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The Body of the Mind: Embodied Cognition, Law, and Justice

Adam Benforado

Drexel University Earle Mack School of Law, adam.f.benforado@drexel.edu

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**THE BODY OF THE MIND:
EMBODIED COGNITION, LAW, AND JUSTICE**

ADAM BENFORADO*

ABSTRACT

Recent research from embodied cognition strongly contests the dualist notion of the mind as distinct and apart from the biological machine of the body—a conception that has powerfully shaped our laws, legal practices, theories, and institutions for centuries. According to the embodied (or grounded) cognition perspective, the body is involved in the constitution of the mind. Thus, beyond our conscious awareness, an abstract concept, like trustworthiness, may be primed by sensorimotor experience, like feeling physical warmth. This Article introduces recent insights from this budding field, discusses some of the potential implications of experiments in embodied cognition for courtroom interactions, and addresses the significant challenges to using this research as a means to reform.

* Assistant Professor of Law, Drexel University Earle Mack School of Law, 3320 Market Street, Philadelphia, PA 19104, 215.571.4809, adam.benforado@drexel.edu. I would like to extend my gratitude to students in my Law and Mind Sciences seminar over the last two years who have eagerly debated the value and implications of embodied cognition research, and to Brooke Bailer, Kathryn Brady, and Geoff Goodwin for helpful comments. I am also indebted to the participants at the 2009 Childress Lecture, particularly the hardworking members of the *Saint Louis University Law Journal*, Joel Goldstein, and the great John Powell.

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[T]he principal error and the commonest . . . consists in my judging that the ideas which are in me are similar or conformable to the things which are outside me

– René Descartes¹

Although . . . I possess a body with which I am very intimately conjoined, . . . it is certain that this I [that is to say, my soul by which I am what I am], is entirely and absolutely distinct from my body, and can exist without it.

– René Descartes²

INTRODUCTION

A. *The Legacy of Dualism*

There is the body. There is the mind. They are separate and distinct. This is the language of the law and the core of our culture. This is the discourse of Western existence. *Mens rea* and *actus reus*; mind over matter; body and soul.

The conception of the body and the mind as dissimilar, interacting entities can be traced back at least as far as Plato and the ancient Greeks, but it is the seventeenth-century French rationalist René Descartes who is most often associated with the idea of dualism.³ For Descartes, humans were made up “of two distinct substances—*res cogitans*, unextended thinking substance, or mind,

1. RENÉ DESCARTES, DISCOURSE ON METHOD AND MEDITATIONS 82 (Elizabeth S. Haldane & G.R.T. Ross trans., DOVER PUBLS. 2003).

2. *Id.* at 112.

3. Marleen Rozemond, *The Nature of the Mind*, in THE BLACKWELL GUIDE TO DESCARTES’ MEDITATIONS 48, 48 (Stephen Gaukroger ed., 2006) (“[L]ong before Descartes, a central component of the Christian tradition had been the idea that the human soul is immortal and this idea was often (although not always) supported by arguments to the effect that it is incorporeal.”). Certain scholars have challenged the notion that Descartes actually held beliefs commonly understood as Cartesian dualism, while nevertheless acknowledging the influence and pervasiveness of this formulation. *See, e.g.*, GORDON BAKER & KATHERINE J. MORRIS, DESCARTES’ DUALISM 1 (1996). Other scholars have suggested that humans are born Cartesian dualists. As Paul Bloom writes,

We can explain much of what makes us human by recognizing that we are natural Cartesians—dualistic thinking comes naturally to us. We have two distinct ways of seeing the world: as containing bodies and as containing souls. These two modes of seeing the world interact in surprising ways in the course of the development of each child, and in the social context of a community of humans they give rise to certain uniquely human traits, such as morality and religion.

PAUL BLOOM, DESCARTES’ BABY: HOW THE SCIENCE OF CHILD DEVELOPMENT EXPLAINS WHAT MAKES US HUMAN, at xii (2004); *id.* at xiii (“[B]efore they can speak or walk or control their bowels, babies see the world as containing both physical things, which are governed by principles such as solidity and gravity, and immaterial minds, which are driven by emotions and goals. Babies are natural-born dualists.”).

and *res extensa*, extended corporeal substance, or body.”⁴ Thus, sense-perception was not a necessary component of the fully conceived mind: a mind needed only to have intellectual capacities “and the ability to perform the kind of willing involved in judgment.”⁵

Although varying somewhat in form and articulation over the centuries, this dualist notion of the mind as independent and apart from the biological machine of the body has had an incredible influence on our beliefs, practices, customs, and institutions.⁶ Indeed, it has been offered as an explanation for not only libertarian tendencies and religious convictions concerning a divine creator, but also for our appreciation of art and even certain types of humor.⁷

In line with broader societal trends, our laws and legal theories have not been immune to the power of the dualist conception.⁸ The moral intuitions about responsibility and free will underlying (and justifying) our legal frameworks are based on an understanding of the mind as an independent

4. JOHN COTTINGHAM, DESCARTES 119 (1986) [hereinafter COTTINGHAM, DESCARTES]; see also John Cottingham, *The Mind-Body Relation*, in THE BLACKWELL GUIDE TO DESCARTES’ MEDITATIONS, *supra* note 3, at 179, 184-85 (discussing the two kinds of substance and positing that there may be a third); TOM SORRELL, DESCARTES: A VERY SHORT INTRODUCTION 78 (Very Short Introduction ed., 2000).

5. SORRELL, *supra* note 4, at 77; see also COTTINGHAM, DESCARTES, *supra* note 4, at 119 (“Descartes’ claim that an act of thinking or doubting ‘needs no place and depends on no material thing’ (e.g., requires no brain) . . .”). As scholars have argued,

A . . . notorious problem for dualism is the problem of interaction between mind and body. . . . [Descartes] explicitly remarks that we know from our experience that mind acts upon, and is acted upon by, body. But since mind and body are defined by Descartes in terms of not just distinct but mutually incompatible attributes, it is not easy to see how such causal flow is possible.

Id. (citation omitted). Based on its singularity and placement, Descartes determined that the place of linkage—the “principal seat” of the “soul”—must be a specific area of the brain, the pineal gland. 1 RENÉ DESCARTES, THE PHILOSOPHICAL WRITINGS OF DESCARTES 340-41 (John Cottingham et al. trans., 1985).

6. Lisa Feldman Barrett & Kristen A. Lindquist, *The Embodiment of Emotion*, in EMBODIED GROUNDING: SOCIAL, COGNITIVE, AFFECTIVE, AND NEUROSCIENTIFIC APPROACHES 237, 238 (Gün R. Semin & Eliot R. Smith eds., 2008) (noting that “dualistic thinking . . . remains firmly entrenched in our everyday reasoning about the world”).

7. See BLOOM, *supra* note 3, at xiii; Joshua Green & Jonathan Cohen, *For the Law, Neuroscience Changes Nothing and Everything*, 359 PHIL. TRANSACTIONS ROYAL SOC’Y B: BIOLOGICAL SCI. 1775, 1779 (2004) (noting that many religious individuals are “explicitly dualist libertarians”).

8. At the most basic level, many areas of law distinguish between the mental world and the physical world. As Laura Spitz has observed, “Family law courts have historically punished physical abuse to a greater degree than mental abuse. First Amendment jurisprudence regularly engages in deciding whether and in what circumstances actions are speech. Tort remedies often require determinations of fact about whether injuries are physical or nonphysical.” Laura Spitz, *I Think, Therefore I Am; I Feel, Therefore I Am Taxed: Descartes, Tort Reform, and the Civil Rights Tax Relief Act*, 35 N.M. L. REV. 429, 436 n.47 (2005).

“uncaused causer” animating the material body and allowing it “to move without any apparent physical cause and in pursuit of goals.”⁹ Moral blameworthiness turns on the existence of a mind: “[W]hen something is seen as a mere physical entity operating in accordance with deterministic physical laws, it ceases to be seen, intuitively, as a mind. Consequently, it is seen as an object unworthy of moral praise or blame.”¹⁰ Was the criminal defendant compelled beyond his awareness or control? Or was his act the result of “a guilty mind”—that rational, separate entity that masters the body? Our retributivist legal principles—referenced in everything from the grading of homicides to various criminal defenses—derive their authority from the assumed existence of this “free will.”¹¹ And the same can be said of tort law: the objective reasonable person standard is built on the assumption that humans possess “will power” through which the rational, autonomous brain can control our actions in the material world.¹²

The Enlightenment view of free will—reliant on Cartesian dualism—“is [also] a key component of the ‘liberal self’ in First Amendment theory.”¹³ Thought and action are separate: in the words of Ronald Dworkin, “Government insults its citizens, and denies their moral responsibility, when it decrees that they cannot be trusted to hear opinions that might persuade them to dangerous or offensive convictions.”¹⁴ The independent, autonomous mind filters information; it thinks and chooses; it decides what the body should do. Thus, “the incitement standard derived from the landmark Supreme Court case of *Brandenburg v. Ohio* seems to assume that, except in extreme circumstances, human beings can resist harmful messages through reflection and rational thought.”¹⁵

That the legal sphere should be marked by the brand of dualism is perhaps expected; more surprising is that the Cartesian divide has made a lasting impression on even those fields, like psychology, which purport to take up the study of mental functions and behavior directly. As Lisa Feldman Barrett and Kristen A. Lindquist explain,

9. Green & Cohen, *supra* note 7, at 1782.

10. *Id.*

11. See John A. Powell & Stephen Menendian, *Remaking Law: Moving Beyond Enlightenment Jurisprudence*, 54 ST. LOUIS U. L.J. 1035, 1040 (2010); see also Jon Hanson & David Yosifon, *The Situational Character: A Critical Realist Perspective on the Human Animal*, 93 GEO. L.J. 1, 18–20 (2004) [hereinafter Hanson & Yosifon, *The Situational Character*] (discussing state of mind elements of criminal law).

12. Hanson & Yosifon, *The Situational Character*, *supra* note 11, at 15–18.

13. Matthew D. Bunker & David K. Perry, *Standing at the Crossroads: Social Science, Human Agency and Free Speech Law*, 9 COMM. L. & POL’Y 1, 12 (2004).

