

THE EXPERIENTIAL FUTURE OF THE LAW

Adam J. Kolber*

ABSTRACT

Pain, suffering, anxiety, and other experiences are fundamentally important to civil and criminal law. Despite their importance, we have limited ability to measure experiences, even though legal proceedings turn on such measurements every day. Fortunately, technological advances in neuroscience are improving our ability to measure experiences and will do so more dramatically in what I call “the experiential future.”

In this Article, I describe how new technologies will improve our assessments of physical pain, emotional distress, and a variety of psychiatric disorders. I also describe more particular techniques to help determine whether: (1) a patient is in a persistent vegetative state, (2) a placebo treatment relieves pain, (3) an alleged victim has been abused as a child, (4) an inmate being executed is in pain, (5) an interrogatee has been tortured, and more. I argue that as new technologies emerge to better reveal people’s experiences, virtually every area of the law should do more to take these experiences into account.

* Professor of Law, Brooklyn Law School. For helpful comments, I thank Vania Apkarian, Anita Bernstein, Michael Cahill, Glenn Cohen, Einer Elhauge, Martha Farah, Howard Fields, Cynthia Godsoe, John C.P. Goldberg, Stuart Green, Daniel Hackman, Claire Hill, Kyron Huigens, Joshua Kleinfeld, Ivy Lapidès, Maggie Lewis, Dan Markel, Jonathan Marks, Allan McCay, Michael Meaney, Jennifer Mnookin, Amanda Pustilnik, Alice Ristroph, Robert Sapolsky, Larry Solan, Dayalan Srinivasan, Moshe Szyf, Nelson Tebbe, Gustavo Turecki, as well as participants at conferences and colloquia at Brooklyn Law School, Columbia University, Dalhousie University, Harvard Law School, the Oxford Centre for Functional MRI of the Brain, the Oxford Uehiro Centre for Practical Ethics, University College London, the University of Arizona, the University of Minnesota, and the University of California, Irvine. This project was generously supported by Brooklyn Law School and the University of San Diego School of Law.

INTRODUCTION	587
I. THE IMPORTANCE OF SUBJECTIVE EXPERIENCE	590
II. THE EXPERIENTIAL PRESENT	595
A. <i>Measuring Physical Pain</i>	596
B. <i>“Mind Reading” Technologies</i>	601
1. <i>Diagnosing Disorders of Consciousness</i>	601
2. <i>Lie Detection</i>	602
III. THE EXPERIENTIAL FUTURE	604
A. <i>Tort Contexts</i>	605
1. <i>Physical Pain</i>	608
a. <i>Incorporating New Technologies into Law</i>	609
b. <i>Novel Legal Questions About Pain Compensation</i>	611
c. <i>Measuring Baselines</i>	612
d. <i>Administrative Compensation Schemes</i>	614
e. <i>Pain Relief and False Advertising</i>	615
2. <i>Emotional Distress</i>	618
a. <i>Damages for “Suffering”</i>	618
b. <i>Intentional Infliction of Emotional Distress</i>	620
c. <i>Negligent Infliction of Emotional Distress</i>	621
B. <i>Punishment Contexts</i>	622
1. <i>Blameworthiness</i>	623
a. <i>Whether a Crime Occurred</i>	623
i. <i>Child Physical and Sexual Abuse</i>	624
b. <i>How Much Blame</i>	627
i. <i>Retributivists</i>	628
ii. <i>Consequentialists</i>	631
iii. <i>How Sentencing Downplays Subjective</i> <i>Experience</i>	632
2. <i>Punishment Severity</i>	632
a. <i>Our Mostly Non-Experiential Punishment Practices</i>	635
b. <i>The Special Case of Lethal Injection</i>	640
3. <i>Interrogation and Torture</i>	644
C. <i>The Experiential Gap Between Tort and Criminal Law</i>	647
D. <i>Why the Experiential Future Matters Now</i>	648
CONCLUSION	651

INTRODUCTION

Subjective experience is fundamentally important to the law. We craft laws to make us feel happier and safer and help us avoid conflicts that cause misery and grief. When conflicts inevitably arise, litigants frequently claim that they have been wrongfully made to feel pain, sadness, fear, or anxiety. The outcomes of legal adjudication can also cause negative experiences, as when courts issue injunctions or sentence offenders to prison. There are few generalizations that apply to the law as a whole, but one is that virtually every aspect of the law affects people's feelings, emotions, and other experiences.

Though our experiences are critically important to the law, they cannot be observed directly. People try to express their feelings and emotions, but we are suspicious of their claims, especially when they have financial incentives to lie or exaggerate. Even when speaking truthfully, the nature and intensity of one's feelings are very difficult to convey. Despite our limited ability to judge the experiences of others, legal proceedings turn on such judgments every day.

Fortunately, technological advances in neuroscience are beginning to provide more accurate methods of measuring experiences. In 2007, I described how, in principle, brain imaging techniques could be used to more objectively assess a litigant's pain.¹ One year later, a patent was granted on an alleged method of using brain imaging to measure pain.² During that same year, brain imaging evidence of pain was readied for battle in a worker's compensation dispute, though the case settled soon thereafter.³ In early 2010, the Applied fMRI Institute became the first commercial enterprise to offer brain scanning services to assess pain.⁴ And pain is just one of the many experiences, like

¹ Adam J. Kolber, *Pain Detection and the Privacy of Subjective Experience*, 33 AM. J.L. & MED. 433 (2007) [hereinafter Kolber, *Pain Detection*]; see also Henry T. Greely, *Prediction, Litigation, Privacy, and Property: Some Possible Legal and Social Implications of Advances in Neuroscience*, in NEUROSCIENCE AND THE LAW 114, 141–42 (Brent Garland ed., 2004) (noting the possibility that neuroimaging could help assess pain).

² Objective Determinations of Chronic Pain in Patients, U.S. Patent No. 7,462,155 B2 (filed Oct. 27, 2004) (issued Dec. 9, 2008); see also Brenda Simon, *Patent on Pain Detection?*, LAW & BIOSCIENCES BLOG (Jan. 28, 2009), <http://blogs.law.stanford.edu/lawandbiosciences/2009/01/28/patent-on-pain-detection> (discussing the patent).

³ Greg Miller, *Brain Scans of Pain Raise Questions for the Law*, 323 SCIENCE 195 (2009) (describing how parties sought expert witnesses to testify about fMRI evidence purportedly showing that an employee's chemical burns caused him chronic pain).

⁴ At least, I am not aware of any other company that has previously offered such services. See *Services*, APPLIED FMRI INSTITUTE, <http://www.appliedfmri.org/services.html> (last visited Feb. 5, 2011) [hereinafter APPLIED FMRI INSTITUTE]. Applied fMRI no longer advertises brain-based pain assessment on its website, *id.*,

distress, depression, and anxiety, for which we are working to develop more objective measurements. While there is much debate about when these technologies will be ready for courtroom use, litigants will no doubt seek to introduce such evidence in the near future.

In this Article, I describe some of the ways in which new technologies are shifting the way we measure experiences and will continue to do so more dramatically over the next thirty years. I discuss in general terms how new technologies may improve our assessments of physical pain, pain relief, emotional distress, and a variety of psychiatric disorders. I also discuss more particular applications of such technologies to assess whether: (1) a patient is in a persistent vegetative state, (2) a placebo treatment relieves pain, (3) an alleged victim has been abused as a child, (4) an inmate being executed is in pain, (5) an interrogatee has been tortured, and others.

My central claim is that as new technologies emerge to better reveal people's experiences, the law ought to do more to take these experiences into account. In tort and criminal law, we often ignore or downplay the importance of subjective experience. This is no surprise. During the hundreds of years in which these bodies of law developed, we had very poor methods of making inferences about the experiences of others. As we get better at measuring experiences, however, I make the normative claim that we ought to change fundamental aspects of the law to take better account of people's experiences.

In Part I, "The Importance of Subjective Experience," I briefly explain why subjective experience is so important to the law. Indeed, if classical utilitarianism is correct, everything of value depends on subjective experience, and the law should help us maximize good experiences. But even if classical utilitarians overstate the importance of subjective experience, the nature and quality of our experiences are undoubtedly critical to any account of what makes our lives valuable. For the law to connect with the important aspects of our lives, it must attend to subjective experience.

While some of the most exciting technologies to help us assess experiences are nowhere near ready for forensic use, in Part II, "The Experiential Present," I describe some of the assessment technologies already available in our primitive experiential present. For example, though we do not typically think

but such assessments are now being marketed by Chronic Pain Diagnostics, Inc., see *Pain Measurement Through Objective Testing*, CHRONIC PAIN DIAGNOSTICS, INC., <https://chronicpd.com/Home.html> (last visited Feb. 5, 2011).

that an X-ray of a broken leg reveals subjective experience, it surely tells us something about a person's pain. Emerging technologies will enable us to make inferences about others' experiences more frequently and with greater precision. These technologies may never be perfect. But they don't have to be. They need only be cost-effective supplements to the very crude methods we use today.

In Part III, "The Experiential Future," I argue that as better methods of measuring experiences emerge, they can and should revolutionize many areas of civil and criminal litigation. In the tort context, this argument is easy to make. Both current law and our best theories of tort law treat experiences like pain and suffering as generally relevant to damage assessments. If we remain consistent with this prevailing view in the future, the content of the law should change in rather dramatic ways. Instead of the rough proxy measures of experience that have become embedded in the law over many years, we can turn to new technologies that help us measure experience more directly.

In criminal justice contexts, by contrast, there is a conflict between prevailing law and our best theories of why we punish offenders. Prevailing law suggests that we can generally ignore victim and offender experiences or consider them to a very limited degree. I will argue that prevailing law is misguided and inconsistent with our best efforts to justify punishment. If we seek just punishment practices, then we must consider subjective experience more than we do now. The experiential future will make it easier to measure both the amount of harm caused by crime perpetrators and the amount of punishment they should subsequently receive.

Given the breadth of this Article, I can only scratch the surface of the many areas of the law that should change in the experiential future (and in many cases, I refer readers to more detailed discussion that I have provided elsewhere). But this Article will paint a picture of what the future will look like if the law pays better attention to subjective experience, as I argue it should. While dramatic technological advances are still some time away, thinking about our experiential future, I argue, can help us better understand and apply the law even today.

Oliver Wendell Holmes famously remarked that "[t]he life of the law has not been logic: it has been experience."⁵ Quite inadvertently, Holmes's

⁵ OLIVER WENDELL HOLMES, *THE COMMON LAW* 3 (Harvard Univ. Press 2009) (1881). Holmes argued that judges decide cases pragmatically and are influenced by their prejudices and life experiences. Judges do

comment also applies to our experiential future, for the life of the law largely has been and will continue to be about measuring, monitoring, manipulating, permitting, and prohibiting certain experiences. In the experiential future, we will have better measures of subjective experience and plenty of reason to revise the law to focus more directly and explicitly on those experiences.

I. THE IMPORTANCE OF SUBJECTIVE EXPERIENCE

When crafting law, we implicitly make value judgments about the importance of subjective experience. Consider two prominent views of tort law. On one view, tort law promotes corrective justice. Those who tortiously cause injury must compensate their victims to make them whole.⁶ To decide what it means to make a victim whole, we must make a value judgment. If we require tortfeasors to compensate victims for their pain and suffering, we have implicitly decided that those experiences have disvalue.

Alternatively, suppose that tort law is supposed to deter bad behavior. If so, we seek to prohibit activities when their expected costs exceed their expected benefits. We use tort law to encourage people to internalize the risks of harm they create by forcing them to pay for those harms should they arise.⁷ To do this, we must decide what outcomes count as costs that must be internalized. If we require tortfeasors to internalize the costs of the pain and suffering they cause, we have implicitly decided that those experiences have disvalue. In other words, under some widely held views of tort law, we must decide whether or not experiential harms matter.⁸

Classical utilitarians have a clear answer. On their view, experiences are all that ultimately matter. The good—that which is of value—consists in experiences like happiness and pleasure, while the bad—that which is of disvalue—consists in experiences like sadness and pain.⁹ To choose the morally correct action, including the right law or policy, we should try to

not, as many theorists claimed, formalistically deduce outcomes in particular cases by applying case facts to the law. See Moses J. Aronson, Book Review, 20 TEX. L. REV. 118 (1942) (reviewing MAX RADIN, *LAW AS LOGIC AND EXPERIENCE* (1940)) (discussing controversy over the proper interpretation of Holmes's statement).

⁶ See David W. Leebron, *Final Moments: Damages for Pain and Suffering Prior to Death*, 64 N.Y.U. L. REV. 256, 271 (1989) (discussing the corrective justice rationale for tort law).

⁷ See, e.g., Ronen Perry, *Re-Torts*, 59 ALA. L. REV. 987, 990 (2008) (stating that, from an economic perspective, the primary objective of tort law is to deter behavior that unjustifiably risks causing harm).

⁸ I discuss these and other possible goals of tort law in more detail in Part III.A *infra*.

⁹ See, e.g., JAMES GRIFFIN, *WELL-BEING: ITS MEANING, MEASUREMENT, AND MORAL IMPORTANCE* 7–8 (1986); WILL KYMLICKA, *CONTEMPORARY POLITICAL PHILOSOPHY* 13 (2d ed. 2002).

maximize net happiness or pleasure. Though difficult to implement, the formula is extraordinarily generalizable, applying to everything we do. If the classical utilitarian view is correct, nothing is more important to the law than experiences because all value depends on experiences.¹⁰

Classical utilitarians may oversimplify our experiential palette. We value other more complicated experiences like empathy, creativity, and spontaneity that are not easily categorized as kinds of happiness or pleasure. But the core idea behind classical utilitarianism—that everything of value depends on our experiences—has substantial appeal. Many of our life goals revolve around obtaining certain kinds of experiences. For most of human history, daily life has been consumed with efforts to avoid the pains of hunger and thirst. Even those who are well nourished strive to avoid chronic pain and emotional distress. We cannot explain why these experiences are bad solely in terms of some other potential locus of disvalue, like a deprivation of liberty. A solitary person can still have bad experiences, even when no one interferes with his liberty.

By contrast, to enjoy anything, including some liberty, we must experience it. That which is entirely outside our range of experiences cannot affect us, at least not in any way that we ever come to recognize.¹¹ We cannot value liberties that no one is aware of; such liberties are only valuable, if at all, in a very impersonal way. Perhaps nothing is of value without a person to value it, and some fact about the world that never enters conscious experience has no one to value it. In a world without creatures that have experiences—a world of sophisticated but unfeeling robots, for example—we might think there is nothing of value at all.

