective nature, i.e., mostly states and international organizations [IOs], and only sometimes individuals, whereas law-makers in the national legal order are individuals.").

311. See generally HART, *supra* note 299, at 6 ("What is the law?").

312. *Id.* For a detailed explanation, see Scott J. Shapiro, *What Is the Internal Point of View?*, 75 FORDHAM L. REV. 1157 (2006).

formalism toward positivism and post-positivism. It also normalizes the recognition of the fuller-spectrum of human cognition in judicial choice, in law, and in life.

#### CONCLUSION

Legal thought about judicial behavior has long sought to advance and uphold the presumption that judges shape law through logical reasoning devoid of human influences. Yet we are increasingly aware of cases where judges demonstrate biases or preferences for or against certain defendants, plaintiffs, witnesses and attorneys. These preferences are commonly displayed with shows of emotion and empathy (or the lack thereof). Such instances have long been characterized not as commonplace occurrences, but as surprising anomalies. Prevailing scholarship about judicial decision-making often supports this view by adhering to an historical presumption that judges operate impartially, rationally, and absent the influence of emotion, even as evidence mounts that most people do not. In doing so, these scholars uphold a historical commitment in the legal profession that paints judges as exceptional and exempt from the inferior characteristics of human behavior, a view many judges also adopt.

New research in neuroscience increasingly challenges this view, calling into question longstanding theories about judicial influence on the law. Humans make choices, and the choices we make are greatly influenced by the ways our brains function. Insights from neuroscience are essential in their ability to explain why an observed behavior is occurring.

This Article has endeavored to demonstrate that this information is valuable and necessary to the study of judicial behavior. The legitimacy of judges and of our legal system depends on the ability of judges to make sound judicial decisions. Yet legitimacy demands that the legal profession acknowledge the prevalence of human traits such as bias and emotion in human thinking. Acknowledging that a judge will be predisposed toward certain groups of people based on personal experiences destigmatizes the notion of judicial bias, which is an important first step toward addressing it. Doing so also calls upon all judges to think more critically about how they shape law and who they serve.

Finally, embracing a cognitive approach to the study of law effectively humanizes what the law is and the people who make it. This Article aims to advance a discourse on how complex and interconnected human cognition is and why understanding it matters for judicial decision-making. It calls upon judges, arbitrators, and other adjudicators to reflect on how one's personal beliefs, values, and emotions can play a role in shaping not only what one thinks but *how* one thinks. As neuroscience races ahead, the legal profession must examine the positive and negative effects that accompany making judges' human qualities explicit to themselves and to others. In doing so, we update old attitudes with new knowledge.