14. RONALD DWORKIN, *FREEDOM’S LAW: THE MORAL READING OF THE AMERICAN CONSTITUTION* 200 (1996).

15. Bunker & Perry, *supra* note 13, at 4 (footnote omitted).

[Dualism's] residue is highly conserved in psychological theories of mind in the form of the *machine metaphor*: the idea that any psychological phenomenon can be understood to function like a machine, with processes that can be separated into definable bits and pieces that have no necessary causal relation to one another but that can interact.¹⁶

Hence, even where it ought to be most exposed as a myth—where the best tools lie for chipping away the accretion of many hundreds of years—the notion of the mind and body as independent, distinct, and possessing unique, individual structures, properties, and processes has persisted.¹⁷

In many ways, a truly robust challenge has only come in the last decade or so, as researchers have begun directly testing the dualist conception through experimentation.¹⁸ This recent research in embodied cognition by cognitive psychologists, social psychologists, and neuroscientists, among others, casts strong doubt on the traditional understanding of the mind and body as placed “in opposition, as well as more recent scientific understanding of thought as abstract, disembodied information processing.”¹⁹ In particular, that research suggests “the body helps to constitute the mind” and that the Cartesian boundaries between the mind and the body must be dissolved.²⁰ Our perceptions, attitudes, feelings, memories, and judgments are influenced—indeed, constructed—by bodily states and experiences. Abstract thought is actually grounded to a significant extent in our bodies' interactions with the concrete, physical world.

This has significant implications for law, but this work has not been considered by the legal establishment and is nearly absent from existing law review literature. One of the purposes of this Article is to encourage legal scholars, judges, and others to engage research on embodied cognition and explore potential issues that the work raises for our laws and legal theories.

B. *Learning from the Mind Sciences*

The subsequent discussion is intended not only to show the potential impact of a vital, emerging area of research for our jurisprudence, but also to illuminate some of the challenges of continuing to incorporate mind sciences research into law and legal theory. Over the centuries, an Enlightenment

16. Barrett & Lindquist, *supra* note 6, at 238.

17. *Id.*

18. Lawrence W. Barsalou, *Grounded Cognition*, 59 ANN. REV. PSYCHOL. 617, 619–20 (2008). Of course, Cartesian dualism has been assailed in different ways over the centuries and there have been important challenges to its foundations beyond those discussed in this Article even within the narrow field of psychology. *Id.* The focus here is on what is arguably the most potent and sophisticated attack to date: research in embodied cognition.

19. EMBODIED GROUNDING: SOCIAL, COGNITIVE, AFFECTIVE, AND NEUROSCIENTIFIC APPROACHES, *supra* note 6, at i.

20. Barrett & Lindquist, *supra* note 6, at 246.

conception of the human being—of which mind-body dualism is a part—has become engrained in our societal structures, institutions, and broader culture.²¹ Within law, this conception of the rational, autonomous, self-transparent actor has influenced fields as diverse as tort law, corporate law, criminal law, discrimination law, and many others.²² Moreover, this model of human action has been embraced by the dominant legal theoretic framework of the last forty years, law and economics.²³

In spite of its pervasiveness and potency, this model has been increasingly contested by evidence from social psychology, social cognition, and cognitive neuroscience, among other disciplines. Within the legal academy, critical realists, behavioral realists, behavioral economists, and others have brought insights from these sciences to offer a strong criticism of our legal system and sound a call to unshackle our laws, procedures, and practices from the manacles of our flawed notions of self, reason, agency, and causation.²⁴

21. See Powell & Menendian, *supra* note 11, at 1040–1043.

22. See, e.g., Hanson & Yosifon, *The Situational Character*, *supra* note 11, at 13–20 (discussing the impact of the “dispositionist,” rational actor model on contract law, tort law, and criminal law).

23. See, e.g., *id.* at 8–10, 139–44; see also Adam Benforado & Jon Hanson, *The Costs of Dispositionism: The Premature Demise of Situationist Law and Economics*, 64 MD. L. REV. 24, 33–35 (2005) (investigating how the dispositionist, rational actor model associated with Richard Posner won out over the more situationally sensitive model associated with Guido Calabresi); Jon Hanson & David Yosifon, *The Situation: An Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture*, 152 U. PA. L. REV. 129, 154 (2003) [hereinafter Hanson & Yosifon, *The Situation*] (exploring both the dominance of the rational actor model and its profound failings).

24. To date, my work and the work of my coauthors in the Project on Law and Mind Sciences has focused on employing the insights of social psychology and related fields to better understand the origins of human behavior and, consequently, to build a more realistic account of the human animal upon which legal analysis and theory can be grounded. For scholars involved in the project (known as “critical realists” or “situationists”), engaging evidence from the mind sciences means rejecting a commonsense dispositionist account of human action, based on a myth of stable preferences, rationality, and free choice, in favor of an account acknowledging the powerful role of situational factors—that is, generally unappreciated cognitive proclivities and processes (interior situation) and external environmental/structural forces (exterior situation)—in shaping behavior. For a sampling of this critical realist scholarship, see Hanson & Yosifon, *The Situation*, *supra* note 23; Adam Benforado et al., *Broken Scales: Obesity and Justice in America*, 53 EMORY L.J. 1645 (2004) [hereinafter Benforado et al., *Broken Scales*]; Adam Benforado & Jon Hanson, *Naïve Cynicism: Maintaining False Perceptions in Policy Debates*, 57 EMORY L.J. 499 (2008); Adam Benforado, *The Geography of Criminal Law*, 31 CARDOZO L. REV. 823 (2010); Adam Benforado, *Frames of Injustice: The Bias We Overlook*, 85 IND. L.J. ____ (forthcoming 2010); Ronald Chen & Jon Hanson, *Categorically Biased: The Influence of Knowledge Structures on Law and Legal Theory*, 77 S. CAL. L. REV. 1103 (2004); Ronald Chen & Jon Hanson, *The Illusion of Law: The Legitimizing Schemas of Modern Policy and Corporate Law*, 103 MICH. L. REV. 1 (2004); Hanson & Yosifon, *The Situational Character*, *supra* note 11. The distinction between critical realism and other approaches has been explained as follows:

As explored in other work, the process of reform has been an uphill battle.²⁵ It is not only that these commonsense ideas about what moves us are deeply affirming and have been established over centuries, and that many of the processes at work are beyond our conscious awareness or control, but also that there are powerful entities that benefit greatly from maintaining the status quo.²⁶

That said, particularly over the last decade there has been real progress in incorporating insights from the mind sciences into law and legal theory. The important advances have to do both with the growing weight of the evidence and the sophistication of the science, but also with the nature of the insights. Much of this progress is in applying research that is surprising, but not entirely unexpected or counterintuitive.²⁷ Given the long history of explicit racism in our country, for instance, it is not particularly shocking that implicit racial bias should influence employers, police officers, and doctors.²⁸ Likewise, research on hedonic adaptation has many interesting applications, but the fundamental insights—that humans are poor at affective forecasting and adjust to life

[L]aw and economics applies the rational actor model to all topics related to law, legal institutions, and legal theory; economic behavioralism applies the boundedly rational actor model to specific legal areas (e.g., products liability or employment law); behavioral realism applies the situational character model to specific legal areas (particularly, thus far, anti-discrimination law); and critical realism applies the situational character model to that, as well as all topics related to law, legal institutions, and legal theory.

Adam Benforado & Jon Hanson, *The Great Attributional Divide: How Divergent Views of Human Behavior Are Shaping Legal Policy*, 57 EMORY L.J. 311, 316 n.3 (2008).

25. See, e.g., Adam Benforado & Jon Hanson, *Legal Academic Backlash: The Response of Legal Theorists to Situationist Insights*, 57 EMORY L.J. 1087 (2008) [hereinafter Benforado & Hanson, *Legal Academic Backlash*].

26. See, e.g., Benforado et al., *Broken Scales*, *supra* note 24, at 1690–91 (exploring how an engrained notion of autonomous, rational, self-transparent consumers exercising free choice helps corporations such as fast food companies maximize profits and avoid liability and regulation).

27. Of course, what people find “surprising” may be changing as a result of the public’s growing familiarity with insights from the mind sciences as a result of a wave of best-selling psychology books aimed at popular audiences and increased media attention. See, e.g., DAN ARIELY, *PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS* (2008); DANIEL GILBERT, *STUMBLING ON HAPPINESS* (2006); MALCOLM GLADWELL, *BLINK: THE POWER OF THINKING WITHOUT THINKING* (2005); JONAH LEHRER, *HOW WE DECIDE* (2009); RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* (2008).

28. See, e.g., John T. Jost et al., *The Existence of Implicit Bias Is Beyond Reasonable Doubt: A Refutation of Ideological and Methodological Objections and Executive Summary of Ten Studies that No Manager Should Ignore*, in 29 RES. ORGANIZATIONAL BEHAV. 39, 47–50 (Barry M. Staw & Arthur P. Brief eds., 2009); Kristin A. Lane et al., *Implicit Social Cognition and Law*, 3 ANN. REV. L. & SOC. SCI. 427, 430, 442 (2007). This is not to suggest that this research has not been controversial or met with strong resistance. See Benforado & Hanson, *Legal Academic Backlash*, *supra* note 25, at 1128–43.

events, good or bad, are not unexpected.²⁹ Similarly, our observations of others' behaviors ought to render research on the power of group influence on persuasion rather expected.³⁰ After all, we already tend to acknowledge that attitudes towards social policies often seem to depend on the stated position of a person's political party rather than the objective content of the policies (although we do not tend to acknowledge that we, ourselves, are influenced by such group affiliations).

Just as important, the growing success of incorporating the insights of the mind sciences into law, theory, and policy has to do with the fact that we have discovered (and continue to discover) ways to apply the insights in concrete ways that do not entirely destabilize or threaten the system. In a number of cases, legal scholars have managed to negate the anxiety and discomfort entailed in research that calls into question the legitimacy of our existing institutions, structures, or process of justice, by offering the findings cautiously (such that the footings of our legal system are shaken, but not irreparably cracked) and by translating studies into readily implementable changes that police departments, courts, and others can implement without throwing their operations into disarray.³¹ For example, researchers challenging naïve models of how memory works and suggesting that existing eyewitness identifications were deeply flawed, were subsequently able to offer a set of reforms shown to significantly increase identification reliability, including introducing sequential lineups as an alternative to simultaneous lineups, choosing foils that all match the witness's initial description of the perpetrator, and having police officers use open-ended questions rather than leading ones.³² The result was an 8000 word national guide for collecting and preserving eyewitness evidence produced by the U.S. Department of Justice in 1999.³³ Although the work remains controversial, experts on implicit social cognition have offered similar,

29. See, e.g., Samuel R. Bagenstos & Margo Schlanger, *Hedonic Damages, Hedonic Adaptation, and Disability*, 60 VAND. L. REV. 745, 750 (2007); John Bronsteen et al., *Hedonic Adaptation and the Settlement of Civil Lawsuits*, 108 COLUM. L. REV. 1516, 1526–28 (2008).