The idea that value consists solely of subjective experience has been sharply attacked, however. Robert Nozick famously proposed a thought experiment intended to elicit the intuition that more things in fact matter to us

¹⁰ I am describing classical utilitarians as value hedonists rather than welfare hedonists. Value hedonists believe that “pleasure is the only intrinsic good and pain the only intrinsic evil.” SHELLY KAGAN, *NORMATIVE ETHICS* 31 (1998). Welfare hedonists believe that our well-being—the quality of our own lives—depends only on experiences, while acknowledging (contra value hedonists) that there are other forms of value in the world, like ethical value or the value of mathematical truths, that do not depend solely on experiences. *See id.*

¹¹ *See* JAMES HILLMAN & MICHAEL VENTURA, *WE’VE HAD A HUNDRED YEARS OF PSYCHOTHERAPY AND THE WORLD’S GETTING WORSE* 62 (1993) (“[W]hat we are really, and the reality we live, is our psychic reality”); John Bronsteen et al., *Welfare as Happiness*, 98 *GEO. L.J.* 1583, 1594–95 (2010).

than just experiences.¹² Nozick asked us to imagine being connected to a machine that can give us any set of experiences we want:

Suppose there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel you were writing a great novel, or making a friend, or reading an interesting book. All the time you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's experiences?¹³

Before we answer, Nozick put aside some concerns that are not relevant to the thought experiment:

If you are worried about missing out on desirable experiences, we can suppose that business enterprises have researched thoroughly the lives of many others. You can pick and choose from their large library or smorgasbord of such experiences, selecting your life's experiences for, say, the next two years. After two years have passed, you will have ten minutes or ten hours out of the tank, to select the experiences of your *next* two years. Of course, while in the tank you won't know that you're there; you'll think it's all actually happening. Others can also plug in to have the experiences they want, so there's no need to stay unplugged to serve them.¹⁴

Despite the machine's ability to give us whatever experiences we might want, Nozick argued that we would not plug in to it. According to Nozick, the fact that we would not connect is evidence that we in fact value more things than just experiences. "Perhaps what we desire," he claimed, "is to live . . . in contact with reality."¹⁵

Nozick's thought experiment is widely treated as a thorough refutation of the view that experiential states are all that matter.¹⁶ As I have argued elsewhere,¹⁷ however, the thought experiment is hardly so successful. Even if

¹² ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA 42–45 (1974). Nozick's thought experiment builds on a similar one proposed by J. J. C. Smart. See J. J. C. Smart, *An Outline of a System of Utilitarian Ethics*, in UTILITARIANISM: FOR AND AGAINST 1, 19–22 (J. J. C. Smart & Bernard Williams eds., 1973).

¹³ Smart, *supra* note 12, at 42.

¹⁴ *Id.* at 42–43.

¹⁵ *Id.* at 45.

¹⁶ See, e.g., KYMLICKA, *supra* note 9, at 13.

¹⁷ Adam Kolber, *Mental Statism and the Experience Machine*, BARD J. SOC. SCI., Winter 1994–95, at 10 [hereinafter Kolber, *Mental Statism*]; see also Adam J. Kolber, *Therapeutic Forgetting: The Legal and Ethical Implications of Memory Dampening*, 59 VAND. L. REV. 1561, 1605 n.226 (2006).

most people would say that they would not connect to an experience machine, we cannot necessarily treat such responses as reflecting people's considered judgments. In particular, we may be biased by the particular formulation of the thought experiment. For example, people may simply prefer the set of experiences in the world that they currently inhabit over the set of experiences they anticipate having if they were connected to an experience machine. Their intuitive reactions to the thought experiment may reflect a bias for our status quo experiences, rather than a deep, meaningful preference for the non-experiential value of living in the real world.

To illustrate our status quo bias, I have argued, we should consider the experience machine scenario in reverse, thereby switching the status quo.¹⁸ Suppose that you were told that you are currently hooked up to an experience machine. All of your friends and family do not really exist and all of your accomplishments up to this point never actually happened. Instead, in the real world, you are someone else who has different friends, family, and accomplishments than you currently perceive yourself to have. Moreover, you are told that your life in the real world has significantly worse experiences than your current life on the machine (otherwise you would not have connected in the first place). Indeed, for all you know, you may in fact be connected to an experience machine right now.¹⁹ The revised formulation of the question is: would you *disconnect* if you believed that you were currently connected to an experience machine?²⁰

While most people share Nozick's original intuition that they would not connect to the machine, far fewer would disconnect from a machine to which they were already connected. Indeed, some recent work in experimental philosophy tested this intuition by asking subjects a reverse-experience-machine question like the one I proposed. Depending on how life off of the experience machine was described in the experiment, between 46% and 87% of subjects would *remain* connected to an experience machine.²¹ Given that many of us would remain connected to an experience machine to which we were already connected, Nozick's original formulation of the thought experiment may elicit, at least to some extent, a preference for our status quo

¹⁸ Kolber, *Mental Statism*, *supra* note 17, at 15.

¹⁹ *Id.*

²⁰ *Id.*

²¹ Felipe De Brigard, *If You Like It, Does It Matter if It's Real?*, 23 PHIL. PSYCHOL. 43, 47–48 (2010).

mode of living rather than a considered judgment that more matters to us than just experiences.

Still, even if Nozick's thought experiment fails to clearly establish that we care about more than just subjective experience, we may indeed care about other things. Robert Hare pointed out that we prefer to live in a world in which our spouses are faithful, even if we never discover their adultery and even if the adultery has no effect on our subjective experience.²² Once again, our intuitions in Hare's example may be biased by the thought experiment or just be plain wrong, but it is very difficult to prove that experiences are all that matter.

Importantly, however, nothing I will say about the experiential future depends on the claim that experiences are the *only* things that matter. Though I have sought to show that subjective experience is very important to our lives, we may, rightly or wrongly, care about other things as well. What is indisputable is that some experiences are valuable and some are disvaluable. As Shelly Kagan has stated, "[P]retty much everyone believes at least this much: the presence of pleasure and the absence of pain is at least one component of well-being. (It is quite hard to deny this. The value of pleasure and the disvalue of pain seem virtually self-evident to anyone experiencing them.)"²³ Martha Nussbaum, for example, has offered a rather objective list of "functional capabilities" that she takes to be central to human life;²⁴ still, many of the capabilities she lists are intimately connected to human experience, like "[n]ot having one's emotional development blighted by overwhelming fear and anxiety, or by traumatic events of abuse or neglect."²⁵ Even deontologists must count experiences as sources of value or disvalue "if only to flesh out the 'duty of beneficence' that is standardly included among the 'right things' to be

²² R. M. HARE, *ESSAYS ON PHILOSOPHICAL METHOD* 131 (1971).

²³ KAGAN, *supra* note 10, at 30; *see also* Thomas M. Scanlon, *The Moral Basis of Interpersonal Comparisons*, in *INTERPERSONAL COMPARISONS OF WELL-BEING* 17, 23 (Jon Elster & John E. Roemer eds., 1991) (recognizing conscious states as among the things that are important to us); Peter Railton, *Alienation, Consequentialism, and the Demands of Morality*, 13 *PHIL. & PUB. AFF.* 134, 149 (1984) (identifying "happiness, knowledge, purposeful activity, autonomy, solidarity, respect, and beauty" as "intrinsically" valuable); *cf.* DEREK PARFIT, *REASONS AND PERSONS* 4 (1984) (stating that, even for objective theories of self-interest, "happiness and pleasure are at least part of what makes our lives go better for us, and misery and pain are at least part of what makes our lives go worse").

²⁴ MARTHA C. NUSSBAUM, *WOMEN AND HUMAN DEVELOPMENT: THE CAPABILITIES APPROACH* 78–80 (2000).

²⁵ *Id.* at 79.

done.”²⁶ If subjective experience is even *instrumentally* relevant to one’s theory of the good, one cannot entirely ignore our experiential future.

So long as pain and suffering are generally disvaluable (even if other things are disvaluable too), we must consider them when crafting law and adjudicating cases. To return to the discussion of tort law, if tort law is supposed to promote corrective justice, defendants who tortiously cause pain and suffering must compensate plaintiffs for those bad experiences. Similarly, if tort law is supposed to optimally deter bad activities, then defendants who risk excessive experiential harms must compensate plaintiffs for those bad experiences.²⁷ Thus, on any prevailing view of tort law, subjective experience matters. Of course, to the extent that measuring subjective experience in individual cases is impossible or cost prohibitive, we have to settle for second-best solutions. But as new technologies facilitate measurement, our second-best solutions become less and less defensible.

II. THE EXPERIENTIAL PRESENT

We already have some technologies that help us assess the experiences of other people. When we see an X-ray of a shattered leg, for example, we can generally infer that the person with the shattered leg was in great pain soon after his injury. Traditional diagnostic imaging, however, provides only weak and inexact evidence about our experiences. For example, many people with genuine back pain have no abnormal anatomical findings, while many people without back pain do show spine-related abnormalities.²⁸

While courts wrestled at first with decisions to admit diagnostic images,²⁹ today courts regularly admit X-rays, CT scans, and MRIs to provide insight into the extent of a person’s pain and suffering.³⁰ Advances in imaging

²⁶ Robert E. Goodin, *Utility and the Good*, in A COMPANION TO ETHICS 241, 241 (Peter Singer ed., 1991).

²⁷ To give people proper incentives, we should focus not on the *actual* harms they cause but on the harms they should have anticipated. Nevertheless, our best evidence of what harms ought to have been expected will often depend on the *actual* harms that occur. See *infra* Part III.A.

²⁸ See Gina Kolata, *With Costs Rising, Treating Back Pain Often Seems Futile*, N.Y. TIMES, Feb. 9, 2004, at A1 (noting a researcher’s claim that “[a] variety of studies have suggested that in 85 percent of cases it is impossible to say why a person’s back hurts”).

²⁹ See Anthony R. Benedetto, *Not Just “X-Rays” Today: Recommendations for Admissibility of Modern Radiology Images*, 49 S. TEX. L. REV. 113, 126–27 (2007); Stacey A. Tovino, *Imaging Body Structure and Mapping Brain Function: A Historical Approach*, 33 AM. J.L. & MED. 193, 209–15 (2007).

³⁰ See, e.g., Jack E. Hubbard & Samuel D. Hodge, Jr., *“Show Me the Pain”: Limitations and Pitfalls of Medical Imaging of the Low Back*, 14 MICH. ST. U. J. MED. & L. 129 (2010) (describing a variety of diagnostic imaging tests that sometimes provide good evidence of low back pain).

technology may eventually provide far better evidence of people's subjective states by focusing less on body tissue like bone and muscle and more on the brain, where we process most of the information related to our experiences. In this Part, I briefly describe some of the technologies that can help us infer the experiences of other people.

A. *Measuring Physical Pain*

Experiences like pain are private in the following sense: I am a better authority on what I am immediately experiencing at a given moment than anyone else.³¹ I know how I am feeling through introspection, while others have to make inferences about my experiences based on my behavior or other indirect clues. These inferences may be wrong. A person who seems to be in pain may be lying to gain a favorable settlement or to avoid work obligations. Others, like stroke victims or young children, may be incapable of expressing their feelings.³²

Doctors and researchers have long sought to make more accurate assessments of pain. For example, clinicians regularly ask patients to rate their pain on a scale from 0 to 10, where 10 is the worst pain imaginable.³³ But two people who experience pain of the same intensity may nevertheless refer to their pain with different numbers. Among other reasons, one patient may have a very vivid imagination about the worst pain imaginable and, therefore,

³¹ I call this the "Walking in Memphis" principle. In a song of the same name, singer Marc Cohn asks, "[D]o I really feel the way I feel?" MARC COHN, *Walking in Memphis*, on MARC COHN (Atlantic Records 1991). The answer is, "yes," he really does feel the way he feels. In fact, it is arguably impossible for it to be otherwise. I discuss the topic of neuroscience and pain measurement in more detail in Kolber, *Pain Detection*, *supra* note 1.

³² We must nevertheless make judgments under uncertainty about the pain of creatures that cannot communicate. For example, Nebraska controversially banned the abortion of fetuses at twenty weeks' gestational age, citing a legislative finding that such fetuses may experience pain. Pain-Capable Unborn Child Protection Act, NEB. REV. STAT. § 28-3,104 (2010). Even soon after we are born, there is disagreement about the nature of the pain we experience. *See, e.g.*, Janice Lander et al., *Comparison of Ring Block, Dorsal Penile Nerve Block, and Topical Anesthesia for Neonatal Circumcision*, 278 JAMA 2157, 2161 (1997) (recommending that newborns receive anesthesia prior to circumcision). And, of course, there are continuing debates over the moral and legal significance of the pain of nonhuman animals. *See* Adam Kolber, Note, *Standing Upright: The Moral and Legal Standing of Humans and Other Apes*, 54 STAN. L. REV. 163, 182–88 (2001) (describing Peter Singer's view that we must give equal consideration to the interests of all creatures that experience pain). All of these issues will be better informed in the experiential future.

³³ *See, e.g.*, PATRICK WALL, PAIN: THE SCIENCE OF SUFFERING 11–12 (2000); Eric Eich et al., *Questions Concerning Pain*, in WELL-BEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY 155, 162 (Daniel Kahneman et al. eds., 1999).

systematically rate his pain lower than someone else with a less vivid imagination.

Despite the notorious difficulties of making intersubjective assessments of experience,³⁴ we nevertheless make them every day. When we observe a child cry, we infer that the child is in pain. When we see a litigant laboriously hobble up to the witness stand, we infer that he is having difficulty moving or at least wants to seem that way. If intersubjective experiential assessments were entirely impossible, we would be hard-pressed to justify our current tort practices.

New technologies will never eliminate the difficulties of making intersubjective assessments. In the future, however, our assessments of others' experiences will improve. In recent years, researchers have made tremendous strides in identifying neural correlates of the experience of pain.³⁵ Some of these techniques use functional magnetic resonance imaging (fMRI) of the brain, which is similar to the more familiar structural MRI of the brain that hospitals have been using for over twenty years.³⁶ While structural MRI reveals brain anatomy, like whether a person has a tumor or signs of a head injury, fMRI reveals which portions of a person's brain are especially active under particular conditions.³⁷

When imaging brain function in subjects experiencing pain, researchers observe increased activation in specific parts of the brain, including certain regions of the cortex.³⁸ The amount of activation observed depends on the intensity of the pain.³⁹ For example, one team of researchers had subjects

³⁴ See, e.g., GRIFFIN, *supra* note 9, at 106–24; Scanlon, *supra* note 23, at 17.

³⁵ See, e.g., David Borsook & Lino Becerra, *Functional Imaging of Pain and Analgesia—A Valid Diagnostic Tool?*, 117 PAIN 247 (2005); Robert C. Coghill et al., *Pain Intensity Processing Within the Human Brain: A Bilateral, Distributed Mechanism*, 82 J. NEUROPHYSIOLOGY 1934 (1999); E. A. Moulton et al., *Regional Intensive and Temporal Patterns of Functional MRI Activation Distinguishing Noxious and Innocuous Contact Heat*, 93 J. NEUROPHYSIOLOGY 2183 (2005); Carlo A. Porro, *Functional Imaging and Pain: Behavior, Perception, and Modulation*, 9 NEUROSCIENTIST 354, 357 (2003); I. Tracey, *Imaging Pain*, 101 BRIT. J. ANAESTHESIA 32 (2008).

³⁶ See Hubbard & Hodge, *supra* note 30, at 149 (noting that MRI was approved by the FDA in 1986).

³⁷ JAMIE WARD, THE STUDENT'S GUIDE TO COGNITIVE NEUROSCIENCE 49–56 (2006).

³⁸ See, e.g., Pierre Rainville et al., *Pain Affect Encoded in Human Anterior Cingulate but Not Somatosensory Cortex*, 277 SCIENCE 968, 969 (1997) (using positron emission tomography to support “previous findings of significant pain-related activations” in the primary and secondary somatosensory cortices, the rostral insula, and the anterior cingulate cortex); Tor D. Wager et al., *Placebo-Induced Changes in fMRI in the Anticipation and Experience of Pain*, 303 SCIENCE 1162, 1162 (2004) (“Pain responsive regions, or the ‘pain matrix,’ include thalamus, somatosensory cortex, insula, and anterior cingulate cortex.”).

³⁹ See Coghill et al., *supra* note 35, at 1936; Porro, *supra* note 35, at 357.

touch a hot piece of metal and report the pain they experienced using a 1-to-10 pain scale.⁴⁰ Based on subjects' self-reported pain, each subject was placed into a high, medium, or low pain sensitivity group. Subjects were later exposed to the same heat stimulus during an fMRI scan. Consistent with their self-reports, subjects in the high sensitivity group, on average, showed greater activation in the parts of the brain used to process pain than did the subjects in the low sensitivity group.⁴¹

More recently, researchers have shown how the amount of brain activity in the insula closely correlates with the subjective pain reports of *individual* subjects.⁴² A team of researchers describing the work state that "the brain activity . . . in this insular region reflects the magnitude of subjective pain *every time* a participant[] indicates that individual's perceived magnitude of pain, with a linear correlation between brain activity and magnitude of subjective perception."⁴³ That's precisely the kind of work that may someday lead fMRI evidence of pain into the courtroom.

While the research I have so far described focuses on acute pain, researchers have also used neuroimaging to identify structural changes in the brain associated with chronic pain.⁴⁴ In a 2004 study, Vania Apkarian and colleagues used traditional MRI to identify structural differences in the brains of a group of people with chronic back pain compared to the brains of a group without back pain.⁴⁵ On average, the group with chronic back pain had a lower volume of neocortical grey matter than did the pain-free group.⁴⁶ Moreover,

⁴⁰ Robert C. Coghill et al., *Neural Correlates of Interindividual Differences in the Subjective Experience of Pain*, 100 PROC. NAT'L ACAD. SCI. 8538, 8538 (2003).

⁴¹ *Id.* at 8539–42.

⁴² See M. N. Baliki et al., *Parsing Pain Perception Between Nociceptive Representation and Magnitude Estimation*, 101 J. NEUROPHYSIOLOGY 875, 880 fig.4 (2009).

⁴³ A. Vania Apkarian et al., *Pain and the Brain: Specificity and Plasticity of the Brain in Clinical Chronic Pain*, 152 PAIN (SUPP. 3) S49, S50 (2011); see also Andre Marquand et al., *Quantitative Prediction of Subjective Pain Intensity from Whole-Brain fMRI Data Using Gaussian Processes*, 49 NEUROIMAGE 2178 (2010) (using fMRI brain data and machine learning algorithms to predict the level of pain an individual subject will report from a painful stimulus).

⁴⁴ See Karen D. Davis, *Recent Advances and Future Prospects in Neuroimaging of Acute and Chronic Pain*, 1 FUTURE NEUROLOGY 203 (2006); Arne May, *Chronic Pain May Change the Structure of the Brain*, 137 PAIN 7, 12 (2008).

⁴⁵ A. Vania Apkarian et al., *Chronic Back Pain Is Associated with Decreased Prefrontal and Thalamic Gray Matter Density*, 24 J. NEUROSCIENCE 10410, 10410–11 (2004).

⁴⁶ *Id.* at 10410–13.

the study identified a positive relationship between how long subjects had chronic pain and how much brain volume they lost.⁴⁷

Perhaps most impressive, Apkarian and colleagues were recently able to distinguish a group of subjects with chronic back pain from a group of subjects without chronic back pain by examining how subjects responded to acute pain.⁴⁸ When the groups were exposed to a painful heat stimulus, they had largely similar brain activity under fMRI.⁴⁹ In one particular region of the brain, however, the nucleus accumbens, researchers found dramatically different responses to the cessation of the heat stimulus in back pain sufferers relative to healthy controls.⁵⁰ The researchers claim that this signal “distinguishes the two groups at a very high rate of sensitivity and specificity, implying that this signal can be used as an *objective* marker of chronic pain.”⁵¹

All of these techniques for measuring pain are at an early stage of development, however, and require further elaboration and replication. Even though a number of researchers have patented neuroscientific methods of measuring pain,⁵² and fMRI pain evidence has begun to trickle into pretrial litigation,⁵³ such technologies have numerous obstacles to overcome before they are ready for use in the clinic or the courtroom.

⁴⁷ *Id.*; see also Paul Y. Geha et al., *The Brain in Chronic CRPS Pain: Abnormal Gray-White Matter Interactions in Emotional and Autonomic Regions*, 60 NEURON 570 (2008) (identifying structural differences in the brains of those with chronic regional pain syndrome).

⁴⁸ Marwan N. Baliki et al., *Predicting Value of Pain and Analgesia: Nucleus Accumbens Response to Noxious Stimuli Changes in the Presence of Chronic Pain*, 66 NEURON 149, 149 (2010).

⁴⁹ *Id.* at 151.

⁵⁰ *Id.* at 151–53. The researchers suspect that when chronic pain sufferers are exposed to acute pain, they are momentarily relieved of their chronic pain. Because the cessation of acute pain leads to the return of chronic pain, the reward centers of their brains do not treat the cessation of acute pain as being rewarding in the same way that healthy subjects do. *Id.* at 156–57. Whatever the reason, so long as the difference can reliably be identified, we might someday be able to use fMRI to distinguish those with genuine chronic back pain from those without it.

⁵¹ *Id.* at 157; see also DONNA LLOYD ET AL., HEALTH & SAFETY EXEC., DEVELOPMENT OF FUNCTIONAL MAGNETIC RESONANCE IMAGING (fMRI) TO MEASURE THE CENTRAL NERVOUS SYSTEM RESPONSE TO CHRONIC BACK PAIN (2005), available at <http://www.hse.gov.uk/research/rp/pdf/rr394.pdf>.

⁵² As noted, a patent was granted on a method of using functional magnetic resonance imaging to measure pain more objectively. See '155 Patent, *supra* note 2. Other recent patents related to pain-assessment include: Assembly and Method for Objectively Measuring Pain in a Subject, U.S. Patent No. 6,018,675 (filed May 22, 1998) (issued Jan. 25, 2000), and Method and Apparatus for Objectively Measuring Pain, Pain Treatment and Other Related Techniques, U.S. Patent No. 6,907,280 (filed Mar. 30, 2001) (issued June 14, 2005).

⁵³ See Miller, *supra* note 3.

There are five major obstacles to using these emerging techniques to assess pain. First, most—but not all—brain imaging research examines average features of a group of subjects relative to average features of another group. In order to use brain imaging in forensic contexts, we ideally seek assessments of the experiences of particular people, not groups of people. Second, individual brains vary quite a bit, and it is not yet clear whether we will be able to find distinct biological markers of pain that are good enough for the courtroom. Third, when looking at chronic pain and brain structure, we do not know if chronic pain causes changes in brain structure or whether those with particular brain structures are at greater risk of developing chronic pain. Either way, the brain data might be useful in assessing whether a particular litigant has genuine pain. But our inability to answer such basic questions reminds us that this research is still at an early stage. Fourth, pain is multifaceted, having sensory, affective, and cognitive components.⁵⁴ Pain can be caused by physical trauma or have psychogenic origins.⁵⁵ For the foreseeable future, these brain imaging technologies are unlikely to recognize nuanced variations in pain affect and etiology. Fifth, whatever technology is developed to detect malingered pain may be subject to countermeasures. If people can easily cheat, the technique will not be useful in the courtroom. Techniques that rely on functional brain imaging may be particularly susceptible to countermeasures because we have some control over our own brain activity.⁵⁶ By contrast, tests that examine structural features of the brain will be much harder to fool.

Though these techniques need considerable refinement, remember that we are not very good at assessing pain today. We have poor data on rates of pain malingering,⁵⁷ and we don't know the error rates of pain assessments made by judges, jurors, doctors, and insurance examiners. How can we even say that brain-based methods of pain assessment are worse than the ones we use now if we don't know the error rates of our current assessment techniques? In order for new technologies to inform our clinical and forensic assessments, they need

⁵⁴ See Kolber, *Pain Detection*, *supra* note 1, at 436–37.

⁵⁵ *Id.*

⁵⁶ Compare R. Christopher deCharms et al., *Control over Brain Activation and Pain Learned by Using Real-Time Functional MRI*, 102 PROC. NAT'L ACAD. SCI. 18626, 18626 (2005) (suggesting that, with training, we can develop some control over our acute pain and, hence, the way that our pain appears under fMRI), with Stuart W.G. Derbyshire et al., *Cerebral Activation During Hypnotically Induced and Imagined Pain*, 23 NEUROIMAGE 392 (2004) (suggesting that, absent coaching, merely imagining pain will not appear the same under fMRI as actually experiencing pain).

⁵⁷ See Kolber, *Pain Detection*, *supra* note 1, at 434 n.5 (citing some limited data on malingering).

only provide cost-effective ways of improving our current methods of pain assessment. To do that, they hardly need to be perfect.

B. “Mind Reading” Technologies

New technologies will tell us about other experiences aside from just pain. Later on, I will discuss several such techniques as they relate to particular areas of the law. For example, I will discuss epigenetic evidence of childhood abuse and adversity, electroencephalographic evidence of the anesthetic depth of those being executed, and a variety of methods of assessing emotional distress, including the extreme suffering associated with torture.

There are also other methods of inferring people’s experiential states that could somewhat sensationally be called “mind reading.” If such techniques become successful, they will not enable us to “see” experiences in any literal sense,⁵⁸ but they will enable us to make better inferences about experiences than we could without them. I briefly discuss two of these efforts here.

1. Diagnosing Disorders of Consciousness

In 2006, researchers used fMRI to help assess the mental activity of a woman believed to be in a persistent vegetative state.⁵⁹ When the woman was scanned and asked to imagine engaging in certain actions like playing tennis or navigating rooms in her house, her brain activity looked remarkably similar to the activity in healthy control subjects who imagined engaging in the same activities.⁶⁰ One researcher declared that the study provides “knock-down, drag-out” evidence of the patient’s conscious experiences.⁶¹

Even though the study was not specifically designed to assess subjective experience, it still provides some evidence of the subject’s experiential life. For example, we now have some reason (though certainly not conclusive reason) to believe that the woman has had the experience of hearing the voice

⁵⁸ Cf. Michael S. Pardo & Dennis Patterson, *Philosophical Foundations of Law and Neuroscience*, 2010 U. ILL. L. REV. 1211, 1225–45 (criticizing legal scholars who blur conceptual differences between mind and brain).

⁵⁹ Adrian M. Owen et al., *Detecting Awareness in the Vegetative State*, 313 SCIENCE 1402, 1402 (2006).

⁶⁰ *Id.*

⁶¹ Benedict Carey, *Mental Activity Seen in a Brain Gravely Injured*, N.Y. TIMES, Sept. 8, 2006, at A1 (quoting Nicholas Schiff, a neuroscientist at Weill Cornell Medical College) (internal quotation marks omitted).

of the researchers and has had the experience of imagining herself engaging in activities like playing tennis and walking around her home.

More recently, very similar techniques were used to communicate with a man who, for five years, was believed to be in a vegetative state.⁶² The man was instructed to think about, for example, playing tennis to give a “yes” response and navigating his home to give a “no” response.⁶³ Using this technique, the patient correctly answered simple questions like: “Do you have any brothers?”⁶⁴ The research shows that our ability to identify people’s mental states, including their experiences, is improving dramatically. We can certainly expect that, in the experiential future, imaging techniques will provide increasingly helpful information about the experiences of people who are unable to communicate. Indeed, we might be able to use this very technique to ask minimally conscious patients whether they are in pain.⁶⁵

2. *Lie Detection*

Researchers are also working to develop mind reading technologies of more general application, including technologies that detect deception. One older and not very successful method of detecting deception relies on the polygraph. Polygraphs measure a subject’s pulse, blood pressure, respiration, and skin conductance while the subject is being questioned.⁶⁶ Some think that these physiological responses reflect a subject’s level of stress and anxiety during questioning and that these experiential indicators provide evidence of whether or not the subject is lying.⁶⁷ Interestingly, polygraphs measure

⁶² See Martin M. Monti et al., *Willful Modulation of Brain Activity in Disorders of Consciousness*, 362 *NEW ENG. J. MED.* 579, 580–81 (2010); Benedict Carey, *Trace of Thought Is Found in ‘Vegetative’ Patient*, *N.Y. TIMES*, Feb. 4, 2010, at A1.

⁶³ Monti et al., *supra* note 62, at 581.

⁶⁴ Carey, *supra* note 62.

⁶⁵ While we cannot assume that minimally conscious patients will provide veridical answers, we can never automatically accept anyone else’s pain reports as truthful and accurate. We can nevertheless have good grounds to trust people’s answers. If, for example, the pain description of some cognitively impaired person is indistinguishable from the descriptions of unimpaired people in a Turing-style test, see Graham Oppy & David Dowe, *The Turing Test*, *STANFORD ENCYCLOPEDIA OF PHILOSOPHY* (May 13, 2008), <http://plato.stanford.edu/entries/turing-test>, we will have good reason to trust the impaired person’s pain reports, at least absent good evidence to the contrary.

⁶⁶ Paul Root Wolpe et al., *Emerging Neurotechnologies for Lie-Detection: Promises and Perils*, *AM. J. BIOETHICS*, Mar.–Apr. 2005, at 39, 40.

⁶⁷ Cf. Joseph R. Simpson, *Functional MRI Lie Detection: Too Good to Be True?*, 36 *J. AM. ACAD. PSYCHIATRY & L.* 491, 491 (2008) (noting that polygraphs measure autonomic arousal).

indicators of subjective experience in order to make some further inference about a subject's truthfulness.

Polygraphs are generally considered unreliable at detecting deception.⁶⁸ Most courts are reluctant to admit evidence from polygraph tests,⁶⁹ and the Supreme Court has held that rules of evidence that categorically ban admission of polygraph data do not violate defendants' constitutional rights.⁷⁰ Importantly, however, polygraphs may be reasonably accurate tools to assess *experiences* like stress and anxiety. Most criticism of polygraphs concerns the subsequent inference that stress and anxiety can provide evidence of deception. After all, even accurate assessments of stress and anxiety may be poor predictors of deception.

Researchers are trying to develop more accurate methods of detecting deception using brain imaging.⁷¹ While many in the scientific community doubt that current brain-based methods of lie detection are sufficiently accurate and reliable to use in forensic contexts, that has stopped neither companies from marketing fMRI lie detection services to the public,⁷² nor litigants from trying to introduce such evidence in court.⁷³

Even if current lie detection technology is too inaccurate to rely on in court, we already have good reason to think about future uses of such technology. Given the substantial possibility that we will develop reasonably accurate lie detectors within the next thirty years, our current secretive behaviors have already become harder to hide. A person in the year 2011 who visits a strip club, cheats on his spouse, evades taxes, or murders someone can surely be

⁶⁸ *Cf. id.* ("Estimates of [polygraph] accuracy range from a high of 95 percent to a low of 50 percent, with the best estimate probably around 75 percent sensitivity and 65 percent specificity." (footnote omitted)).

⁶⁹ *United States v. Scheffer*, 523 U.S. 303, 311 (1998) ("Most States maintain *per se* rules excluding polygraph evidence.").

⁷⁰ *Id.* at 305–07.