30. See, e.g., Geoffrey L. Cohen, *Party Over Policy: The Dominating Impact of Group Influence on Political Beliefs*, 85 J. PERSONALITY & SOC. PSYCHOL. 808, 808 (2003).

31. See, e.g., Gary L. Wells et al., *From the Lab to the Police Station: A Successful Application of Eyewitness Research*, 55 AM. PSYCHOL. 581, 595 (2000) (“With well over 1,000 publications on eyewitness issues since 1979 . . . psychologists were [primed] to assist the legal system when the eyewitness issue came to the fore.”).

32. *Id.* at 585–93.

33. OFFICE OF JUSTICE PROGRAMS, U.S. DEP’T OF JUSTICE, *EYEWITNESS EVIDENCE: A GUIDE FOR LAW ENFORCEMENT* (1999); see also OFFICE OF JUSTICE PROGRAMS, U.S. DEPT. OF JUSTICE, *EYEWITNESS EVIDENCE: A TRAINER’S MANUAL FOR LAW ENFORCEMENT* (2003). From the perspective of the eyewitness researchers, the Guide was imperfect because it did not explicitly mandate the use of double-blind procedures or sequential lineups. Wells et al., *supra* note 31, at 594–95. However, it opened the door for future innovations and shows the potential for successful integration and application of mind sciences research. *Id.* at 595–96.

relatively undisruptive, practical alterations to existing employment and other practices to encourage direct debiasing, or to reduce the impact of existing biases.³⁴

One of the questions this Article attempts to address is whether the newest mind sciences research shares (or is likely to share) these beneficial qualities that have helped certain research gain acceptance. The field of embodied cognition offers a glimpse of where we are going with our ongoing challenge to Enlightenment thinking, and it may demonstrate some of the limits of using insights from the mind sciences to shape our legal system.

I. EMBODIED COGNITION

A. Overview

As suggested earlier, according to the embodied (or grounded) cognition perspective, the body is involved in the constitution of the mind.³⁵ Given that the research is still very new, there is not yet a fully unified view of the field.³⁶ But most embodied cognition researchers reject the conception of the brain as a computer filled with amodal symbols that represent knowledge completely apart from motor or sensory experiences.³⁷ Rather, there is general agreement

34. See, e.g., Scott A. Moss & Peter H. Huang, *How the New Economics Can Improve Employment Discrimination Law, and How Economics Can Survive the Demise of the "Rational Actor,"* 51 WM. & MARY L. REV. 183, 251–53 (2009) (offering an overview of some potentially effective approaches based primarily on the work of Susan Fiske).

35. The phrases “embodied cognition” and “embodied grounding” are both used to refer to the diverse set of research projects investigated in this Article. Lawrence Barsalou has suggested that “grounded cognition” is preferable because “‘embodied cognition’ produces the mistaken assumption that all researchers in this community believe that bodily states are necessary for cognition and that these researchers focus exclusively on bodily states in their investigations.” Barsalou, *supra* note 18, at 619. Accepting the validity of this critique, “embodied cognition” is nonetheless chosen here to explicitly acknowledge and contest the foundations of Cartesian dualism and because the term “grounding” may seem nebulous to those unfamiliar with the field.

In many ways, the modern origins of embodied cognition can be traced back to the efforts of cognitive linguists studying metaphor. George Lakoff and Mark Johnson collaborated on two seminal books in the area in which they asserted that abstract thought was grounded in bodily experience and situations. GEORGE LAKOFF & MARK JOHNSON, *METAPHORS WE LIVE BY* (1980); GEORGE LAKOFF & MARK JOHNSON, *PHILOSOPHY IN THE FLESH: THE EMBODIED MIND AND ITS CHALLENGE TO WESTERN THOUGHT* (1999) [hereinafter LAKOFF & JOHNSON, *PHILOSOPHY IN THE FLESH*]. In *Philosophy in the Flesh*, they identified a set of “primary metaphors” that seemed to reveal the power of physically grounded realities to our cognition, including “affection is warmth,” “important is big,” “happy is up,” “bad is stinky,” “difficulties are burdens,” and “categories are containers.” *Id.* at 50–54.

36. Barsalou, *supra* note 18, at 618, 620 (noting that “[c]onceptions of grounded cognition take many different forms” and that “vagueness exists and misperceptions follow”).

37. *Id.* at 618 (“From the perspective of grounded cognition, it is unlikely that the brain contains amodal symbols; if it does, they work together with modal representations to create

in the modern embodiment community that (1) “cognitive events derive from the types of experiences that come from having a body with particular sensorimotor capacities,”³⁸ (2) “the body helps to implement the mind in that the conceptual system . . . relies on sensorimotor simulations,”³⁹ and (3) “[n]ot only does the body help to constitute the mind but so does the situation[.]”⁴⁰ As Nils B. Jostmann, Daniël Lakens, and Thomas W. Schubert explain, “Through schematization of experienced bodily states, people develop perceptual representations of abstract concepts. Because the concrete sensory experiences remain part of these representations, activation of these experiences can influence mental simulation and abstract thought.”⁴¹ Consider, for example, that infants appear to have innate needs for close physical contact with caregivers.⁴² Given that these needs appear to be even more powerful than those related to nourishment,⁴³ infants are likely to have an extensive set of experiences with a friendly, helpful, and trustworthy caregiver during their first months and years of existence. As an interaction occurs, the brain captures information about perceptual, motor, and introspective states, and, as a result, concepts—in this case, physical warmth and interpersonal warmth—become mentally associated.⁴⁴ A later experience with physical warmth may reactivate the earlier mental association (multimodal representation), leading to impressions of interpersonal warmth.⁴⁵

cognition.”); Gün R. Semin & John T. Cacioppo, *Grounding Social Cognition: Synchronization, Coordination, and Co-Regulation*, in EMBODIED GROUNDING: SOCIAL, COGNITIVE, AFFECTIVE, AND NEUROSCIENTIFIC APPROACHES, *supra* note 6, at 119, 139–40 (explaining how “the notion of the solitary computer now seems antiquated”).

38. Barrett & Lindquist, *supra* note 6, at 246.

39. *Id.* “Simulation is the reenactment of perceptual, motor, and introspective states acquired during experience with the world, body, and mind.” Barsalou, *supra* note 18, at 618.

40. Barrett & Lindquist, *supra* note 6, at 247. “From this perspective, the cognitive system evolved to support action in specific situations, including social interaction. These accounts stress interactions between perception, action, the body, the environment, and other agents, typically during goal achievement.” Barsalou, *supra* note 18, at 619.

41. Nils B. Jostmann et al., *Weight as an Embodiment of Importance*, 20 PSYCHOL. SCI. 1169, 1169–70 (2009) (internal citations omitted).

42. See, e.g., Harry F. Harlow, *The Nature of Love*, 13 AM. PSYCHOL. 673, 675–85 (1958) (describing a set of experiments with infant macaque monkeys showing the primary importance of contact comfort); 1 JOHN BOWLBY, ATTACHMENT AND LOSS 210–34 (1969) (describing attachment behavior in infant humans and other animals).

43. See Harlow, *supra* note 42, at 676–77 (noting that “contact comfort . . . overshadow[ed] . . . the variable of nursing” in the infant macaque monkey experiments).

44. See Barsalou, *supra* note 18, at 618 (“[T]he brain captures states across the modalities and integrates them with a multimodal representation stored in memory”); Lawrence E. Williams & John A. Bargh, *Experiencing Physical Warmth Promotes Interpersonal Warmth*, 322 SCIENCE 606, 606–07 (2008) [hereinafter Williams & Bargh, *Experiencing Physical Warmth*].

45. See Barsalou, *supra* note 18, at 618–19.

To gain a better understanding of how embodied cognition works in practice, this Article now takes up three very recent sets of experiments in detail (starting with one exploring the warmth association, just discussed), before moving to a broader consideration of current and future embodied cognition research.

B. *Three Experiments*

1. Warmth

Imagine that you sign up to participate in a social psychology experiment. On the appointed morning, you go to the laboratory and are met in the lobby by an experimenter, who has her hands full with a coffee, clipboard, and two books.⁴⁶ As you ride the elevator up to the fourth-floor laboratory, she asks if you could hold the coffee as she begins to fill in your name and start time.⁴⁷ At the end of the ride, she takes back the coffee and you go into the experimental room to fill out a personality impression questionnaire in which you rate an individual on personality traits after reading a short description of the person.⁴⁸

It turns out that the variable in the experiment was what you were holding as you rode the elevator.⁴⁹ In one condition, participants were primed by holding a cup of hot coffee; in the other, it was a cup of iced coffee.⁵⁰ Although the exposure only lasted ten to twenty-five seconds,⁵¹ that small alteration in bodily experience mattered: “[P]eople who had briefly held the hot coffee cup perceived the target person as being significantly warmer . . . than did those who had briefly held the cup of iced coffee” and the temperature of the beverage “did not affect ratings on traits unrelated to the warm-cold

46. Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 607.

47. *Id.*

48. Lawrence E. Williams & John A. Bargh, *Supporting Online Material for Experiencing Physical Warmth Promotes Interpersonal Warmth*, *SCIENCE* 2–3 (2008), <http://www.science.org/cgi/data/322/5901/606/DC1/1> [hereinafter Williams & Bargh, *Supporting Online Material*].

Specifically, they were told that “Person A is intelligent, skillful, and industrious. Person A is also determined, practical, and cautious.” Participants then rated Person A on ten personality traits using 7-point bipolar scales anchored by a trait and its opposite. Five of these scales were related to the warm-cold distinction: *generous/ungenerous*, *happy/unhappy*, *good-natured/irritable*, *sociable/anti-social*, and *caring/selfish*. The remaining scales were unrelated to the warm-cold distinction: *attractive/unattractive*, *carefree/serious*, *talkative/quiet*, *strong/weak*, and *honest/dishonest*.