⁷¹ *See, e.g.*, Julie A. Seaman, *Black Boxes*, 58 EMORY L.J. 427, 430 (2008); Wolpe et al., *supra* note 66, at 39.

⁷² *See, e.g.*, APPLIED FMRI INSTITUTE, *supra* note 4; *Lie Detection*, CEPHOS, <http://www.cephoscorp.com/lie-detection/index.php> (last visited Feb. 20, 2010); NO LIE MRI, <http://noliemri.com> (last visited Oct. 29, 2010).

⁷³ *See United States v. Semrau*, No. 07-10074, 18, 33–39 (W.D. Tenn. May 31, 2010) (Pham, Mag., report and recommendation), available at <http://blogs.law.stanford.edu/lawandbiosciences/files/2010/06/fMRI-Report-and-Recommendation1.pdf> (recommending that allegedly exculpatory fMRI lie detection evidence be excluded in a health care fraud case as insufficiently reliable and lacking sufficient probative value to outweigh its risk of prejudicial effect); *Wilson v. Corestaff Servs. L.P.*, 900 N.Y.S.2d 639, 642 (N.Y. Sup. Ct. 2010) (excluding fMRI lie detection evidence in an employment discrimination case principally on the ground that witness credibility is a jury question).

asked thirty years later about his thoughts and conduct throughout the course of his life. The “look-back” potential of accurate lie detection reduces the probability that our current thoughts and behavior will remain secret in coming decades.

In contrast to polygraphy, brain-based methods of lie detection do not necessarily rely on subjective experience as an intermediary. Some approaches focus on cognitive activity that might indicate deception,⁷⁴ and such cognition is not typically thought of as experiential. Still, if these lie detection techniques prove reliable, they will surely influence our experiential future. Instead of using the crude techniques we have now to determine if, say, a plaintiff is malingering pain, we could ask the plaintiff if he is experiencing pain while assessing whether he is telling the truth.

Importantly, however, even if we do develop good methods of detecting deception, we will still want other methods of measuring people’s experiences that do not rely on self-reports.⁷⁵ For even when we have no reason to lie or exaggerate, we cannot easily convey the nature and intensity of our own experiences. We may be the ultimate authorities about our own experiences, but we can still benefit from technologies that convey the nature of our experiences in more objective terms.

III. THE EXPERIENTIAL FUTURE

Though we should pay a great deal of attention to subjective experience, the law often ignores the experiences of litigants, claimants, prison inmates, and crime victims. In the experiential present, we can blame these failings on the costs and other difficulties of measurement. In the future, however, such measurements will become cheaper and easier. In this Part, I survey just a few of the ways in which subjective experience is important to the law and argue that as measurements of experience become more reliable and cost-effective, the law should do more to take them into account.

⁷⁴ Simpson, *supra* note 67, at 493–94 (noting the hypothesis that additional brain activity in deception conditions may reflect the increased cognitive load required to withhold truthful information); cf. Daniel D. Langleben, *Detection of Deception with fMRI: Are We There Yet?*, 13 LEGAL & CRIMINOLOGICAL PSYCHOL. 1, 4 (2008) (“[T]he model postulating that suppression of the prepotent truth is the only basic mechanism of [lying], needs to be revised.”).

⁷⁵ Moreover, there are arguably criminal contexts in which the Fifth Amendment right against self-incrimination would permit us to measure a defendant’s experiences but not to query his experiences using lie detection techniques.

A. *Tort Contexts*

In Part I, I argued that experiences are so fundamentally important to our lives that they have to count among the things in the world that have value or disvalue. So, theories of tort law, for example, must count bad experiences among the various harms and costs we inflict on each other. Precisely how tort law should consider subjective experience, however, depends on the details of one's preferred theory of torts.

Some scholars justify tort law as a form of corrective justice. When a tortfeasor wrongfully injures his victim, he must compensate the victim for the past injustice.⁷⁶ Among the injuries that require compensation, we must count various forms of pain and suffering because such experiences are highly disvalued. So those who defend a corrective justice account of tort law must measure the pain and suffering of victims in order to ensure that they are justly compensated for their injuries.⁷⁷

Other scholars provide an economic analysis of tort law.⁷⁸ They believe tort law should encourage socially beneficial behavior by forcing people to internalize the risks of harm they create. Since pain and suffering represent kinds of harm, we can use tort law to prohibit behaviors that cause excessive risk of pain and suffering.⁷⁹ Tort law does this by forcing those who create excessive risks of pain and suffering to pay compensation for those harms if they subsequently arise. Thus, those who defend an economic analysis of tort law must take account of experiential harm to give people incentives to only

⁷⁶ Cf. JULES L. COLEMAN, *RISKS AND WRONGS* 329 (1992) ("Corrective justice imposes a duty to repair wrongful losses on those agents responsible for them.").

⁷⁷ There is much disagreement about whether we should only be held responsible for harms to the extent we culpably cause them or whether we should be responsible for harms we cause more generally, even when harms are aggravated by factors beyond our control. See *MORAL LUCK* (Daniel Statman ed., 1993). If we only care about a tortfeasor's antecedent beliefs (or lack thereof) about the harms he risks causing, then the actual experiential harms he causes will be less important. Still, these actual harms will often provide the best evidence of the magnitude of harm that the tortfeasor knowingly risked causing.

⁷⁸ The intellectual heritage of economic analyses of law can be traced back to classical utilitarianism. According to Richard Posner, "Modern economics has given up on trying to measure utility, because such measurement requires information about people's preferences and emotions that seems unobtainable." RICHARD A. POSNER, *FRONTIERS OF LEGAL THEORY* 96 (2001). I claim, of course, that utility will become at least somewhat easier to assess in the experiential future.

⁷⁹ See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 186-87 (1987) ("By awarding damages for 'pain and suffering' . . . tort judges and jurors implicitly recognize . . . that pain and the kind of suffering that ensues when one loses an arm or a leg, is blinded, or suffers some other grievous and permanent (or long-lasting) injury inflict real even though nonpecuniary cost.")

risk causing such harm when doing so is expected to create greater offsetting benefits.

Since no one can perfectly predict the future, those seeking optimal deterrence could argue that we should focus not on *actual* experiential harms but on those that should have been *expected*. For example, suppose a surgeon can perform many more operations if he is willing to increase his rate of error. To decide how quickly to work, we want his decision to reflect the *expected* societal benefits of performing quick operations relative to their *expected* societal costs. Such determinations are made not by assessing the experiences of individual litigants, but by aggregating data about the bad experiences of others who are pertinently like a particular patient. Nevertheless, even in those cases where we care about *expected* bad experiences, our best evidence of what a tortfeasor should have expected will often depend on what his victim *actually* experiences. So a court that seeks optimal deterrence, rather than corrective justice, might still assess the propriety of a surgeon's decision, in part, by considering actual harmful consequences to particular victims.

Many who defend an economic analysis of tort law believe that, in addition to deterrence, tort law can also help efficiently allocate losses. For example, suppose there is an extremely small risk that some widget will injure consumers. We use tort law to force the manufacturer to bear the risk of harm from the widget because the manufacturer can more efficiently spread the cost of product-related injuries. Typically, the price of the widget will implicitly reflect a small premium that every customer pays in order to, in effect, buy insurance against the widget's dangerous malfunction.⁸⁰

While economic analysts of tort law widely agree that tortfeasors should internalize pain-and-suffering costs in order to promote optimal deterrence,⁸¹ there is much disagreement about whether we should permit pain-and-suffering damages at all when considering tort law's insurance function. A number of scholars have argued that rational consumers generally do not seek insurance

⁸⁰ See Alan Schwartz, *Proposals for Products Liability Reform: A Theoretical Synthesis*, 97 YALE L.J. 353, 362 (1988).

⁸¹ See George L. Priest, *The Current Insurance Crisis and Modern Tort Law*, 96 YALE L.J. 1521, 1553 (1987) ("To obtain optimal incentives for injury prevention, a party that has violated a legal standard must pay full losses to the victim, including both pecuniary and non-pecuniary losses."); Robert Cooter, *Towards a Market in Unmatured Tort Claims*, 75 VA. L. REV. 383, 396 (1989) ("[A]n efficient tort system creates incentives for people not to impose pain and suffering upon others.").

for pain and suffering.⁸² For example, while many people buy insurance to help cover the costs of medical treatment, they don't buy insurance against the pain and suffering frequently associated with illness.⁸³ Similarly, though parents no doubt suffer terribly upon the death of a child, they generally do not purchase insurance on the lives of their children.⁸⁴

Other economic analysts have argued that we *should* compensate pain and suffering to further tort law's insurance function.⁸⁵ There is evidence that people do, in fact, insure against risks of pain and suffering and that the absence of formal policy coverage for pain and suffering may be due to market impediments.⁸⁶ Indeed, in two surveys of consumer preferences about the harms caused by dangerous products, the vast majority of subjects expressed demand for pain-and-suffering insurance and had the same or similar demand for pain-and-suffering coverage as they did for monetary insurance.⁸⁷

But even if consumers would not insure against risks of pain and suffering, they are certainly not indifferent to such experiences. Just as people who refrain from buying life insurance still value their lives, people who refrain from buying insurance against pain and suffering still value the absence of those experiences; there is simply insufficient demand to support a market for pain and suffering insurance. If the price of insuring against pain and suffering through the tort system is too high, then we ought not use tort law to insure against pain and suffering. The deterrence and corrective justice rationales for providing pain-and-suffering damages, however, would remain.

⁸² See, e.g., Priest, *supra* note 81, at 1546–47, 1553; Cooter, *supra* note 81, at 392 (“[A] rational person would insure only against that pain and suffering that curtailed earnings.”).

⁸³ See Priest, *supra* note 81, at 1547 (“[T]here is no market for pain and suffering insurance in any society in the world.”).

⁸⁴ *Id.* at 1546; Schwartz, *supra* note 80, at 365.

⁸⁵ See, e.g., Ronen Avraham, *Should Pain-and-Suffering Damages Be Abolished from Tort Law? More Experimental Evidence*, 55 U. TORONTO L.J. 941, 977 (2005) (presenting evidence “that even on pure insurance grounds, the preferable default rule is to provide for some pain-and-suffering damages”); Steven P. Croley & Jon D. Hanson, *The Nonpecuniary Costs of Accidents: Pain-and-Suffering Damages in Tort Law*, 108 HARV. L. REV. 1785 (1995).

⁸⁶ See, e.g., COLEMAN, *supra* note 76, at 421 (suggesting that first party pain-and-suffering insurance may not exist because insurance companies fear fraudulent claims); Jennifer H. Arlen, *Reconsidering Efficient Tort Rules for Personal Injury: The Case of Single Activity Accidents*, 32 WM. & MARY L. REV. 41, 73 n.149 (1990) (noting that insurance companies do sell accidental death and dismemberment policies as well as uninsured motorist coverage, both of which provide compensation for nonpecuniary losses); Avraham, *supra* note 85, at 945–54; cf. Schwartz, *supra* note 80, at 365 (recognizing mixed empirical evidence that consumers seek to insure against pain and suffering and discussing impediments to creating such insurance).

⁸⁷ See Avraham, *supra* note 85, at 962, 966–67, 975.

The precise ways in which we should consider subjective experience, including how much we must individualize our measurements, will vary depending on one's preferred theory of tort law. Whatever theory one prefers, however, positive law is quite clear. Unlike many areas of the law that use only very rough proxies to measure experience, the tort system at least purports to require assessments of the pain and suffering of individual litigants. According to the *Restatement (Second) of Torts*, fact-finders are supposed to estimate fair and reasonable compensation for pain and suffering by noting "such factors as the intensity of the pain or humiliation, its actual or probable duration and the expectable consequences."⁸⁸ Tort law does not rely on a fixed schedule of compensation of, say, \$10,000 for the pain of a broken arm or \$20,000 for the pain of a broken leg. Rather, despite the difficulties of measurement,⁸⁹ as a matter of law, we are supposed to actually measure amounts of pain and suffering. No matter one's theory of tort law, the dominant view of tort compensation is that damages are supposed to return individual plaintiffs to the *status quo ante*, a determination that requires an individualized experiential assessment.⁹⁰

1. *Physical Pain*

Given that at least positive law requires individualized experiential measurements, in the not-so-distant future, we may use some of the neuroimaging techniques described in Part I to help assess physical pain. Such techniques might help to confirm or disconfirm claims that a person's pain is entirely malingered, even if these techniques are still too inaccurate to reveal much more than that. While the reliability of the technology will no doubt be challenged in court, it will be accepted more readily if the medical community uses it for other purposes, like diagnosis. For example, doctors might seek more objective confirmation of a patient's pain before prescribing narcotics for relief. Such widespread use would help bring down the cost of the technology and likely improve its accuracy over time.

⁸⁸ RESTATEMENT (SECOND) OF TORTS § 912 cmt. b (1977).

⁸⁹ *Id.* ("[I]t is impossible to require anything approximating certainty of amount even as to past harm.")

⁹⁰ See 1 MARILYN MINZER ET AL., DAMAGES IN TORT ACTIONS § 3.01 (2010) ("The general purpose of compensatory damages in tort actions is to give the injured party a sum of money which will restore him, as nearly as possible, to the position he would have been in if the wrong had not been committed; in other words, to make the plaintiff whole."); see also Ellen S. Pryor, *Rehabilitating Tort Compensation*, 91 GEO. L.J. 659, 660–61 (2003) (stating that "a dominant theme" among legal academics and practitioners is that tort law is designed to return plaintiffs to the *status quo ante*).

In the more distant future, we may be able to assess *how much* pain a person is experiencing. That is far more difficult than assessing whether a patient who purports to have serious pain is entirely malingering. If we examine two people with brains that are essentially identical, except that one brain shows more activity in regions associated with pain, we might have good grounds to infer that the person whose brain shows greater activity in these regions is also experiencing more pain than the other person. In real life, however, no two people have brains that are so alike. As we compare people with brains that are increasingly diverse, it becomes more difficult to make comparative determinations of their experiences. Nevertheless, as our understanding of brain structure and function improves, we will slowly get better at making such comparisons.⁹¹

a. Incorporating New Technologies into Law

To see how new pain assessment technologies may change the law, we can examine the effects of related technologies in recent history. Technologies to measure drunk driving may be instructive. One way to assess people's experiences is to test their levels of intoxication. If a person scores very high on a blood alcohol test, he is probably experiencing symptoms like dizziness, nausea, or lethargy. Generally speaking, we don't use blood alcohol tests in order to assess experiences. Rather, we use them to measure cognitive impairments that happen to correlate with intoxication-related experiences. Presumably, we don't care if you are dizzy, nauseous, or lethargic while driving, so long as these experiences do not create a danger.⁹²

Even though we do not use intoxication tests to assess subjective experience, such tests nevertheless offer important lessons about the ways that more quantifiable measuring tools may affect our experiential future.⁹³ Early drunk driving statutes set the prohibited level of intoxication using vague legal standards, making it a crime for a person to drive "under the influence of

⁹¹ Indeed, we make such comparisons all the time. Consider some experience from the recent past that caused you physical pain. Suppose you were faced with the prospect of having the experience again. All else being equal, you would likely infer that you would experience pain similar to the pain you felt the last time. You would make such an inference despite the fact that your brain has changed, at least subtly, since you last had the painful experience.

⁹² Even so, the subjective experience of intoxication may still be relevant to drunk driving penalties. Drivers who experience symptoms of intoxication may be more on notice of their cognitive impairments and hence more deserving of punishment than intoxicated drivers who have no unusual bodily sensations to warn them of their impaired condition.

⁹³ This discussion benefited substantially from conversations with Jennifer Mnookin.

intoxicants to such an extent that his ability to drive with safety to himself and others [was] thereby materially impaired.”⁹⁴ In the early days of automobiles, police officers had to rely on hard-to-quantify methods of assessing a driver’s intoxication: the officer would smell the driver’s breath and observe his behavior. In time, police, courts, and legislatures started relying on blood tests and breath tests to assess impairment. Legislatures embraced these new technologies by modifying drunk driving statutes that had relied solely on vague standards of intoxication to also include a much more clearly defined rule. It became illegal to drive with a blood alcohol content above the statutory level.⁹⁵

Thus, the history of drunk driving law may foreshadow an experiential future where the law changes to accommodate new technology. When we shifted from relying on primitive techniques to assess impairment, like smelling alcohol on a driver’s breath, the law adapted accordingly. Instead of defining prohibited conduct with only a vague, hard-to-measure legal standard, the law began to prohibit conduct defined explicitly in terms of the newer, more easily quantifiable technology.⁹⁶ If this lesson applies to new techniques to measure pain and other experiences, these techniques may spark changes in the law to take advantage of the more precise information they make available.

In a world with more precise units of pain, for example, the role of juries might change. Rather than have juries assess damage awards for pain as they do now—by estimating reasonable compensation—we might develop some set of policies to convert amounts of pain that are caused negligently or intentionally into amounts of compensation. Jurors will still have plenty of work to do, but once they find that a tort has occurred and caused a certain level of pain, we may have more uniform methods of calculating an

⁹⁴ *Owens v. Commonwealth*, 136 S.E. 765, 766–67 (Va. 1927); *see also Commonwealth v. Lyseth*, 146 N.E. 18, 18 (Mass. 1925) (making it a crime merely to drive “under the influence of intoxicating liquor”).

⁹⁵ *See, e.g.*, MASS. ANN. LAWS ch. 90, § 24(1)(a)(1) (LexisNexis 2005) (“Whoever . . . operates a motor vehicle with a percentage, by weight, of alcohol in their blood of eight one-hundredths or greater . . . shall be punished . . .”).

⁹⁶ *See, e.g.*, GA. CODE ANN. § 40-6-391(a) (2007) (“A person shall not drive or be in actual physical control of any moving vehicle while . . . [t]he person’s alcohol concentration is 0.08 grams or more . . .”). Of course, breath tests do not perfectly measure impairment. Not everyone who drives with a particular blood alcohol level is impaired to the same degree. Current breath tests may well be replaced by some better technology in the future.

appropriate level of pain compensation that depends quite directly on the technology we use to measure pain.⁹⁷

b. Novel Legal Questions About Pain Compensation

If we could better measure pain, we might seek standardized units in which to describe it.⁹⁸ This is no easy task, as pain has a variety of sensory components (for example, duration, texture, and intensity) and a variety of associated emotions.⁹⁹ Since we are currently unable to disentangle these aspects of pain, we presumably lump them all together and let jurors do their best to assign a total dollar value. If we were better able to measure pain, however, we might seek alternative methods of pricing pain or pain components.

We might even seek to disentangle the amount of pain a person feels from his ability to tolerate it. Perhaps we will someday distinguish between a person who is feeling a lot of pain but is good at tolerating it from another person who is, in some sense, feeling the same amount of pain but tolerating it poorly. If we could make such a distinction (and I make no claim that we can or should), the law would have to determine precisely what sorts of experiences should be compensated and whether pain tolerance is relevant. Currently, however, we are so dependent on rough proxies for pain that the law does not address these more fine-grained questions about how various aspects of pain contribute to the total compensation litigants should receive.

The burgeoning literature on hedonic psychology points to other features of pain we might need to address in the experiential future. Hedonic psychologists study how we can increase happiness and reduce pain and

⁹⁷ There are two important caveats here. First, litigants may have constitutional rights to jury trials that are potentially implicated by more uniform methods of calculating damages. Second, uniform methods of converting amounts of pain to dollars risk ignoring another important aspect of subjective experience. Namely, plaintiffs vary in the relative value they assign to dollars. Corrective justice involves both injury and compensation. If we seek to provide accurate compensation, we must consider the subjective value of both injury and award. *Cf.* Daphna Lewinsohn-Zamir, *Identifying Intense Preferences*, 94 CORNELL L. REV. 1391, 1394 (2009) (arguing that entitlement allocations, to be fair or efficient, must take account of the relative intensity of preferences for the entitlements).

⁹⁸ Law student Evan Fisher, commenting on an earlier draft of this Article, suggested that I call these units of pain “Kolbers.” According to Fisher, “Many professors of law knowingly or unknowingly make their names synonymous with anguish, but few have such a legitimate opportunity.” E-mail from T. Evan Fisher to author (Sept. 20, 2010, 12:11 CET) (on file with author).

⁹⁹ Kolber, *Pain Detection*, *supra* note 1, at 436–37.

suffering.¹⁰⁰ They have found, for example, that our evaluations of a painful episode depend especially on the peak intensity of pain during the episode and the amount of pain felt at the end of the episode. So, patients will remember a colonoscopy as being less painful if the colonoscopy lasts *longer* than usual, provided that the pain at the end of the procedure is comparatively lower.¹⁰¹ Patients will even be more likely to return for follow-up colonoscopies in future years when the longer procedure is used.¹⁰²

Based on this evidence, we might think that public health advocates should encourage doctors to use the longer procedure. But notice that the longer procedure actually causes more pain in total. So the public policy recommendation forces us to decide whose pain counts: Is it the pain of the person undergoing the procedure? Or, is it the remembered pain of the person who, years later, decides whether to schedule a follow-up colonoscopy?¹⁰³

In the experiential future, this broad public policy question may be raised as to individual litigants. A defendant who negligently exposed his former employee to carcinogenic substances may be liable to pay for the pain and suffering associated with future colonoscopies. Do we consider the total amount of pain experienced during the procedure, or do we focus on the amount of pain the plaintiff-employee will remember afterwards? A precise, detailed calculation of his damages requires us to address the difficult value questions raised by work in hedonic psychology.¹⁰⁴ In our primitive experiential present, however, our estimates of pain and suffering are so rough that these more detailed issues are usually ignored.

c. *Measuring Baselines*

Whenever we assess the magnitude of an injury, we must consider not only a person's condition at some post-injury endpoint—for example, pain at the doctor's office or when in court—but must also examine his baseline

¹⁰⁰ See, e.g., Eich et al., *supra* note 33, at 160; Samuel R. Bagenstos & Margo Schlanger, *Hedonic Damages, Hedonic Adaptation, and Disability*, 60 VAND. L. REV. 745, 760 (2007).

¹⁰¹ Donald A. Redelmeier et al., *Memories of Colonoscopy: A Randomized Trial*, 104 PAIN 187, 189–93 (2003).

¹⁰² *Id.*

¹⁰³ See Peter H. Huang, *Should Law & Policy Favor Our Experiencing or Remembering Selves? Insights from Happiness Studies & Neuroscience* (Sept. 18, 2010) (unpublished manuscript) (on file with author).

¹⁰⁴ See Mark Kelman, *Hedonic Psychology and the Ambiguities of "Welfare,"* 33 PHIL. & PUB. AFF. 391, 398–411 (2005).

condition.¹⁰⁵ If a plaintiff has 20 units of pain after a leg injury, his harm is 20 units in magnitude, provided that he had no pain in his baseline condition. But if the plaintiff already had 5 units of pain from a preexisting chronic condition and has a total of 20 units of pain after the injury, then the injury caused him 15 units of pain, representing the amount of harm caused by the defendant's negligence.¹⁰⁶

The fact that pain assessment requires at least two measurements makes such assessments especially difficult. Even with the best possible technology to measure people's experiential states after some injury, we cannot accurately assess the amount of harm *caused* by that injury unless we know the injured person's baseline condition. This measurement challenge is not insurmountable, however. Presumably, we simply assume that, absent evidence to the contrary, injured people had normal, ordinary baseline conditions.

We face the same baseline problem today. If you injure my leg, we will generally assume that my leg was pain-free prior to the injury, absent evidence to the contrary. Such assumptions may be less accurate for certain kinds of experiences, like anxiety and panic, if people vary to a greater degree in their baseline conditions. Nevertheless, even if we can only improve our post-injury assessments and remain stuck with our poor baseline assessments, we would still be better off in the experiential future, since now we must engage in very rough estimates of both baseline and post-injury conditions. And who knows what the future will bring? Perhaps someday we will all have regular medical check-ups that gather data about our baseline conditions. What our experiential future will be like depends largely on how far into the future we care to look.

¹⁰⁵ See, e.g., 1 JOEL FEINBERG, *HARM TO OTHERS* 33–36, 204 (1984) (describing harm as a setback to interests); see also Adam J. Kolber, *The Comparative Nature of Punishment*, 89 B.U. L. REV. 1565 (2009) [hereinafter Kolber, *Comparative Nature*] (arguing that the severity of punishment must also be measured as a setback from a baseline position); *id.* at 1579–81 (challenging Seana Shiffrin's noncomparative conception of harm).

¹⁰⁶ The system of measuring pain I describe is greatly oversimplified for ease of explication. Presumably, forensic measurement of the pain of an injury would look at levels of pain over periods of time, including expected future levels of pain. In addition, there is an important debate about whether compensation baselines should be determined using a historical baseline (the plaintiff's condition just before the injury) or a counterfactual baseline (the condition the plaintiff would have been in but for the defendant's tortious conduct). See JOEL FEINBERG, *Wrongful Life and the Counterfactual Element in Harming*, in *FREEDOM AND FULFILLMENT* 3, 7 (1992).

d. Administrative Compensation Schemes

While the tort system generally purports to assess individualized levels of physical pain, the same is not true for worker's compensation, disability, and other administrative schemes that typically do not compensate claimants for pain as such.¹⁰⁷ Under many compensation schemes, pain serves merely as evidence of some other condition that the compensation scheme does remedy.¹⁰⁸ For example, worker's compensation schemes typically provide compensation for a particular injury without considering the varied amounts of distress the injury causes.¹⁰⁹ These schemes often provide a certain number of weeks' pay for a particular injury described at a fairly abstract, impersonal level.¹¹⁰

Compensation schemes with schedules of payment likely save on transaction costs. It is expensive to examine patients and determine their pain and suffering. In the experiential future, however, pain and suffering will be cheaper and easier to measure. We will then have greater reason for these schemes to consider subjective experience than they have now. For example, if we ever develop a good system to measure pain in units, schedules of payments for pain could be calibrated in terms of those units.

As noted earlier, however, there is much debate about whether people want to pay for pain-and-suffering insurance.¹¹¹ If people really don't want to insure against pain and suffering and if these compensation schemes are merely meant to provide insurance, such compensation schemes need not waste money on expensive individualized assessments of pain and suffering. Even so, individualized assessments of pain and suffering would still be desirable in some cases as evidence of other physical injuries for which people do seek compensation through insurance.

¹⁰⁷ See Ellen Smith Pryor, *Compensation and the Ineradicable Problems of Pain*, 59 GEO. WASH. L. REV. 239, 257–304 (1991) (discussing the relevance of pain to Social Security and worker's compensation programs). Under the Social Security Disability Insurance program, pain can be a disabling condition. See, e.g., *Chambliss v. Massanari*, 269 F.3d 520, 522 (5th Cir. 2001) (“[P]ain must be constant, unremitting, and wholly unresponsive to therapeutic treatment to be disabling.”); *Smith v. Schweiker*, 671 F.2d 789, 793 (3d Cir. 1982) (stating that “pain in itself may be a disabling condition” and that, in any event, it “is a symptom of a medical impairment”).

¹⁰⁸ See Pryor, *supra* note 107, at 240–41.

¹⁰⁹ *Id.*

¹¹⁰ See, e.g., Federal Employees' Compensation Act, 5 U.S.C. § 8107(c) (2006) (providing pricing schedule for federal employee compensation, including 160 weeks' compensation for loss of an eye and 205 weeks' compensation for loss of a foot).

¹¹¹ See *supra* notes 81–87 and accompanying text.

e. Pain Relief and False Advertising

While I have principally focused on how new technologies will inform pain assessment in individual cases, our improved understanding of pain may influence public sentiment about certain broader policy issues. Consider the tort of false advertising for products that promote pain relief through a placebo effect.¹¹² In *FTC v. QT, Inc.*, for example, the Federal Trade Commission took action against the company that marketed “Q-Ray Ionized Bracelets” in a series of infamous television infomercials.¹¹³ The court held that QT engaged in false advertising by making deceptive or misleading claims that these “ionized” bracelets relieve pain.¹¹⁴

There are abundant reasons to dislike QT’s marketing claims. As one aspect of the case, however, the court found false QT’s claim that medical research has shown that the bracelets relieve pain.¹¹⁵ The court relied on experts who said that, in order to establish the bracelets’ ability to relieve pain, the bracelets had to perform better than a placebo bracelet in a blind research study.¹¹⁶ Yet, the bracelets may have relieved pain, even if they were no better than placebos. And QT claimed only to reduce pain, not to reduce pain *better* than a placebo.¹¹⁷

While some medications treat symptoms through pharmacological pathways, placebos relieve pain principally by generating the expectation that they relieve pain.¹¹⁸ Ironically, it is quite possible that the more hyperbolic QT’s claims were, the better the bracelets could relieve pain by reinforcing expectations of pain relief. If the company did anything to relieve pain, it did so by using infomercials to generate expectations of relief, not by “ionization” or other hocus-pocus.

¹¹² I discuss placebo effects in more detail in Adam J. Kolber, *A Limited Defense of Clinical Placebo Deception*, 26 YALE L. & POL’Y REV. 75 (2007) [hereinafter Kolber, *Placebo Deception*].

¹¹³ 448 F. Supp. 2d 908, 912, 917–18 (N.D. Ill. 2006).

¹¹⁴ *Id.* at 960–67.

¹¹⁵ *Id.* at 938.

¹¹⁶ *Id.* at 937–44. The court also noted that when “a product’s effectiveness arises solely as a result of the placebo effect, a representation that the product is effective constitutes a ‘false advertisement’ even though some consumers may experience positive results.” *Id.* at 964 (quoting *FTC v. Pantron I Corp.*, 33 F.3d 1088, 1100 (9th Cir. 1994)) (internal quotation marks omitted).

¹¹⁷ *Id.* at 912.

¹¹⁸ Ginger A. Hoffman et al., *Pain and the Placebo: What We Have Learned*, 48 PERSP. BIOLOGY & MED. 248, 257–58 (2005); Donald D. Price & Howard L. Fields, *The Contribution of Desire and Expectation to Placebo Analgesia: Implications for New Research Strategies*, in THE PLACEBO EFFECT: AN INTERDISCIPLINARY EXPLORATION 117, 117 (Anne Harrington ed., 1997).