Id.

49. Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 607.

50. *Id.*

51. Williams & Bargh, *Supporting Online Material*, *supra* note 48, at 2.

dimension.”⁵² Moreover, participants had no idea that physical experience affected their judgments.⁵³

In a subsequent experiment, the same researchers found that experiences of physical temperature impact not only *judgments* as to interpersonal warmth, but also the warmth of *behavior* towards others.⁵⁴ In the second experiment, individuals held “either [a] hot or cold therapeutic pad under the guise of [conducting] a product evaluation” and then were given a choice of a reward for their participation.⁵⁵ One of the rewards was a “prosocial gift to ‘treat a friend’” and the other was “a personal reward for the participants themselves.”⁵⁶ As it turned out, experiences of physical temperature had an effect on prosocial behavior towards other people: “[P]articipants primed with physical coldness were more likely to choose the gift for themselves (75%) than the gift for a friend (25%), whereas those primed with physical warmth were more likely to choose a gift for a friend (54%) than the gift for themselves (46%).”⁵⁷

The researchers suggest the dynamic has to do with a part of the brain called the insular cortex that is involved in “both the sensation of one’s physiological state (such as skin temperature) and the detection of [interpersonal warmth and] trustworthiness of others.”⁵⁸ The robustness of the connection between concrete physical experiences of temperature and abstract psychological concepts is evidenced by the fact that warm-cold metaphors can be bidirectional: if ambient temperature can influence someone’s perception and evaluation of social interactions, someone’s social experience can influence the perception of temperature.⁵⁹ In one set of recent experiments, for

52. Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 607 (“The effect of the coffee manipulation was specific to feelings of interpersonal warmth and was not a general mood or ‘halo’ effect.”).

53. *Id.* “According to recent theory and research in social cognition, interpersonal warmth refers to a constellation of traits related to perceived favorability of the other person’s intentions toward us, including friendliness, helpfulness, and trustworthiness.” *Id.* at 606 (citation omitted).

54. *Id.* at 607.

55. *Id.*

56. *Id.* (“The framing condition was counterbalanced such that half of participants chose between a Snapple reward for themselves and a gift certificate reward for a friend, and the other half chose between a Snapple reward for a friend and a gift certificate reward for themselves.”).

57. Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 607.

58. *Id.*; see also Andreas Meyer-Lindenberg, *Trust Me on This*, 321 *SCIENCE* 778, 779 (2008) (“The anterior insula is traditionally associated with sensing the physiological state of the body, but strongly reacts to adverse or uncomfortable occurrences in social interactions, such as unfairness, risky choices, frustration, or impending loss of social status. This brain region also responds to the intentions and emotional state of others, and imbues them with feeling.”) (citations omitted).

59. Chen-Bo Zhong & Geoffrey J. Leonardelli, *Cold and Lonely: Does Social Exclusion Literally Feel Cold?*, 19 *PSYCHOL. SCI.* 838, 839 (2008).

example, investigators “found that people literally felt cold . . . or preferred warm food . . . when they experienced being socially excluded.”⁶⁰

2. Weight

Having enjoyed your first taste of the exciting world of social psychology experiments, you sign up for another. This time, after arriving at the laboratory, you are led into a room and handed a questionnaire, attached to a clipboard, asking you to appraise the value of six foreign currencies⁶¹ or to assess the importance of “having a voice in a decision-making procedure.”⁶² You fill in the survey and then hand it back to the experimenter.⁶³

This time, the variable that was altered was the weight of the clipboard—half of the participants were given a clipboard with an empty storage compartment (for a total weight of 1.45 pounds) and half were given a clipboard with a storage compartment filled with paper (for a total weight of 2.29 pounds).⁶⁴ Although the difference was less than a pound, the physical experience of the weight of the clipboard influenced the relevant judgments of the volunteers: “[P]articipants who held a heavy clipboard estimated the currencies to be more valuable” and found having a voice in the referenced decision-making procedure to be more important than participants who held a light clipboard.⁶⁵ Physical weight appeared to be linked to the perceived “weightiness”—or importance—of issues.⁶⁶

In subsequent experiments, researchers found that although weight had no impact on mood or perceived pleasantness or difficulty of the task, it did “influence[] how people deal[t] with abstract issues much as it influenc[ed] how people deal[t] with concrete objects: It le[d] to greater investment of effort.”⁶⁷ As the investigators explained, increased weight resulted in “greater elaboration of thought, as indicated by greater consistency between related judgments, greater polarization between judgments of strong versus weak arguments, and greater confidence in one’s opinion.”⁶⁸

60. *Id.* at 840.

61. Jostmann et al., *supra* note 41, at 1170 (“Participants were to guess how many euros were needed to purchase each stated quantity of foreign currency.”).

62. *Id.* at 1171 (Participants were “presented [with] a short scenario in which a university committee denied students the opportunity to express their opinions regarding the size of a grant to study abroad. Participants indicated how important it was for them that the committee would listen to the opinion of the students.”) (citations omitted).

63. *See id.* at 1170–71.

64. *Id.* at 1170.

65. *Id.* at 1171.

66. Jostmann et al., *supra* note 41, at 1173.

67. *Id.*

68. *Id.*

These findings have been bolstered by a parallel experiment by another set of psychologists in which participants evaluated a psychology job candidate while using a light or heavy clipboard and then reported how important they deemed it was to make a correct evaluation.⁶⁹ The researchers found that those given the heavy clipboard viewed the candidate more favorably, assessed the candidate to be more serious about the position, and felt that making an accurate assessment was more important than those with a light clipboard.⁷⁰

3. Cleanliness

Now a committed test subject, you return for a third and final experiment at the laboratory where you are led into a room to watch a disgusting three-minute scene from the movie *Trainspotting*.⁷¹ As the next participant is brought in, you are taken into a second room, a staff room, that must be kept extremely clean and are asked to wash your hands before sitting down to assess a set of six moral dilemmas: “eating one’s dead dog,” “switching the tracks of a trolley to kill one workman instead of five,” “keeping money inside a found wallet,” “killing a terminally ill plane crash survivor to avoid starvation,” “putting false information on a résumé,” and “using a kitten for sexual arousal.”⁷² You rate each based on how wrong you believe the action to be and are then asked to remember back to watching the film and record how you felt using an emotion rating scale.⁷³

Previous research has shown “a causal relationship between feelings of physical disgust [as would be prompted by watching the gross movie clip, being exposed to a bad smell, or working in a disgusting room] and moral condemnation . . . regardless of whether the action to be judged is itself disgusting.”⁷⁴ In this experiment, the variable that was manipulated was whether or not participants were asked to wash their hands after being primed for disgust. It turned out that “hand washing reduced feelings of disgust,

69. Joshua M. Ackerman et al., *Feeling It: Haptic Priming Effects in Impression Formation 1* (2009) (unpublished report, on file with author and the *Saint Louis University Law Journal*).

70. *Id.*

71. Simone Schnall et al., *With a Clean Conscience: Cleanliness Reduces the Severity of Moral Judgments*, 19 *PSYCHOL. SCI.* 1219, 1221 (2008) [hereinafter Schnall et al., *Clean Conscience*].

72. *Id.* at 1220–21.

73. *Id.* at 1221.

74. Simone Schnall et al., *Disgust as Embodied Moral Judgment*, 34 *PERS. SOC. PSYCHOL. BULL.* 1096, 1105 (2008) [hereinafter Schnall et al., *Disgust*]. Schnall and his coauthors have also documented that (1) while disgust appears to impact moral judgments, it does not impact additional nonmoral judgments; (2) inducing other negative affect (e.g., sadness) does not similarly impact moral judgments; and (3) the influence of disgust on amplifying moral judgments is strongest in those subjects who are most sensitive to their own bodily sensations (providing evidence that “feelings of disgust rather than merely the primed concept of disgust” were behind the experimental results). *Id.* at 1105–06.

which in turn reduced the severity of the moral judgments” in the various scenarios.⁷⁵ As the researchers concluded, “Our findings support the notion that purity can serve as a basic intuition when judging the moral quality of an action: People appear to have intuitions about moral transgressions that go beyond principles of harm or fairness.”⁷⁶

Even with respect to people’s *own* actions, physical cleansing seems to impact moral assessments, “alleviat[ing] the upsetting consequences of unethical behavior and reduc[ing] threats to one’s moral self-image.”⁷⁷ In another study, participants first described a previous unethical thing that they had done and then either used an antiseptic wipe to clean their hands or did not.⁷⁸ People who had physically cleansed themselves were shown both to be “less motivated to volunteer [for a subsequent experiment without pay] because the sanitation wipes had already washed away their moral stains and restored a suitable moral self” and left them more likely to report reduced “moral emotions (i.e., disgust, regret, guilt, shame, embarrassment and anger . . .).”⁷⁹ As with the processing of information about physical warmth and interpersonal warmth, the experiences of physical and moral disgust appears to recruit similar brain regions, particularly in the temporal and frontal lobes.⁸⁰

C. *The Broader Field*

The experiments on warmth, weight, and cleanliness present only three areas of current embodied cognition research. To get a more complete sense of the scope of the field, it is worth briefly considering how other sensorimotor experiences related to position, size, distance, shape, and texture also appear associated with psychological constructs beyond our conscious awareness. There is now empirical evidence that such experiences influence—among other things—perception, memory, conceptual processing, thought, emotion, and social cognition.⁸¹

The position and condition of our body can affect our perception even in situations where our implicated primary senses are not impaired (e.g., where we are able to observe all seemingly relevant aspects of the scene). As Dennis R. Proffitt summarizes,

75. Schnall et al., *Clean Conscience*, *supra* note 71, at 1221. “[T]he effect of the rather subtle manipulations was substantial, with medium to large effect sizes.” *Id.* at 1222.

76. *Id.*

77. Chen-Bo Zhong & Katie Liljenquist, *Washing Away Your Sins: Threatened Morality and Physical Cleansing*, 313 *SCIENCE* 1451, 1451 (2006).

78. *Id.* at 1452.

79. *Id.* “Handwashing, however, did not influence nonmoral emotions.” *Id.*

80. Jorge Moll et al., *The Moral Affiliations of Disgust: A Functional MRI Study*, 18 *COGNITIVE & BEHAV. NEUROLOGY* 68, 68 (2005).