Though many people resist the idea that placebos generate real pain relief, neuroscientists have bolstered belief in the power of placebos in the face of recent attacks.¹¹⁹ They have enabled us to better understand and visualize the mechanisms of placebo pain relief. For example, neuroscientists have used functional brain imaging to show that placebo treatments reduce activation in regions of the brain associated with pain, suggesting that placebo effects are not merely due to biases in the ways that patients report their experiences to investigators.¹²⁰ When subjects are exposed to a painful stimulus and given a pharmacologically inactive cream (which they are deceptively told relieves pain), they show brain activity similar to that of subjects receiving pharmacologically active analgesics.¹²¹ While we have long known about the placebo effect prior to recent advances in brain imaging, the neuroscience research has helped make placebo effects more palpable to those who are skeptical of hard-to-assess claims of pain relief. If we come to better appreciate the power of placebo pain relief, we may become less skeptical of placebo pain relief advertising claims.

In *QT*, the court noted that “an advertisement will be found misleading and deceptive if,” among other things, it “is likely to mislead consumers acting reasonably under the circumstances.”¹²² Quite possibly, reasonable consumers are likely to be misled by the claim that a product is an effective pain reliever when it is no better than a placebo. So I am not criticizing the court’s interpretation of the law. There may also be good policy reasons to prohibit companies from marketing products that perform no better than placebos, particularly if the marketing conveys the impression that a product works *better* than a placebo.

¹¹⁹ See Asbjörn Hróbjartsson & Peter C. Gøtzsche, *Is the Placebo Powerless? An Analysis of Clinical Trials Comparing Placebo with No Treatment*, 344 NEW ENG. J. MED. 1594, 1595–99 (2001) (“We found little evidence in general that placebos had powerful clinical effects.”); see also Gunver S. Kienle & Helmut Kiene, *The Powerful Placebo Effect: Fact or Fiction?*, 50 J. CLINICAL EPIDEMIOLOGY 1311, 1316 (1997) (“[W]e have not found any reliable demonstration of the existence of placebo effects.”).

¹²⁰ Wager et al., *supra* note 38, at 1162; see also Fabrizio Benedetti et al., *Conscious Expectation and Unconscious Conditioning in Analgesic, Motor, and Hormonal Placebo/Nocebo Responses*, 23 J. NEUROSCIENCE 4315, 4315 (2003); Predrag Petrovic et al., *Placebo and Opioid Analgesia—Imaging a Shared Neuronal Network*, 295 SCIENCE 1737, 1737 (2002); Tor D. Wager, *The Neural Bases of Placebo Effects in Anticipation and Pain*, 3 SEMINARS PAIN MED. 22, 29 (2005).

¹²¹ Wager et al., *supra* note 38, at 1162–63.

¹²² *QT*, 448 F. Supp. 2d at 957 (citing *FTC v. Pantron I Corp.*, 33 F.3d 1088, 1095 (9th Cir. 1994), and *Kraft, Inc. v. FTC*, 970 F.2d 311, 314 (7th Cir. 1992)).

My point is simply that, even if QT's claims were misleading and entitled plaintiffs to relief, QT's claims were probably not, strictly speaking, false.¹²³ As recent neuroscience research confirms, placebos can relieve pain. A company that markets a placebo by advertising its ability to relieve pain is not making a false claim, assuming that the particular placebo has the advertised effect relative to using no treatment at all. Our better understanding of the subjective experience of pain relief reminds us that, even if good policy reasons dictate caution when exploiting placebo effects, courts should recognize that placebo relief is genuine relief.¹²⁴

2. *Emotional Distress*

For a long time, psychologists, psychiatrists, and social workers have provided expert testimony about litigants' emotional distress, including their

¹²³ In fact, there had been a double-blind, placebo-controlled study of the bracelets conducted by researchers at the Mayo Clinic. Robert L. Bratton et al., *Effect of "Ionized" Wrist Bracelets on Musculoskeletal Pain: A Randomized, Double-Blind, Placebo-Controlled Trial*, 77 MAYO CLINIC PROC. 1164 (2002). You may be surprised to learn that the researchers found "significant improvement in pain scores" in those who wore Q-Ray bracelets. *Id.* at 1164, 1166. You probably will not be surprised to learn that they also found significant improvement in pain scores in the group that wore ordinary bracelets that were not "ionized." *Id.* at 1164. As we would expect, the pain relief from the ionized bracelets and the ordinary bracelets was about the same. *Id.*

Still, the advertising for Q-Ray bracelets focused on the claim that the bracelets relieve pain, and there is good reason to believe that they did just that, at least for many purchasers. *See id.* The matter is not entirely clear, however, because the Mayo Clinic did not even test the right group to establish whether the bracelets relieve pain. *Id.* at 1167–68. To make that comparison, the team should have tested a group of subjects that wore Q-Ray bracelets against a group that wore no bracelets at all. *See id.* at 1167. Then we could see whether the bracelets relieved pain through a placebo effect or whether subjects just got better over time.

¹²⁴ In 2006, the American Medical Association (AMA), the country's largest and most established professional body of doctors, banned doctors from using placebos deceptively, *see* COUNCIL ON ETHICAL & JUDICIAL AFFAIRS, AM. MED. ASS'N, CEJA REPORT 2-I-06, PLACEBO USE IN CLINICAL PRACTICE (2006). The AMA banned placebo deception even though doctors administer placebos, in one form or another, quite frequently. Rachel Sherman & John Hickner, *Academic Physicians Use Placebos in Clinical Practice and Believe in the Mind–Body Connection*, 23 J. GEN. INTERNAL MED. 7, 7 (2008); Jon C. Tilburt et al., *Prescribing "Placebo Treatments": Results of National Survey of US Internists and Rheumatologists*, 337 BRIT. MED. J. 1097, 1098–99 (2008).

By categorically banning deceptive use of placebos, it is now deemed unethical for a doctor to recommend a QT bracelet or other placebo intervention to a patient, without disclosing—and thereby eviscerating or at least weakening—the placebo nature of the product. The ban forces us to weigh interests in autonomy and doctor–patient trust against the beneficial pain-relieving effects of placebos. *See* Kolber, *Placebo Deception*, *supra* note 112, at 114–16, 125–27. Yet, we cannot balance such interests appropriately unless we have good measures of placebo pain relief under a variety of conditions—something we can hope for in our experiential future. While there may be good policy reasons for the court's decision in *QT* and for the AMA's prohibition, we should be wary that the prohibition subtly reflects perceptions that placebo relief is somehow inferior to other forms of pain relief. For an in-depth discussion of why we ought not categorically prohibit use of placebo deception, *see id.* at 114–27.

experiences of panic, depression, and anxiety. One way these experts make assessments of subjective experience is by obtaining litigants' self-reports. But in forensic contexts, litigants have incentives to lie, and we are disinclined to trust their claims. While mental health professionals have some methods of detecting malingering,¹²⁵ in the experiential future, they will have far better methods of diagnosing psychiatric symptoms and estimating their severity, even when subjects have incentives to lie.

a. Damages for "Suffering"

To be sure, we are just beginning to develop new technologies to assess emotional distress and related phenomena.¹²⁶ Researchers are working hard to identify brain structures or patterns of brain activity associated with particular emotions and psychiatric disorders.¹²⁷ Studies looking at brain structure have found that depression and chronic stress are associated with smaller hippocampi¹²⁸ and that currently depressed subjects have higher amygdala volumes than healthy subjects.¹²⁹ Those with post-traumatic stress disorder, social anxiety disorder, and specific phobias show hyperactivity in the

¹²⁵ See generally Michael Sharpe, *Distinguishing Malingering from Psychiatric Disorders*, in MALINGERING AND ILLNESS DECEPTION 156 (Peter W. Halligan et al. eds., 2003) (describing methods of detecting feigned psychiatric disorders).

¹²⁶ Not all advances in our ability to assess the experiences of others will come from neuroscientists. We know, for example, that people with naturally red hair are more likely to be anxious about visiting the dentist. Catherine J. Binkley et al., *Genetic Variations Associated with Red Hair Color and Fear of Dental Pain, Anxiety Regarding Dental Care and Avoidance of Dental Care*, 140 J. AM. DENTAL ASS'N 896, 897 (2009). A high percentage of people with naturally red hair (almost all, in one study) have a gene variant that makes them less responsive to the local anesthetics used by dentists. *Id.* at 897, 900. Since redheads have been undermedicated on previous occasions, they are correspondingly more anxious about visits to the dentist. *Id.* at 904. The finding led a group of researchers to recommend to dentists that they be especially sensitive to the management of dental pain and anxiety in those with red hair. *Id.*

¹²⁷ See, e.g., Lisa Feldman Barrett et al., *The Experience of Emotion*, 58 ANN. REV. PSYCHOL. 373 (2007); Ethan Kross et al., *Coping with Emotions Past: The Neural Bases of Regulating Affect Associated with Negative Autobiographical Memories*, 65 BIOLOGICAL PSYCHIATRY 361 (2009); Tor D. Wager et al., *Prefrontal-Subcortical Pathways Mediating Successful Emotion Regulation*, 59 NEURON 1037 (2008); Jamil Zaki et al., *Different Circuits for Different Pain: Patterns of Functional Connectivity Reveal Distinct Networks for Processing Pain in Self and Others*, 2 SOC. NEUROSCIENCE 276 (2007).

¹²⁸ See Sonia J. Lupien et al., *Stress Hormones and Human Memory Function Across the Lifespan*, 30 PSYCHONEUROENDOCRINOLOGY 225, 238 (2005) ("[C]hronic exposure to elevated levels of [hormones released when a person experiences stress] is related to both memory impairments and a smaller volume of the hippocampus."); Yvette I. Sheline et al., *Depression Duration but Not Age Predicts Hippocampal Volume Loss in Medically Healthy Women with Recurrent Major Depression*, 19 J. NEUROSCIENCE 5034, 5039 (1999) (reporting "smaller hippocampal volumes in subjects with a history of depression").

¹²⁹ Philip van Eijndhoven et al., *Amygdala Volume Marks the Acute State in the Early Course of Depression*, 65 BIOLOGICAL PSYCHIATRY 812, 815–16 (2009).

amygdala and insula under functional brain imaging.¹³⁰ Those with phobias have atypical brain metabolism and patterns of electrical activity,¹³¹ and those with unipolar depression show different brain activity than those with bipolar depression.¹³² Many similar studies that investigate the biology of human experience have been undertaken or are underway.¹³³

When plaintiffs suffer as part of some broader tortious injury, they are frequently entitled to recover damages for their emotional distress. So technologies that confirm or disconfirm emotional distress or indicate something about the intensity of a person's distress will have important applications in the tort context, just like technologies that reveal physical pain.

Emotional harm can also constitute the core of a tortious injury. Under some circumstances, plaintiffs can sue for intentional or negligent inflictions of emotional distress. But though tort law generally seeks to compensate people for their physical and emotional pain, a number of doctrines limit stand-alone claims of emotional distress. New technologies should eventually spark revisions to ease these limitations.¹³⁴ The next two sections explain why legal doctrine should change as our measurements of emotional distress improve.

¹³⁰ Amit Etkin & Tor D. Wager, *Functional Neuroimaging of Anxiety: A Meta-Analysis of Emotional Processing in PTSD, Social Anxiety Disorder, and Specific Phobia*, 164 AM. J. PSYCHIATRY 1476, 1482, 1485 (2007).

¹³¹ Richard J. Davidson et al., *While a Phobic Waits: Regional Brain Electrical and Autonomic Activity in Social Phobics During Anticipation of Public Speaking*, 47 BIOLOGICAL PSYCHIATRY 85, 85 (2000) (“[Social phobics showed a marked increase in right-sided activation in the anterior temporal and lateral prefrontal scalp regions.”).

¹³² See Janis Kelly, *ICBD 2009: fMRI Differentiates Bipolar from Major Depression*, MEDSCAPE (July 1, 2009), <http://www.medscape.com/viewarticle/705207>.

¹³³ See, e.g., Carmen Andreescu et al., *fMRI Activation in Late-Life Anxious Depression: A Potential Biomarker*, 24 INT'L J. GERIATRIC PSYCHIATRY 820 (2009) (examining event-related fMRI data to identify the neuroanatomical substrate of late-life anxious depression); Mary L. Phillips & Eduard Vieta, *Identifying Functional Neuroimaging Biomarkers of Bipolar Disorder: Toward DSM-V*, 33 SCHIZOPHRENIA BULL. 893 (2007) (discussing the search for neuroimaging evidence to distinguish unipolar and bipolar depression); Heather L. Urry et al., *Making a Life Worth Living: Neural Correlates of Well-Being*, 15 PSYCHOL. SCI. 367, 368–69 (2004) (describing electroencephalographic correlates of self-reported well-being and positive affect); Thomas Frank, *Anxiety-Detecting Machines Could Spot Terrorists*, USA TODAY, Sept. 19, 2008, at 2A (describing the Department of Homeland Security's efforts to develop a machine that uses “sharp swings in body temperature, pulse and breathing [to] signal the kind of anxiety exuded by a would-be terrorist or criminal”).

¹³⁴ See Betsy J. Grey, *Neuroscience, Emotional Harm, and Emotional Distress Tort Claims*, AM. J. BIOETHICS, Sept. 2007, at 65, 66; Stacey A. Tovino, *Functional Neuroimaging and the Law: Trends and Directions for Future Scholarship*, AM. J. BIOETHICS, Sept. 2007, at 44, 45–46; A.M. Viens, *The Use of Functional Neuroimaging Technology in the Assessment of Loss and Damages in Tort Law*, AM. J. BIOETHICS, Sept. 2007, at 63, 65.

b. Intentional Infliction of Emotional Distress

The tort of intentional infliction of emotional distress limits recovery to those cases where “extreme and outrageous conduct intentionally or recklessly causes severe emotional distress.”¹³⁵ The bar to recovery is high. As a comment to the *Restatement (Second) of Torts* notes: “Liability has been found only where the conduct has been so outrageous in character, and so extreme in degree, as to go beyond all possible bounds of decency, and to be regarded as atrocious, and utterly intolerable in a civilized community.”¹³⁶

There are two principal reasons for limiting recovery for intentional inflictions of distress to only the most egregious violations. First, the conduct must be “extreme and outrageous” and cause “severe” distress because not all intentional inflictions of distress should generate tort liability.¹³⁷ Making someone the butt of a mild joke may intentionally inflict subjective distress, but the distress may not be severe enough to warrant state intrusion into our daily lives. In such cases, we limit the scope of the tort, not because we cannot measure subjective distress, but rather because we *can* measure it well enough to decide that the conduct at issue is too minor to warrant state intervention.

The second principal reason for limiting the scope of the tort, however, is related to measurement difficulties. Courts raise barriers to recovery for intentional infliction of distress partly out of fear of bogus claims. An early case to grant recovery for intentional infliction of emotional distress, for example, warned about “trumped-up claims” that rely only on “subjective symptoms”:

On the whole we see no good reason why a wrongful invasion of a legal right, causing an injury to the body or mind which reputable physicians recognize and can trace with reasonable certainty to the act as its true cause, should not give rise to a right of action against the wrongdoer, although there was no visible hurt at the time of the act complained of. Of course, there is always a possibility of trumped-up claims if there may be a recovery when no evidence of

¹³⁵ RESTATEMENT (SECOND) OF TORTS § 46 (1965); see also John J. Kircher, *The Four Faces of Tort Law: Liability for Emotional Harm*, 90 MARQ. L. REV. 789, 798–806 (2007) (describing the elements of an intentional infliction of emotional distress claim).