81. *See* Barsalou, *supra* note 18, at 623–31.

Under constant viewing conditions, the apparent incline of hills increases when people are tired or encumbered by wearing a heavy backpack; hills also appear steeper to people who are in poor physical condition or who are elderly and in declining health, compared with those who are young, healthy, and fit. Similarly, apparent distance increases when the observer is encumbered by a backpack or throwing a heavy ball. When one is standing on a high balcony, the apparent distance to the ground is positively correlated with one's fear of heights.⁸²

Moreover, researchers have found that participants struggle to accurately assess the weight of something lifted by another without experiencing for themselves the peripheral sensation entailed in simulating the lifting action.⁸³ Thus, we do not simply “see” the world as it actually is, we “see” the world through the lens of our bodies.

This is also true with respect to how we reason. When people think about an abstract domain like time, they inevitably rely on their experiences in space.⁸⁴ In one study, participants were asked which day of the week a rescheduled meeting would occur if a Wednesday gathering had been “moved forward two days.”⁸⁵ The participants' answers depended on their current spatial trajectories: participants thinking of moving through space answered “Friday,” while participants imagining elements in the environment coming toward them answered “Monday.”⁸⁶

Sensorimotor experiences are also connected to affect. In one study, researchers “found that negative evaluations of stimuli biased selective attention in a downwards direction, consistent with metaphorical associations between negative evaluations and vertical position (e.g., Heaven is up and Hell is down).”⁸⁷ In another study, the same investigators found that people with depressive symptoms had downward-biased selective attention—in other words, individuals who were feeling “down” literally looked down.⁸⁸

82. Dennis R. Proffitt, *Embodied Perception and the Economy of Action*, 1 *PERSP. PSYCHOL. SCI.* 110, 110 (2006).

83. Simone Bosbach et al., *Inferring Another's Expectation from Action: The Role of Peripheral Sensation*, 8 *NATURE NEUROSCIENCE* 1295, 1296–97 (2005).

84. Lera Boroditsky & Michael Ramscar, *The Roles of Body and Mind in Abstract Thought*, 13 *PSYCHOL. SCI.* 185, 185 (2002).

85. *Id.*

86. *Id.*

87. Brian P. Meier & Michael D. Robinson, *Does “Feeling Down” Mean Seeing Down? Depressive Symptoms and Vertical Selective Attention*, 40 *J. RES. PERSONALITY* 451, 458 (2006) (citing Brian P. Meier & Michael D. Robinson, *Why the Sunny Side Is Up: Associations Between Affect and Vertical Position*, 15 *PSYCHOL. SCI.* 243, 243–47 (2004)).

88. *Id.* at 459–60 (“Considering causal direction, we believe that the relation is bi-directional.”). The “up/good” and “bad/down” dynamic is not the only implicated vertical spatial dimension simulation. “[T]he social concept of power is [also] embodied in vertical spatial positions[.]” “high power” groups are associated with “up” and “low power” groups are

In addition, bodily states can both *result from* social cognition and *cause* social cognition.⁸⁹ With respect to the former, experimental participants primed with stereotypes about the elderly, for example, later walked down the hall slower than unprimed subjects (demonstrating unintended mimicry).⁹⁰ With respect to the latter, an individual's posture, facial expression, or bodily actions can impact his feelings and impressions. Thus, "people feel prouder if they assume an upright posture as compared with a body position in which the upper part of the body is bent over."⁹¹ Likewise, participants allowed to engage the facial musculature involved in smiling as a result of holding a pen between their teeth rate cartoons as funnier than those who are inhibited from smiling as a result of holding a pen with their lips.⁹² And performing a "pushing away" motion (as opposed to a "pulling towards" motion) has been shown to cause people to rate a neutral, unrelated stimulus as more positive,⁹³ just as nodding one's head vertically (as opposed to shaking one's head horizontally) has been shown to increase agreement with the editorial content of a radio show.⁹⁴

More recently, researchers have found that the handling of smooth versus rough puzzle pieces affects the way people characterize ambiguous social interactions—those experiencing physical roughness interpret interactions as "rougher" in the sense of being more competitive, argumentative, and less coordinated.⁹⁵ Similarly, ongoing research suggests that the experience of

associated with "down." Thomas W. Schubert, *Your Highness: Vertical Positions as Perceptual Symbols of Power*, 89 J. PERSONALITY & SOC. PSYCHOL. 1, 16 (2005).

89. Barsalou, *supra* note 18, at 630.

90. See Ap Dijksterhuis & John A. Bargh, *The Perception-Behavior Expressway: Automatic Effects of Social Perception on Social Behavior*, in 33 ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 1, 17–18 (Mark P. Zanna ed., 2001).

91. Sabine Stepper & Fritz Strack, *Proprioceptive Determinants of Emotional and Nonemotional Feelings*, 64 J. PERSONALITY & SOC. PSYCHOL. 211, 215 (1993).

92. Fritz Strack et al., *Inhibiting and Facilitating Conditions of the Human Smile: A Nonobtrusive Test of the Facial Feedback Hypothesis*, 54 J. PERSONALITY & SOC. PSYCHOL. 768, 775 (1988); see also Francesco Foroni & Gün R. Semin, *Language That Puts You in Touch With Your Bodily Feelings*, 20 PSYCHOL. SCI. 974, 979 ("The subliminal presentation of verbs referring to facial expressions of positive and negative emotion shapes readers' evaluation of cartoons . . . [but] the differential pattern of judgments was not found when participants' facial muscle movement was blocked.").

93. John T. Cacioppo et al., *Rudimentary Determinants of Attitudes. II: Arm Flexion and Extension Have Differential Effects on Attitudes*, 65 J. PERSONALITY & SOC. PSYCHOL. 5, 5 (1993).

94. Gary L. Wells & Richard E. Petty, *The Effects of Overt Head Movements on Persuasion: Compatibility and Incompatibility of Responses*, 1 BASIC & APPLIED SOC. PSYCHOL. 219, 219 (1980).

95. Ackerman et al., *supra* note 69.

physical hardness (e.g., sitting in an old wooden chair) may prime impressions that tasks are more difficult.⁹⁶

Overall, the field of embodied cognition has greatly expanded our understanding of the interrelationship between our minds and our bodies, but much is still to come. There are many hypotheses left to be tested and numerous findings left to be expanded and replicated in the coming years and decades. As those investigations continue, we will move ever closer to a goal Descartes shared: true self-knowledge.

D. *The Unlicensed Cognitive Expert*

Although the focus of this Article has been on the work of neuroscientists, social psychologists, and other scientists, it is worth noting that some non-scientists are well aware that manipulating bodily states can change the way people see, think, feel, and act. Marketers, for example, although they often lack the sophistication and more complex understanding of social psychologists, are quite familiar with the fact that things like the temperature of a supermarket, the smell of fresh flowers at an open house, and the smooth edges of a product can have an impact on sales.⁹⁷ As the webpage of the public relations behemoth Burston-Marsteller once proclaimed: “Perceptions are real[.] They color what we see . . . what we believe . . . how we behave. They can be managed . . . to motivate behavior . . . to create positive business results.”⁹⁸ Things as seemingly irrelevant as packaging can prompt powerful judgments about a product: “[T]he firmness of a cup in which water is served may affect consumers’ judgments of the water itself.”⁹⁹ Given the sums of money at stake, it makes perfect sense that companies would pay just as much attention as scientists to things like the influence of haptic cues.¹⁰⁰

96. Drake Bennett, *Thinking Literally: The Surprising Ways that Metaphors Shape Your World*, BOSTON GLOBE, Sept. 27, 2009, at K1 (discussing an ongoing study by Josh Ackerman).

97. See, e.g., Benforado et al., *Broken Scales*, supra note 24, at 1691–1707 (discussing various situational manipulations used by food companies to increase sales).

98. SHELDON RAMPTON & JOHN STAUBER, TRUST US, WE’RE EXPERTS!: HOW INDUSTRY MANIPULATES SCIENCE AND GAMBLER WITH YOUR FUTURE 2 (2001) (quoting Burson-Marsteller, Inc., <http://www.bm.com> (Sept. 27, 1997)).

99. Aradhna Krishna & Maureen Morrin, *Does Touch Affect Taste? The Perceptual Transfer of Product Container Haptic Cues*, 34 J. CONSUMER RES. 807, 807 (2008); see also *id.* at 816 (“[Certain participants] were more likely to evaluate a mineral water more negatively when touching a flimsy disposable cup (vs. a firm cup or vs. not touching the cup), and willing to pay a higher price for bottled water described as being sold in a firm (vs. flimsy) bottle”).

100. As marketing professors Aradhna Krishna and Maureen Morrin describe, “Firms such as McDonald’s, Starbucks, and Dunkin’ Donuts spend millions of dollars on disposable cups and bottles each year. If such firms try to save on costs by using haptically inferior packaging, this could affect consumers’ perceptions of the taste or quality of the beverages they contain.” *Id.* at 817.

Teachers, police officers, waiters, and regular citizens may also have an intuitive sense that influencing certain bodily states and experiences can impact the way people think or behave. Dimming the lights in the classroom cuts down on loud talking. Friendly touching of patrons results in bigger tips. Wearing your police cap results in more deferential treatment. Research in embodied cognition is invaluable because it helps to sort out those folk insights that are based in fact from those based in fiction.

II. IMPLICATIONS FOR LAW AND LEGAL THEORY

A. Overview

Even granting the usefulness of understanding embodied cognition for corporate entities and certain occupations, for many it may not be evident that this work is particularly relevant to law or legal theory. Indeed, the experiments showing that abstract concepts may be primed by physical experiences beyond our conscious awareness may seem more appropriate for a witty cocktail conversation than for the pages of a law review. How could any of this actually matter for real lawyers, judges, and clients?

The answer is that embodied cognition does not differentiate between legal actors and nonlegal actors. We are all creatures of our bodies, whether we wear a robe, a suit, or sandals. And although this research is still in its early stages, work in embodied cognition has the potential to upend the way we think about our judicial system. But even a preliminary consideration of applications within the legal sphere shows the potential challenges of taking this research seriously and trying to use it to develop concrete strategies.

Given space constraints, this Article addresses but one of the many areas—the courtroom¹⁰¹—where the findings of embodied cognition research raise important questions for our legal processes, structures, and practices.¹⁰²

In certain ways, the analysis that follows may harmonize with the intuitions of longtime trial attorneys who, like the teachers, police officers, and waiters mentioned above, have accrued, through repeated interactions and observations, an arsenal of tactics and behaviors related to bodily cues that seem to “work” in court. A seasoned defense attorney may know that details

101. For purposes of this Article, the “courtroom” is construed in the broad sense: the focus is on the experiences and interactions of trial and appellate judges, jurors, law clerks, witnesses, and lawyers both in the courtroom itself and around the courthouse (e.g., in chambers, panel meetings, and deliberations). This exploration is consonant with other recent work investigating some of the ways that “[p]hysical space relationships and boundaries within the courtroom may . . . matter in terms of the outcome of a trial.” Benforado, *The Geography of Criminal Law*, *supra* note 24.

102. In future work, I hope to look at the impact of embodied cognition in other legal arenas, including police practices, corporate decision-making, business and diplomatic negotiation, and prison design.

that are seemingly irrelevant to the merits of the case, like where he stands, what gestures he makes, and how he dresses, are often critical to the outcome.

The recent research on embodied cognition suggests that some of these intuitions may not be so far off. Consider, again, the three experiments explored in detail in this Article.¹⁰³

B. *Experiments in Context*

1. Warmth

Research on the processing of information in the insular cortex related to both physical warmth and interpersonal warmth suggests that temperature effects in the courtroom may be very important. In particular, cold or warm primes may impact, among other things, assessments of others (including witnesses, plaintiffs, defendants, attorneys, and judges), prosocial behavior, and group dynamics.

When it comes to first impressions, psychologists have discovered that the evaluation of a person's warmth and competence are the two most dominant dimensions of one's assessment of another's social behaviors, accounting for 82% of the variance.¹⁰⁴ Moreover, as Lawrence Williams and John Bargh explain, "Of these two fundamental dimensions, warmth is primary, as 'people are more sensitive to warmth information than to competence information' and make trustworthiness judgments of faces faster than for other traits, including competence."¹⁰⁵

The courtroom is a world of first impressions—in most cases, the key players are strangers coming together for a short period of time. And assessments of trustworthiness and character are critical to outcomes in both the civil and criminal contexts. These evaluations inevitably play a significant role in allocating fault and determining guilt, among other things. Do we believe this witness? Is the defendant the type of person who could commit such an act? How much weight should we place on what that attorney just said? Is that judge being mean to the witness or lawyer? As it turns out, jurors are not the only ones making these potentially temperature-sensitive appraisals. Judges and law clerks are also assessing behavior as they watch the parties, their attorneys, the witnesses, and in chambers as they read over briefs, motions, and other items in the record.

103. Bearing in mind the preliminary nature of many of the findings explored in this Article, the following section is not meant to offer firm conclusions or offer concrete policy prescriptions. Rather, the intent is to draw out some of the potential applications of embodied cognition research, which should help frame future hypotheses as investigations continue.

104. Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 606 (citations omitted).

105. *Id.* (quoting Susan T. Fiske, Amy J.C. Cutty & Peter Glick, *Universal Trends in Social Cognition: Warmth and Competence*, 11 *TRENDS COGNITIVE SCI.* 77, 79 (2007)).

Not only are there many opportunities for interpersonal judgment in the courtroom, there are also many chances for prosocial actions. The research on physical warmth suggests that temperature may influence the leniency of judges ruling on motions or at sentencing.¹⁰⁶ A judge subject to a warm prime may be more willing to grant an extension for a filing or be more likely to set a lower bail. Likewise, physical warmth may have an impact on the amount of damages awarded in civil cases. Just as participants in the heating pad experiment were significantly more willing to give a gift to another under a warm condition than a cold condition, jurors may be more generous when they are exposed to warmth.¹⁰⁷ On the appellate level, experienced temperature may influence the willingness of judges to defer to lower courts or agencies, with cold bodily states leading to decreased trust in others' determinations and a decreased desire to accommodate others' perspectives.

The sensory experience of temperature may also matter with respect to the various group dynamics inside the courthouse, whether during settlements between parties, jury deliberations, or judicial conferences following oral arguments. Since coldness has been linked to the experience of social rejection, and social rejection has been shown to induce hostile reactivity toward others, the danger of interpersonal friction to group cohesiveness and effectiveness may depend critically on temperature dynamics.¹⁰⁸ It is plausible, for example, that juries and judicial panels subject to warm temperatures are not only more congenial and unanimous, but that they also reach consensus more quickly. Similarly, parties in a civil suit may be more likely to spurn settlement talks and proceed to trial when experiencing physical coldness.

Despite the wonders of modern climate control technology, jurors, judges, witnesses, plaintiffs, defendants, lawyers, and law clerks may nonetheless be subject to temperature effects in many different ways. Williams and Bargh's research suggests that we should be conscious of the food and drinks that court participants are consuming at key points and that we need to consider whether certain items are consumed disproportionately at certain times of day. Judges may be more lenient when they have a warm cup of tea on the bench than when they are sipping a glass of ice water, and jurors drinking cold sodas during deliberations may feel less generous to a plaintiff seeking damages. If people are more likely to drink coffee in the morning and a cold drink in the afternoon, something as seemingly inconsequential as scheduling may be having an impact on outcomes.¹⁰⁹ Furthermore, the heating pad experiment implies that the amount of clothes parties are wearing may also be important,

106. *See id.* at 607.

107. *See id.*

108. *See* Zhong & Leonardelli, *supra* note 59, at 841 (citations omitted).

109. *See* Williams & Bargh, *Experiencing Physical Warmth*, *supra* note 44, at 607.

whether it is a judge donning a robe over her clothes or a juror who keeps her coat on while sitting in the jury box.¹¹⁰ Finally, the ambient temperature research suggests that we may need to worry about the temperature of the courtroom.¹¹¹ And it suggests that it may matter whether a trial takes place in summer versus winter, or if the trial is located in Florida versus Maine. As a result of jurisdictional variability, geography has always been important to plaintiffs and defendants—in terms of substantive rules, prosecutorial discretion, conviction rates, sentencing, and other factors¹¹²—but the insights of embodied cognition suggest that it may be affecting outcomes in a heretofore unappreciated fashion.¹¹³

2. Weight

The research exploring the metaphorical connection between the physical experience of weight and impressions of seriousness and importance suggests that heaviness may be having an impact on how judges, jurors, law clerks, lawyers, witnesses, and parties view their roles, assess others, and perceive issues.

With respect to role behavior, the work discussed earlier reveals that feeling greater physical weight may encourage the implicated legal actors to give more cautious and considered answers to the questions they are posed.¹¹⁴ Weight may not only prime judges, jurors, and other courtroom participants for greater elaboration of thought,¹¹⁵ but it may also make individuals view accuracy in their task as more important.¹¹⁶ This might be beneficial to the extent that jurors, for example, are encouraged to appreciate the vital importance of their task and work harder to carefully think through the issues. Yet the same dynamic might also be detrimental if weight experiences

110. *See id.*

111. *See* Zhong & Leonardelli, *supra* note 59, at 841.

112. *See generally* Benforado, *The Geography of Criminal Law*, *supra* note 24.

113. To a certain degree embodied cognition research may offer some empirical support for centuries-old notions that variations in climate and other elements of the physical environment influence legal systems. *See, e.g.*, Issachar Rosen-Zvi, *Law and Geography*, in 2 *ENCYCLOPEDIA OF LAW AND SOCIETY: AMERICAN AND GLOBAL PERSPECTIVES* 641 (David S. Clark ed., 2007); CHARLES DE SECONDAT, BARON DE MONTESQUIEU, *THE SPIRIT OF THE LAWS* 23 (Thomas Nugent trans., Batoche Books 2001) (1748) (“[T]he political and civil laws of each nation . . . should be in relation to the climate of each country”). However, none of the discussion in this Article is meant to suggest the magnitude of temperature effects in comparison to other implicated variables. Thus, although this Article asserts that environmental factors—including climate—that affect our bodies and bodily experiences should not be ignored, this project cannot be considered a work of environmental (or geographical) determinism.

114. *See* Jostmann et al., *supra* note 41, at 1173.

115. *See id.*

116. *See* Ackerman et al., *supra* note 69.

encourage individuals to harden their views and become less persuadable.¹¹⁷ If this is the case, weightiness might have the effect of encouraging deadlock in jury deliberations, appellate judicial panels, and settlement negotiations.

Concerning the influence of haptic priming on interpersonal assessments, the research implies that “experienced weight” might prompt legal actors to view expert witnesses as more serious and qualified.¹¹⁸ And the same dynamic should extend to assessments of other key individuals. Consequently, weight may impact how deferential the parties are to the judge or how much “weight” jurors give to a judge’s jury instructions. It may also impact how jurors or appellate judges on a panel view one another.

The work of those studying the impact of weight on priming goals and concepts also suggests that the way legal participants view particular issues or entire cases may turn, in part, on the “heaviness” they experience at key moments. Experiencing greater weight may encourage a juror to view a harm that was committed as more serious or a judge to view a constitutional right as more fundamental.¹¹⁹ In addition, in light of the experiment on currency valuation, the experience of weight might have an impact on the amount that plaintiffs collect.¹²⁰ It might be, for example, that judges exposed to greater weight tend to approve larger settlements.

There are many opportunities for legal actors to “feel” the weight of the case as a result of the clothes they wear, the tools they use, and the materials they are provided. Again, it is important to remember that the weights involved in the embodied cognition experiments were actually very small.¹²¹ It is possible that something as seemingly negligible as a judge’s robe or a juror’s jacket might have an impact on assessments.¹²² Concerning the tools used by judges and jurors, it is worth considering the effect of varying the weights of clipboards, coffee cups, gavels, phones, briefcases, bags, and countless other

117. See Jostmann et al., *supra* note 41, at 1173 (suggesting that weight can lead to “greater confidence in one’s opinion”).

118. See *id.*

119. See *id.* In future research, it would be interesting to consider how weight primes operate when, as in most cases, there are competing rights or interests being asserted, either set of which may be viewed as more or less fundamental.