¹³⁶ RESTATEMENT (SECOND) OF TORTS § 46 cmt. d (1965).

¹³⁷ See Calvert Magruder, *Mental and Emotional Disturbance in the Law of Torts*, 49 HARV. L. REV. 1033, 1035 (1936) (“Against a large part of the frictions and irritations and clashing of temperaments incident to participation in a community life, a certain toughening of the mental hide is a better protection than the law could ever be.”).

bodily injury can be discovered immediately. However, the matter is in the control of the trial courts, and verdicts for plaintiffs for any substantial amounts, when based chiefly on proof of subjective symptoms, will not usually be allowed to stand.¹³⁸

While courts are clearly concerned about bogus claims in intentional infliction of distress cases, those fears should be reduced as we get better at identifying and assessing genuine cases of emotional distress. As claims of emotional distress become harder to fake or exaggerate, courts have less reason to demand the more readily observable proxies for distress that they frequently require today.

c. *Negligent Infliction of Emotional Distress*

Evidentiary barriers to recovery are even clearer in cases of negligent infliction of emotional distress. As Betsy Grey has argued, such barriers may be particularly apt to fall in the face of better technology.¹³⁹ Courts have only recently permitted recovery for negligent infliction of emotional distress, as they feared, among other things, that recognizing the action would lead to frivolous or fraudulent lawsuits.¹⁴⁰ Indeed, according to the *Restatement (Second) of Torts*, one can only recover damages for the negligent infliction of emotional distress when the distress is accompanied by some more concrete physical manifestation of harm,¹⁴¹ like nausea, vomiting, or, in some jurisdictions, nightmares.¹⁴²

¹³⁸ *Johnson v. Sampson*, 208 N.W. 814, 816 (Minn. 1926); *see also Harris v. Jones*, 380 A.2d 611, 613, 617 (Md. 1977) (recognizing increasing acceptance of the tort of intentional infliction of emotional distress but finding evidence of plaintiff's distress "vague and weak at best").

¹³⁹ Grey, *supra* note 134.

¹⁴⁰ *See Consol. Rail Corp. v. Gottshall*, 512 U.S. 532, 545 (1994) ("Because the etiology of emotional disturbance is usually not as readily apparent as that of a broken bone following an automobile accident, courts have been concerned . . . that recognition of a cause of action for [emotional] injury when not related to any physical trauma may inundate judicial resources with a flood of relatively trivial claims, many of which may be imagined or falsified" (first and second alterations in original) (quoting *Maloney v. Conroy*, 545 A.2d 1059, 1061 (Conn. 1988)) (internal quotation marks omitted)); W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 54, at 360–61 (W. Page Keeton ed., 5th ed. 1984) (noting that courts limit recovery for emotional distress in part because of "the danger that claims of mental harm will be falsified or imagined"); Robert J. Rhee, *A Principled Solution for Negligent Infliction of Emotional Distress Claims*, 36 ARIZ. ST. L.J. 805, 808 (2004) (noting that the difficulty of proving mental injuries makes courts wary of false claims).

¹⁴¹ RESTATEMENT (SECOND) OF TORTS §§ 313(1), 436A (1965); Kircher, *supra* note 135, at 809.

¹⁴² Grey, *supra* note 134.

As with intentional inflictions of distress, we limit recovery for negligent inflictions for multiple reasons. We require physical manifestations of emotional harm, in part, to limit recovery to the most egregious instances of negligent conduct. The coercive machinery of the state should only be used to prohibit especially negligent inflictions of distress. The presence of a physical manifestation of distress, however, can serve only as a rough proxy for the severity of the distress. A person contemplating suicide may have no physical manifestation of his distress, even if his distress is far more severe than the distress of someone else who happens to have modest physical manifestations. In the experiential future, we will be hard-pressed to defend physical manifestation requirements.

We will also be hard-pressed to defend other limits on recovery for negligent infliction of distress, including requirements in some jurisdictions that plaintiffs suffer concurrent physical impact or be located within a zone of danger.¹⁴³ Physical injury and zone-of-danger requirements presumably demonstrate that a plaintiff really did suffer from an intense emotional ordeal. Nevertheless, emotional suffering can be quite severe even absent physical injury or proximity to injury. And some emotional suffering can be relatively modest, even if the suffering was generated in a zone of danger or associated with physical impact. From a theoretical perspective, there are no good grounds for these requirements unless they are understood as inaccurate proxies for the measurement of the intensity of a plaintiff's emotional distress. In the experiential future, such proxies should become less and less important.

B. Punishment Contexts

As noted, black letter tort law requires us to try to measure the experiences of particular people. Though we often rely on rough proxies for these experiences, at least the law recognizes their importance to the assessment of damages. By contrast, even though the harms of crime and punishment consist largely of bad experiences, our assessments of blameworthiness and punishment severity in criminal law are far less sensitive to subjective experience than are our assessments of tort damages. Most criminal statutes make no explicit reference to the causation of bad experiences. There are some statutes that are violated when, for example, a defendant causes

¹⁴³ Kircher, *supra* note 135, at 810, 815–16.

“substantial pain,”¹⁴⁴ but such statutes are more the exception than the rule. Victim impact gets some attention at sentencing, but only modest investigatory resources are spent quantifying victim injuries.¹⁴⁵ Judges pay even less attention to the different ways in which *offenders* experience punishment.¹⁴⁶ I will argue that, according to our prevailing justifications of punishment, we are usually required to take subjective experience into account when making determinations both of blameworthiness and of punishment severity.

1. Blameworthiness

There are two principal ways in which better monitoring of subjective experience can improve determinations of blameworthiness. I will first discuss how assessments of subjective experience can provide evidence about whether or not a crime occurred and, hence, whether anyone is blameworthy at all. Then, I will discuss cases in which offenders are clearly blameworthy to some extent and how new technologies may tell us something about how blameworthy they are.

a. Whether a Crime Occurred

I have already noted how breath tests can help reveal whether a driver has committed the crime of driving under the influence.¹⁴⁷ Pain assessment technologies can also help reveal whether a crime has been committed. If Smith claims that Jones deliberately hit Smith’s foot with a hammer, neuroscience evidence that Smith is not in pain immediately after the alleged battery could serve as some evidence that no battery occurred. Other technologies may identify much longer lasting biological markers of experiences, like childhood physical or sexual abuse, and could be useful not only in criminal contexts but also in tort and child custody cases.

¹⁴⁴ For example, under New York law, a person commits assault in the third degree when he intentionally or recklessly causes “physical injury to another person,” N.Y. PENAL LAW § 120.00 (McKinney 2010), where physical injury is defined as “impairment of physical condition or *substantial pain*,” *id.* § 10.00(9) (emphasis added).

¹⁴⁵ See generally Erin Ann O’Hara, *Victim Participation in the Criminal Process*, 13 J.L. & POL’Y 229 (2005) (describing the marginalization of victims in the criminal justice process).

¹⁴⁶ Adam J. Kolber, *The Subjective Experience of Punishment*, 109 COLUM. L. REV. 182, 192–96 (2009) [hereinafter Kolber, *Subjective Experience*].

¹⁴⁷ See *supra* Part III.A.1.a.

i. Child Physical and Sexual Abuse

Over three million possible cases of child abuse and neglect were referred to child protective services agencies in the United States in 2009.¹⁴⁸ While some of these cases may be bogus or otherwise fail to satisfy pertinent legal standards, a vast number of genuine cases of abuse cannot be proven.¹⁴⁹ In cases of physical abuse, diagnostic images of the brain have long been used in court. For example, brain imaging is frequently used to provide evidence of physical trauma to the brain.¹⁵⁰ Evidence of sexual abuse can be more difficult to find. Occasionally, child sexual abuse can be diagnosed based on unusual physical or laboratory findings, as when the abuse leads to physical injury, pregnancy, or disease transmission. But “[s]exual abuse is rarely diagnosed on the basis of only physical examination or laboratory findings,” because “[p]hysical findings are often absent.”¹⁵¹

In many or most cases of childhood abuse, we can gather needed evidence simply by speaking to the victim. In some cases, however, victims may be too young to speak, or we may prefer to spare children the obligation to relive their abuse.¹⁵² In other cases, when abuse is alleged to have occurred a long time ago, the reliability of victims’ recollections has been questioned.¹⁵³ If there were practical methods of developing better evidence of victimization, such methods could be extremely useful in supporting genuine claims of abuse and in challenging spurious ones.

A growing neuroscience literature suggests that childhood trauma can affect the development of the brain. The effects of childhood trauma may last

¹⁴⁸ CHILDREN’S BUREAU, U.S. DEP’T OF HEALTH & HUMAN SERVS., CHILD MALTREATMENT 2009, at viii (2009), available at <http://www.acf.hhs.gov/programs/cb/pubs/cm09/cm09.pdf>; see also Mark S. Lipian et al., *Assessing the Verity of Children’s Allegations of Abuse: A Psychiatric Overview*, 27 INT’L J.L. & PSYCHIATRY 249, 250–51 (2004).

¹⁴⁹ See CHILDREN’S BUREAU, *supra* note 148, at viii.

¹⁵⁰ See, e.g., *Chapa v. United States*, No. 8:04CV376, 2006 WL 1794763, at *1, *9 (D. Neb. June 26, 2006); *Middleton v. State*, 980 So. 2d 351, 355–59 (Miss. Ct. App. 2008); *In re Pers. Restraint of Brooks*, No. 33020-2-II, 2007 WL 1129655, at *2 (Wash. Ct. App. Apr. 17, 2007); see also Am. Acad. of Pediatrics, *Diagnostic Imaging of Child Abuse*, 105 PEDIATRICS 1345, 1346–47 (2000).

¹⁵¹ Nancy Kellogg & Comm. on Child Abuse & Neglect, Am. Acad. of Pediatrics, *The Evaluation of Sexual Abuse in Children*, 116 PEDIATRICS 506, 509 (2005); see also Joyce A. Adams, *The Role of the Medical Evaluation in Suspected Child Sexual Abuse*, in TRUE AND FALSE ALLEGATIONS OF CHILD SEXUAL ABUSE 231, 232–33 (Tara Ney ed., 1995).

¹⁵² Some jurisdictions are especially friendly to hearsay evidence that spares children the obligation to testify in court about their abuse. See, e.g., N.Y. FAM. CT. ACT § 1046(a)(vi) (McKinney 2010).

¹⁵³ See, e.g., ELIZABETH LOFTUS & KATHERINE KETCHAM, THE MYTH OF REPRESSED MEMORY 3–7 (1994).

into adulthood, even when the childhood trauma left no easily observed physical injuries. According to neuroscientist Debra Niehoff:

Over the last three decades, both animal studies and clinical research on human abuse victims have demonstrated that the nervous system is highly sensitive to stress and trauma during the first years of life, and that abuse need not involve an actual physical injury to do lasting damage to the developing brain. Furthermore, trauma-induced aberrations in neural structure and function are essentially corruptions of fundamental neural mechanisms evolved to prepare the individual for survival in dangerous or capricious environments, and they are not erased by maturation. . . . Bones mend and bruises fade, but the harm done to the brain by the experience of violence leaves enduring scars that, while invisible to the casual observer, have long-lasting implications for the health, well-being, and social functioning of the abuse victim.¹⁵⁴

In one recent study, researchers found possible epigenetic markers of childhood abuse.¹⁵⁵ While we inherit our genetic code from our parents, our genome is subject to so-called epigenetic influence from the environment that can affect the expression of our genetic traits.¹⁵⁶ This particular study looked at gene expression of glucocorticoid receptors, proteins in cell membranes that enable our bodies to respond to the stress hormone glucocorticoid.¹⁵⁷

The researchers looked at the level of glucocorticoid receptor expression in brain tissue of three groups of people: (1) twelve suicide victims with a history of being abused in childhood, (2) twelve suicide victims without a history of being abused in childhood, and (3) twelve control subjects who died for other reasons and had no history of abuse.¹⁵⁸ They found a statistically lower level of glucocorticoid receptor expression in the group of suicide victims with a history of abuse in childhood than they did in the other two groups.¹⁵⁹ By

¹⁵⁴ Debra Niehoff, *Invisible Scars: The Neurobiological Consequences of Child Abuse*, 56 DEPAUL L. REV. 849, 849–50 (2007); see also Christine Heim et al., *Pituitary-Adrenal and Autonomic Responses to Stress in Women After Sexual and Physical Abuse in Childhood*, 284 JAMA 592 (2000); M. B. Stein et al., *Hippocampal Volume in Women Victimized by Childhood Sexual Abuse*, 27 PSYCHOL. MED. 951 (1997).

¹⁵⁵ Patrick O. McGowan et al., *Epigenetic Regulation of the Glucocorticoid Receptor in Human Brain Associates with Childhood Abuse*, 12 NATURE NEUROSCIENCE 342 (2009).

¹⁵⁶ See Fazal Khan, *Preserving Human Potential as Freedom: A Framework for Regulating Epigenetic Harms*, 20 HEALTH MATRIX 259, 266–71 (2010).

¹⁵⁷ See Nick Z. Lu et al., *The Pharmacology and Classification of the Nuclear Receptor Superfamily: Glucocorticoid, Mineralocorticoid, Progesterone, and Androgen Receptors*, 58 PHARMACOLOGICAL REV. 782, 784 (2006).

¹⁵⁸ McGowan et al., *supra* note 155, at 343.

¹⁵⁹ *Id.*

contrast, those who committed suicide but had not been abused had no statistically significant difference in the level of receptor expression than control subjects.¹⁶⁰

We don't know precisely why these differences were observed, but whatever the underlying mechanism, the researchers identified possible biomarkers in the group that committed suicide and had been abused that varied substantially from the markers in the other groups of subjects. If the markers are valid and reliable, they might someday help us determine whether an individual was abused as a child.

To be sure, this study has many limitations. First, it has a small sample size and has yet to be repeated by other researchers. Second, the data reflect differences in groups of people and may not be sufficiently fine-grained to provide useful information about individuals. Third, those who commit suicide are likely to have suffered more severely than the average victim, so results might vary in subjects who were less severely victimized. Fourth, the research is unlikely to distinguish various forms of childhood adversity, so child physical abuse, sexual abuse, and neglect might look the same. If a child witnesses an upsetting, accidental killing, his body might undergo epigenetic changes like those of children who have been abused. Fifth, the underlying work on epigenetics is at an early stage, and many basic questions in epigenetics have yet to be answered. Finally, the research examined brain tissue from deceased subjects, an approach that cannot safely be used on living people. While researchers are searching for similar epigenetic markers of adversity in other tissue, like white-blood cells,¹⁶¹ the technique will have limited value so long as the only reliable markers of adversity are in brain tissue.

But under the right circumstances, even epigenetic markers in brain tissue could prove extremely valuable. Imagine their use in a case based on the life and death of pop-music legend Michael Jackson. Jackson claimed that he was repeatedly subject to physical abuse from his father when he was a child.

¹⁶⁰ *Id.* When glucocorticoid receptor genes undergo a process called methylation, the expression of the gene is reduced. *Id.* By examining the percentage of sites that were methylated in candidate methylation sites, the researchers also found a greater percentage of methylation in candidate sites in those who both committed suicide and were abused than they found in the other groups. *Id.* at 343 fig.2.a. These methylation biomarkers may be even more distinctive than biomarkers that merely rely on the level of glucocorticoid receptor expression.