120. See *id.* at 1171.

121. See *id.* at 1170.

122. Although it is beyond the scope of this Article, it would be interesting to explore the regalia of judges in different cultures given embodied cognition research. Some cultures have traditionally instituted quite elaborate sartorial requirements likely to have a significant impact on bodily experience while in court. In England and Wales, for example, High Court judges dealing with Queen’s Bench work traditionally wore a black silk gown and short wig when sitting in the Court of Appeal (Criminal Division). A Lord Chancellor’s Department Consultation Paper, Court Working Dress in England and Wales (2003), available at <http://www.dca.gov.uk/consult/courtress/index.htm>. However, “[a] Queen’s Bench judge trying civil cases in winter w[ore] a black robe faced with fur, a black scarf and girdle and a scarlet tippet.” *Id.*

items. One researcher has already suggested that something as minimal as the heaviness of a pen may impact the way people behave in important interactions.¹²³ With respect to materials, prosecutors may implicitly cue an appreciation of the “gravity” of the crime by allowing the jury to pass around a heavy bit of evidence. Potentially more important is the weight of various documents provided to judges, juries, and law clerks. With tight schedules and substantial caseloads, judges and law clerks often take materials home with them. The briefs and other documents in a single administrative appeal, for example, may add ten or more pounds to a law clerk’s bag. And when that law clerk goes to read or type up notes or memos, she is likely to have the joint appendix in her lap. During oral arguments, both the judge and the clerks will often be handling the documents. Do appellate law clerks or judges treat cases with heavier joint appendixes or briefs more seriously? Do they spend more time on them? Do Supreme Court cases with a heavy stack of amici receive greater attention solely because they have provoked more attention from the public and raise more important issues or also, in part, because they are heavier to carry around?

All of this may lend support to those advocating for more court business—including the filing of documents—being handled electronically. Such reforms may provide for more even treatment of cases. But it can also be argued that although eliminating weight *disparities* may be advantageous, lightening the loads of courtroom actors across the board may not be. To encourage judges, jurors, and law clerks to take their tasks more seriously, it may actually make sense to increase weight sensations by, for example, using heavier paper, binding more official documents, providing heavier pens, or discouraging the use of Internet resources in favor of traditional bound case reporters.

3. Cleanliness

The experiments on physical cleanliness and disgust raise some of the most serious concerns for our justice system because they suggest that the experience of one’s body may have a direct impact on judgments as to the immorality of actions by others. This, in turn, may influence decisive determinations at trial: Is this person guilty of a crime worthy of punishment? Should this individual be imprisoned or released on parole? How much should this party be forced to pay to the victim to atone for his transgression? Was the victim partially to blame for the bad outcome? What is the character of this witness or defendant?

As discussed previously, “extraneously induced disgust makes moral judgment more severe”¹²⁴ and there are many ways that judges, jurors, clerks,

123. See Bennett, *supra* note 96 (discussing Nils Jostmann’s scholarship).

124. Schnall et al., *Disgust*, *supra* note 74, at 1102.

and others may be primed with feelings of disgust, both inadvertently and deliberately. First, a messy or foul-smelling courtroom, deliberation room, or courthouse bathroom may impact judges and jurors, just as the area outside of the courthouse may influence them.¹²⁵ It is possible that when a courthouse is undergoing renovations or located downwind from a paper mill or chemical plant, defendants may face more negative outcomes.¹²⁶ Second, the smell, grooming, and overall physical appearance of a party, witness, or lawyer may have a significant influence on the implicated morality assessments of that person.¹²⁷ This aligns with the commonsense advice of seasoned defense attorneys—shower, suit, and shave—although many lawyers appear to believe that the mechanism has to do with conveying “respect” for the court.¹²⁸ Third, attorneys may actively prime disgust by having witnesses or victims provide graphic narration of gruesome details of the case or by introducing particular physical evidence (e.g., a bloody knife) or documentary evidence (e.g., a horrific video of an attack or a photograph of the crime scene).¹²⁹ Again, many prosecutors are aware that such tactics are effective although they do not necessarily understand the precise cause.

If there is a multiplicity of opportunities for judges and jurors to be primed with feelings of disgust, there are also numerous occasions for moral

125. *See id.* at 1098–99, 1102, 1105–06 (detailing how test subjects made harsher moral judgments after researchers primed them for disgust with foul odors or dirty surroundings).

126. *See id.* at 1098–99. It is also conceivable that incidents during trial involving other participants may prime disgust (e.g., a juror with a hacking cough who does not cover his mouth or a nervous witness who vomits while up on the stand).

127. *See id.* at 1098–99, 1102, 1105–06.

128. The Charles Johnson Law Firm offers the following advice:

When in court it is in your best interest to look your very best for the judge, jury, prosecutor, and yourself. It psychologically helps you in court with your case and can heighten your chances of winning if you look like you are serious about the proceedings and play the part.

People who go to court in shorts and sandals will not get the same treatment that a person in a suit or nice dress would receive. It looks, at least to the court[,] that you have no interest in being there and that is looked at as disrespect to the court . . .

For Men

- *A dark suit is preferred. If a suit is not available, then slacks and a white shirt and tie at the minimum!*
- *Dress shoes (NEVER WEAR SNEAKERS IN A COURTROOM, PERIOD)*
- *Hair well groomed and neat. If you have long hair, make sure it is tied back and combed back.*
- *Don't bathe yourself in strong cologne. This isn't a club and no one wants the distracting smell of another in court.*

The Charles Johnson Law Firm, *In the Courtroom—Dress Code*, <http://www.houstonlawyer.com/inthecourtroom.htm>.

129. *See* Schnell et al., *Disgust*, *supra* note 74, at 1102.

cleansing.¹³⁰ A defendant may face more sympathetic treatment in the morning right after the judge and jurors have taken showers.¹³¹ Likewise, it may behoove a defense attorney to ask for a recess directly after a particularly disgusting detail has emerged or prior to a moment of moral deliberation in hopes that those making assessments may use the restroom (and wash their hands) during the break.¹³² It is possible that defendants may actually fare better in times of mass illness as a result of people washing their hands more and official government policies focused on reducing the spread of disease through cleanliness measures.¹³³

In addition, the experience of one's body may also influence moral assessments of one's self. This might be important in two ways. For one, physical cleansing by a defendant may reduce the moral emotions of guilt, shame, embarrassment, and regret.¹³⁴ A defendant who has just showered or washed his hands may feel *and act* less guilty.¹³⁵ For another, it is plausible that judges or jurors who have just cleaned themselves may be less motivated to act in morally-upstanding ways because, in the words of Zhong and Liljenquist, they have "washed away [any existing] moral stains and restored a suitable moral self."¹³⁶ This is especially disquieting, as there are many aspects of a trial and an appeal that depend on judges and jurors following their charges diligently and honestly without significant oversight.

III. THE CHALLENGE OF APPLICATION

The preceding section offered a number of ways in which experiences of the body within the courtroom might have an impact on outcomes for those who come before our courts. This raises the question of whether we can—or should—make changes to our systems of justice in response, either now or once the research investigated in this Article has further developed.

130. See Schnall et al., *Clean Conscience*, *supra* note 71, at 1222.

131. See *id.* at 1220 (discussing how cognitive priming of cleanliness led to less harsh moral judgments).

132. *Id.* at 1221.

133. See *id.* at 1219 (hypothesizing that cleansing behavior may soften moral judgments of third persons). Prompted by the 2009 H1N1 virus outbreak, the Indiana Courts developed a guide and checklist for trial courts handling a pandemic, which included improving hand hygiene (e.g., encouraging court employees to wash their hands with soap and water and "[p]lac[ing] alcohol-based hand sanitizer at high traffic locations such as break rooms, conference rooms, etc." and "[f]requently clean[ing] all commonly touched surfaces in the workplace, such as workstations, countertops, and doorknobs." Indiana Courts' Pandemic Preparation Guide & Checklist 4 (Oct. 9, 2009), available at http://www.in.gov/flu/files/Indiana_Courts_Pandemic_Preparation_Guide_and_Checklist.pdf.

134. See Zhong & Liljenquist, *supra* note 77, at 1452.

135. *Id.*

136. *Id.*

In certain ways, embodied cognition research presents a heartier challenge than other insights from the mind sciences introduced in the last few decades, both because it conflicts with our deep-seated intuitions about the relationship between the mind and body, and because it is greatly unsettling to our existing legal structures, potentially undermining the notion of fair and equal justice.

A. *An Inextricable Tangle*

Reading an article like this feels a bit like taking a peak into Pandora's box—or, more aptly, opening a can of worms. It is not quite clear what truly lies inside, but a first glimpse suggests that unpleasant surprises may be in store: an inextricable tangle, a squirming mess let loose. If our bodily experiences of temperature, weight, and cleanliness matter to our justice system, what else? There are hundreds of other potentially important variables. Our experiences with size, position, color, hardness, brightness, dryness, and texture could all be tipping the scales of justice one way or another. The pitch of the chair a juror sits in might influence her judgment, as might the material of her slacks, or the height of the ceiling in the deliberation room, or whether there are any windows, or whether it is a sunny or a cloudy day, or whether she has a sore throat or has just eaten a crusty sandwich. It might matter that the prosecutor was very tall rather than very short. It might matter that witnesses were seated in the left field of vision of jurors rather than the right. Can we actually be expected to act on any of these factors? And what would “acting” ultimately entail? Mandating consistency in courtroom architecture and temperature? Informing jurors of the potential impact of bodily factors, or training judges to be cognizant of biasing influences? Testing the sensorimotor sensitivities of potential jurors, judges, and law clerks to see which individuals are particularly sensitive to haptic and other cues?¹³⁷ Moving to all electronic documents in the courthouse? Issuing uniformly designed court clothing? Conducting trials in virtual worlds with carefully constructed avatars standing in for the lead courtroom players? Many of these possibilities imply radical departures from our current structures and processes, and seem to defy easy implementation.¹³⁸ What is the proper amount of cleanliness for a juror to exercise “fair” judgment? What is the optimal temperature for making an accurate assessment of the trustworthiness of a

137. See, e.g., Krishna & Morrin, *supra* note 99, at 807 (noting that individuals vary in their “autotelic need for touch (general liking for haptic input)” and are consequently affected differently by haptic cues); Schnall et al., *Disgust*, *supra* note 74, at 1105 (noting that individuals vary in sensitivity to bodily sensations related to disgust).

138. In this sense, incorporating the insights of embodied cognition into workable changes to court or police department procedures and processes seems considerably more difficult than the ongoing process of improving eyewitness identification procedures discussed earlier. See *supra* notes 31–34 and accompanying text.

witness? And how would we know if, by enacting such reforms, we were not making things worse or creating other yet-to-be-identified situational cues? Taking into account all of this complexity, is it not more prudent to just assume that it is a wash—that if there is one dynamic biasing in one direction, there is probably another biasing in the other? Is it not best to assume that plaintiffs and defendants come out roughly equally when it comes to the impact of embodied cognition on courtroom participants?

B. A Threat to the Legitimacy of the Law

Indeed, it is worth considering whether just discussing or writing about embodied cognition without advocating any radical changes to our legal system might be very dangerous in and of itself. The viability of the law is dependent on both the establishment of a moral consensus behind legal rules and the creation and maintenance of the legitimacy of legal authorities.¹³⁹ “[A]lthough the threat of punishment is always in the background when dealing with legal authorities, most people accept the decisions of those authorities not because they fear them, but because they view their actions as legitimate.”¹⁴⁰ And, in fact, some studies show that when individuals believe that the authorities are legitimate they are significantly more willing to defer to those people or institutions.¹⁴¹ Moreover, research suggests that perceived legitimacy is tied to whether individuals believe that the authorities used fair procedures in reaching verdicts and sentences:¹⁴² “[T]he reputation of the criminal justice system for fair and respectful treatment of people is central to its ability to enlist voluntary compliance from citizens with the law”¹⁴³ In one study, for example, Tom Tyler and Yuen Huo found that Chicago residents’ skepticism of the courts and overall reluctance to obey the law “were strongly influenced by whether they believed that the police and the courts

139. See John Darley et al., *Psychological Jurisprudence: Taking Psychology and Law into the Twenty-First Century*, in 14 PERSPECTIVES IN LAW AND PSYCHOLOGY, TAKING PSYCHOLOGY AND LAW INTO THE TWENTY-FIRST CENTURY 37, 51 (James R.P. Ogloff ed., 2002). Indeed, John Darley and his colleagues have argued that “[l]egitimacy provides greater and more reliable authority to legal officials than does morality, since they have discretionary authority to decide what is appropriate. Within the scope of their prescribed roles, the police and courts make decisions and citizens believe that they ought to obey those decisions.” *Id.*

140. *Id.* at 43 (“Studies of Americans find that people’s feelings of obligation to obey the police and the courts are generally quite high, even in the face of widespread expressions of dissatisfaction with the law and with legal authorities.”) (citations omitted).

141. See, e.g., TOM TYLER, WHY PEOPLE OBEY THE LAW 161 (1990).

142. See Paul Robinson & John Darley, *The Role of Deterrence in the Formulation of Criminal Law Rules*, 91 GEO. L.J. 949, 993 (2003); Darley et al., *supra* note 139, at 55.

143. Robinson & Darley, *supra* note 142, at 994. The dynamic appears to manifest itself both in the “reaction[] to personal experiences with legal authorities . . . [and] when people are evaluating national level political and legal authorities like the Supreme Court.” Darley et al., *supra* note 139, at 52.

treated people with respect, dignity, and fairness and did not harass them or subject them to rude or inappropriate treatment.”¹⁴⁴ When members of the public believe that fairness has fallen by the wayside, they are more likely to be outraged, lose respect for the law, and engage in (further) law-breaking behavior.¹⁴⁵

In view of this research, the threat of exposing the truth about embodied cognition should be evident. This work suggests that our judicial procedures may not be fair. Convictions, sentences, and holdings may turn on things that we believe ought to be irrelevant to the proceedings. What the law says and what actually happened may matter less than what the judge happens to be drinking on the bench.¹⁴⁶ The purported protections built into the system—rules excluding hearsay, freedom from self-incrimination, and the right to confront witnesses, among others—may be considerably less significant than we imagined.

C. *Meeting the Challenge*

These concerns are real and we ought not gloss over them. It is true that exposing these biases built into our system—showing that the emperor is wearing no clothes—may lead to increased skepticism of our laws, courts, and legal actors. But the alternative is to pretend that a system that appears to be biasing outcomes in a patterned way is legitimate. This latter approach is untenable.

Willful ignorance is neither feasible in practice, nor justifiable. Research in embodied cognition is increasingly gaining attention in the popular media.¹⁴⁷ Thus, hiding this data from the public in order to ensure continued respect for the authority of our legal institutions is not a realistic option. Moreover, as discussed earlier, it is almost certain that market participants, among others, are going to pay close attention to this budding area of research in future months and years, whether or not legal scholars and reformers elect to join them, because the work offers the keys to increasing influence.¹⁴⁸ For corporate actors, understanding embodied cognition provides the opportunity to manipulate consumers more precisely and effectively to achieve particular

144. TOM R. TYLER & YUEN J. HUO, TRUST IN THE LAW: ENCOURAGING PUBLIC COOPERATION WITH THE POLICE AND COURTS 181 (2002).

145. Darley et al., *supra* note 139, at 55.

146. *See infra* notes 144–47 and accompanying text (discussing legal realist insights).

147. *See, e.g.*, Audrey Grayson, *That's Cold: How Exclusion Can Leave You Chilly: New Research Suggests Those Who Are Socially Excluded Actually Feel Colder*, ABCNEWS.COM, Sept. 16, 2008, <http://abcnews.go.com/Health/DepressionNews/story?id=5808961&page=1>; Bennett, *supra* note 96; Telephone Interview by Kathleen Dunn with Joshua Ackerman, Wisconsin Public Radio, (Oct. 6, 2009), available at <http://clipcast.wpr.org:8080/ramgen/wpr/dun/dun091006e.rm>.

148. *See supra* Part I.D.

ends without people ever knowing that they are being manipulated. Hence, it presents the appealing prospect of greatly expanding profits, while avoiding the perception of “impropriety” that leads to litigation and regulation. Given this reality, it is a dereliction of duty for the legal establishment not to act as a counterweight to protect our citizens. Our job as lawyers and legal scholars is to root out injustice and unfairness wherever we find it.

Although the notion that we can ignore the embodied cognition research because everything is likely to “balance out” is strongly appealing, it is almost certainly incorrect. Many people who appear before our courts are not repeat players and many cannot bear a negative judgment.¹⁴⁹ If they lose a case that is it: there is no chance to make up the difference the next time around. And their case may hinge on just a few key moments at trial. If a bodily prime turns a jury against a critical witness, or occurs while the jury is meeting for an hour to deliberate, there may be no other opportunity to offset the bodily prime and equilibrate the proceedings. It might be some reassurance to think that at least it is all just a matter of chance (whether jurors are drinking hot coffee or cold soda as they conference; whether hands are washed before or after gory testimony), but it is not at all clear that any of the primes discussed in this Article occur randomly. It is altogether possible—likely, even—that certain factors are largely constant and act as an unseen current subtly steering juries and judges to the same shore time and time again.

We must be cautious, and we should not act on mere speculations about potentially biasing factors. But as the research on embodied cognition continues, and as findings are replicated and elaborated, it is our duty to act, even if imposing obstacles loom on the horizon, and even if the journey proves long and arduous. We are strong enough—and the law is strong enough—to carry the weight.

CONCLUSION

It was a pivotal moment in Western history and philosophy, but Descartes was wrong when he confidently concluded, “I [am] . . . entirely and absolutely distinct from my body.”¹⁵⁰ Research in the mind sciences, particularly in the area of embodied cognition, has provided compelling evidence that minds and bodies are not so easily separated. Yet the idea of disembodied reason has had—and continues to have—a powerful influence on our culture, institutions, and systems.

The popular ideal of the judge is, in many ways, the disembodied adjudicator, the legal mind floating in space: independent, unbiased, rational,

149. See, e.g., Leonard L. Riskin & Nancy A. Welsh, *Is That All There Is?: “The Problem” in Court-Oriented Mediation*, 15 GEO. MASON L. REV. 863, 931 (2008) (noting that this is “a country where most citizens’ experience with the court system is as one-shot players”).

150. DESCARTES, *supra* note 1, at 112.

apart from the world. So, too, the common image of the law: pristine, objective, immaculate, clear and certain, separate and pure, uncorrupted and un-co-opted.

In truth, these images have never been accurate. The Legal Realists knew that almost a century ago when they suggested that the law was embedded in (and the product of) societal realities and that judges were real people with real biases.¹⁵¹ A judge's decision might not just reflect what the law said, but also broader public forces, cultural dynamics, and the judge's "political, economic, and professional background and activities."¹⁵² Human psychological proclivities might drive case determinations.¹⁵³ Hence, the psycho-social impulse of Realism became associated with the idea that a case might turn on things that seemed, and were held to be, irrelevant to the law—factors as immaterial as "what the judge ate for breakfast."¹⁵⁴

To a significant extent, bringing embodied cognition research to the legal arena is about continuing the Realist project. This research suggests that it is not just what the judge ate for breakfast: it is also what the judge is sitting on, wearing, smelling, and holding in his hand. All of these elements and more may be consequential. There is much still left to investigate, and we must keep our feet moving, marching out of the Enlightenment and into the light.

151. See, e.g., Brian Leiter, *American Legal Realism*, in THE BLACKWELL GUIDE TO PHILOSOPHY OF LAW AND LEGAL THEORY 50, 52–53 Martin P. Golding & William A. Edmundson, eds., 2005.

152. Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV 809, 846 (1935). In the words of Herman Oliphant, courts "respond to the stimulus of the facts in the concrete cases before them rather than to the stimulus of over-general and outworn abstractions in opinions and treatises." Herman Oliphant, *A Return to Stare Decisis*, 14 A.B.A. J. 71, 75 (1928).

153. See, e.g., KARL N. LLEWELLYN, THE COMMON LAW TRADITION: DECIDING APPEALS 53 (1960) ("The place to begin is with the fact that the men of our appellate bench are human beings And one of the more obvious and obstinate facts about human beings is that they operate in and respond to traditions. . . . Tradition grips them, shapes them, limits them, guides them. . . . To a man of sociology or psychology . . . this needs no argument"); JEROME FRANK, LAW AND THE MODERN MIND 120 (6th ed., 1963) ("[T]he personality of the judge is the pivotal factor in law administration").

154. See Leiter, *supra* note 151, at 54 (noting that no Realist ever actually uttered the quotation popularly associated with the movement).