¹⁶¹ E-mail from Dr. Moshe Szyf, GSK Professor of Pharmacology and James McGill Professor, McGill Univ., Dep't of Pharmacology & Therapeutics, to author (June 25, 2009, 09:52 EST) (on file with author).

When Jackson died, he was a single parent with three children of his own. Had Jackson's father sought custody of Jackson's children, it might be very important to determine whether or not Jackson's father really did abuse Jackson in childhood. Since Jackson would have already died prior to this hypothetical custody battle, it would be relatively easy to examine his brain tissue for pertinent epigenetic markers of abuse.

Moreover, even if these biomarkers fail to distinguish between various kinds of childhood adversity, they might still be helpful in court. The presence of the relevant markers might provide little evidence of Jackson's father's culpability because the childhood adversity could have had many different causes or perpetrators. Nevertheless, the *absence* of the pertinent markers, assuming the markers prove reliable, could be evidence of the *absence* of childhood adversity. So this sort of evidence may be asymmetric; it may be more helpful to exculpate than inculpate. Still, anything that improves the accuracy of child abuse cases is an important tool.

b. How Much Blame

So far, I have described how brain-based biological markers associated with past experiences could support or challenge claims that someone has engaged in a crime. In other situations, we know that a person has broken a criminal law but dispute *how much* punishment he should receive. For example, in the sentencing phase of death penalty cases, we allow murderers to introduce evidence of childhood abuse or neglect to argue that they do not deserve to be executed.¹⁶² The harsh circumstances of their youth purportedly mitigate their blameworthiness. So long as courts permit such evidence, epigenetic markers of childhood adversity may bear on assessments of blameworthiness in death penalty cases.

Subjective experience is much more broadly relevant to punishment severity when we consider *victim* experiences. As a general rule, the more a crime victim suffers, the more the perpetrator should be punished. The precise reasons will vary, however, depending on how one justifies punishment. In the

¹⁶² See Phyllis L. Crocker, *Childhood Abuse and Adult Murder: Implications for the Death Penalty*, 77 N.C. L. REV. 1143, 1156 (1999) ("Evidence that the defendant was abused as a child is one of the more intuitively recognizable forms of mitigating evidence. A general societal understanding exists that a person abused as a child will likely suffer some kind of long-term negative behavioral and perceptual effects." (footnote omitted)); see also O. Carter Snead, *Neuroimaging and the "Complexity" of Capital Punishment*, 82 N.Y.U. L. REV. 1265, 1299–1302 (2007) (discussing the use of brain imaging evidence in death penalty cases).

next two subsections, I will show why our prevailing theories of punishment, both retributivist and consequentialist, generally lead to the conclusion that those who cause more experiential harms should be punished more severely. These theories imply that assessments of victims' subjective experiences are often quite relevant to sentencing.

i. Retributivists

According to most retributivists, offenders should be punished in proportion to their blameworthiness.¹⁶³ Offenders who commit more serious crimes like murder or rape should be punished more severely than offenders who commit less serious crimes like drug possession or prostitution.

Importantly, the seriousness of a crime will depend in important ways on the experiential harms it causes. To illustrate, suppose that Harsh and Harsher separately decide to rob elderly men in a park. Each has a choice between taking \$100 from: (a) a man who will be extraordinarily upset by the robbery for a long time, or (b) a man who will merely be a little upset by the robbery for a very short time. Assume that both robbers know the emotional responses of their potential victims. Harsh chooses the victim who will recover quite quickly, because Harsh simply wants \$100 and does not want to cause unnecessary suffering. Harsher, by contrast, chooses the victim who will be traumatized by the robbery, either because Harsher prefers to cause his victim to suffer or because he doesn't care about victim suffering, and so he is indifferent between the two victims.

In this scenario, Harsher is more blameworthy than Harsh. Surely, much of the harm of robbery consists of the fear and trauma that robberies cause. Otherwise, we would treat robbery the same way that we treat lesser forms of theft that do not involve confrontations. Since Harsh seeks to cause less harm than does Harsher, Harsh is less blameworthy. If one accepts the retributivist

¹⁶³ According to John Rawls, retributivists hold that "[i]t is morally fitting that a person who does wrong should suffer in proportion to his wrongdoing. That a criminal should be punished follows from his guilt, and the severity of the appropriate punishment depends on the depravity of his act." John Rawls, *Two Concepts of Rules*, 64 PHIL. REV. 3, 4–5 (1955); see also George P. Fletcher, *Reflections on Felony-Murder*, 12 SW. U. L. REV. 413, 427–28 (1981) (stating that it is a "basic principle of just punishment" that "[p]unishment must be proportional to wrongdoing"); Douglas N. Husak, "*Already Punished Enough*," 18 PHIL. TOPICS 79, 83 (1990) ("A corollary of the 'just deserts' theory is the principle of proportionality, according to which the severity of a punishment should be a function of the seriousness of the offense."). I use the term "blameworthiness" in the text to generically capture notions of proportional retribution that depend on "wrongdoing," "the seriousness of an offense," and other similar phrases.

view that we should punish in proportion to blameworthiness, then Harsh should be punished less than Harsher.

Just as tort theorists have different views about when to consider an action's actual consequences as opposed to its expected consequences, so do retributivists. On what I call the "only-culpability" view, an offender's blameworthiness depends only on his mental state with respect to the harm that he causes or risks causing.¹⁶⁴ So, an offender's culpability depends on the risks of harm that he purposely, knowingly, recklessly, and (perhaps) negligently accepted by engaging in criminal behavior.¹⁶⁵ In the case of Harsh and Harsher, Harsh knowingly caused some harm to his victim but less than the harm that Harsher knowingly caused. So Harsh is less blameworthy.

According to the only-culpability view, once we have determined the pertinent facts about an offender's mental state, the amount of harm he actually causes is irrelevant to his blameworthiness. On this view, we have no reason to differentially punish attempted crimes and completed crimes that differ only in terms of the amount of harm that was unforeseeably caused. So, if an assassin fires a bullet intending to kill his victim and a bird happens to fly by and deflect the bullet, the assassin's blameworthiness is in no way reduced simply because a bird intervened to reduce the harmfulness of the assassin's action. What matters is the serious risk of death the assassin intentionally accepted, not the chance forces that determined the outcome.

On another view, call it the "culpability-plus-harm" view, blameworthiness depends both on the sort of culpability just described, as well as the amount of harm an offender actually causes. Under this view, the actual results of an offender's conduct appropriately affect our assessments of his blameworthiness, even when the results depend in large measure on chance. According to this view, the assassin's blameworthiness depends quite importantly on whether or not the bird deflected the bullet. If the bird does not deflect the bullet, the assassin deserves the very severe punishment associated with murder. If the bird does deflect the bullet, the assassin deserves the more modest punishment associated with attempted murder. Under the culpability-

¹⁶⁴ See, e.g., Stephen J. Morse, *Reason, Results, and Criminal Responsibility*, 2004 U. ILL. L. REV. 363, 365 ("Imposing blame and punishment for anything other than intentional action and forbearance is both unfair and, in most cases, useless.").

¹⁶⁵ While some retributivists believe that we can also be culpable for negligently causing harm, others, like Larry Alexander and Kimberly Ferzan, reject that view. See LARRY ALEXANDER & KIMBERLY KESSLER FERZAN, *CRIME AND CULPABILITY* 69–71 (2009) ("We are not morally culpable for taking risks of which we are unaware.").

plus-harm view, the punishment the assassin deserves depends on the bird's flight path, even though the flight path is beyond the assassin's awareness and control.

While there is a vociferous debate about whether only culpability counts or whether harm counts, too,¹⁶⁶ both views agree that subjective experience matters, at least indirectly, to our assessments of how blameworthy a person is. If one examines culpability plus harm, the actual results of criminal conduct are directly relevant to assessments of blameworthiness. The more harm one causes, the more blameworthy he is. Bad subjective experiences are at least part of the harm that criminals cause, and so such experiences affect their blameworthiness. Even if Harsh and Harsher did not or could not predict the differential suffering of their victims, it wouldn't matter: Harsh caused less harm than Harsher, and so, all else being equal, Harsh is less blameworthy.

Suppose, however, that the culpability-plus-harm view is wrong. Suppose instead that only culpability counts such that criminal blameworthiness really depends only on the amount of harm an offender purposely, knowingly, recklessly, or negligently risks causing. If so, the subjective experience of a victim is *not* directly relevant to blameworthiness. In that case, if Harsh and Harsher had no beliefs or intentions about the reactions of their seemingly identical victims, they would be equally blameworthy despite the fact that they caused different amounts of harm.

Even on this view, however, the actual experiences of victims are likely to be *indirectly* relevant: When we assess the amount of harm an offender culpably caused or risked causing, our best evidence of the amount of harm he believed he would cause or risk causing often comes from examining the amount of harm he *actually* caused. In real-life cases like that of Harsh and Harsher, we do not know precisely what offenders believed before they committed their crimes. But as a general matter, robberies that are more vicious lead to more emotional harm. So the amount of harm caused by an offense frequently tells us something, albeit indirectly, about the viciousness or callousness of an offender.¹⁶⁷

¹⁶⁶ I discussed the same issue earlier in the tort context. *See supra* note 77.

¹⁶⁷ Of course, if we ever develop reliable methods of lie detection, we could get more pertinent evidence by asking offenders about their intentions and beliefs at the time of their offenses. Assuming that defendants still retain their Fifth Amendment rights not to incriminate themselves, however, we may still have to rely on indirect evidence of culpability by examining harms that offenders actually cause.

Therefore, regardless of one's views on how harm impacts criminal wrongdoing, assessments of criminal blameworthiness depend either directly or indirectly on victims' experiences.¹⁶⁸ In the experiential present, it may simply be too difficult to distinguish people like Harsh and Harsher. In the experiential future, however, such discriminations will be cheaper and easier to make. Those who defend proportional punishment will have to use the technologies that become available or explain why they persist in knowingly punishing offenders disproportionately.¹⁶⁹

ii. Consequentialists

So far, I have discussed the relationship between victim experiences and blameworthiness and argued that, no matter how one understands blameworthiness, subjective experience is usually relevant. Not all punishment theorists agree with retributivists that punishment should be proportional to blameworthiness. In particular, consequentialists believe that we punish in order to obtain good consequences. We punish to deter crime, incapacitate dangerous people, and rehabilitate offenders.¹⁷⁰ None of those consequences depend directly on offenders' blameworthiness. So one might reasonably ask whether subjective experience matters to consequentialists when deciding how much punishment is appropriate for an offender.

The answer is that subjective experience matters to consequentialists for a number of reasons I address more directly in Part III.B.2. For now, I note that even though blameworthiness is not *directly* part of the consequentialist calculus of the amount of punishment that an offender should receive, blameworthiness is relevant indirectly. All else being equal, it is more blameworthy to intend or permit larger risks of harms than smaller ones. Furthermore, people who intend or permit larger risks of harm are usually also more dangerous. So, even though consequentialists need not worry about

¹⁶⁸ My view contrasts with Leo Katz's in his book, *ILL-GOTTEN GAINS: EVASION, BLACKMAIL, FRAUD, AND KINDRED PUZZLES OF THE LAW* 145–48 (1996). Katz argues that the extent to which victim preferences are knowingly frustrated by criminals “need bear absolutely no relationship to the culpability of the perpetrator.” *Id.* at 151. Yet Katz admits that harm to victims is “one among several criteria of culpability.” *Id.* So long as harm is one of the criteria of culpability, experiential harms (including the experience of having one's preferences violated) must bear at least *some* relationship to perpetrator culpability when these experiential harms are foreseen by perpetrators (as they are in Katz's examples).

¹⁶⁹ Perhaps the best explanation for the failure of criminal law to carefully consider victim experiences is that the differential treatment of some crime victims can be corrected by the tort system. It is usually quite difficult, however, to recover damages from criminals.

¹⁷⁰ See C. L. TEN, *CRIME, GUILT, AND PUNISHMENT* 7–8 (1987).

blameworthiness per se, judgments of blameworthiness are indirectly relevant to consequentialist determinations about the need to deter and incapacitate dangerous people. Harsher is not only more blameworthy than Harsh, he is also more dangerous.

iii. How Sentencing Downplays Subjective Experience

The bottom line is that when assessing how much punishment an offender should receive, victim experiences are generally relevant whether one is a retributivist or a consequentialist. Nevertheless, our current sentencing regimes pay rather little attention to such experiences. We undoubtedly have laws against theft, assault, and rape, in part, to discourage or punish the culpable inflictions of distress typically associated with those crimes. And some statutes define criminal conduct, in part, by reference to victim experiences.¹⁷¹ But we give relatively little consideration to the amount of distress that offenders culpably cause or risk causing, and most criminal statutes make no explicit reference to victims' experiences.

Even statutes that seem to consider victim experiences do so at only the coarsest levels. For example, we distinguish the crime of simple assault from the more serious crime of aggravated assault. Aggravated assault typically refers to assaults with a deadly weapon or with the intent to inflict serious bodily harm.¹⁷² No doubt, aggravated assaults are more likely to cause victims more severe negative experiences. But even among offenses deemed to be aggravated assaults, experiential harm to victims varies widely:

In one case, for example, a state court upheld an aggravated assault conviction, finding (to no surprise) that the victim, who endured internal bleeding, two heart stoppages during emergency surgery, a collapsed lung, broken palate, fractured rib, and more than five months of rehabilitation following a brutal beating, had suffered "serious bodily injury." The same court upheld an aggravated assault conviction in another case, ruling that the loss of three teeth and a scarred lip also constituted "serious bodily injury."¹⁷³

At sentencing, assessments of blameworthiness can be more fine-grained. But even then, we group together conduct that causes quite different levels of

¹⁷¹ For example, California defines the crime of "stalking," in part, by reference to conduct that "seriously alarms, annoys, torments, or terrorizes" the victim. CAL. PENAL CODE § 646.9(e) (West 2008).

¹⁷² See, e.g., MODEL PENAL CODE § 211.1(2) (1980).

¹⁷³ Robert A. Mikos, "Eggshell" Victims, *Private Precautions, and the Societal Benefits of Shifting Crime*, 105 MICH. L. REV. 307, 332–33 (2006) (footnotes omitted).

victim harm. In the aggravated assault cases just described, the defendant who caused *more* harm to his victim got a suspended sentence while the defendant who caused much *less* harm received a three-year prison sentence.¹⁷⁴

Even rather detailed sentencing provisions probably downplay victim harm. For example, Texas grades theft crimes a “state jail felony” when they involve pecuniary losses between \$1,500 and \$20,000 and provides for a sentencing range of 180 days to two years in prison for such thefts.¹⁷⁵ So there is a greater-than-tenfold range in the loss amount but only a fourfold range in the term of imprisonment.¹⁷⁶ Even if the harms of theft depend on more than just the value of goods stolen, it may be difficult to punish offenders proportionally under this sentencing scheme.¹⁷⁷

More pertinently, victims *experience* their losses quite differently. Though the Texas statute grades thefts between \$1,500 and \$20,000 the same way, the theft of \$20,000 from Bill Gates is likely to upset him much less than the theft of \$2,000 from a person with a small net worth. The statute ignores the varied ways in which victims experience monetary losses. Whatever we ultimately care about when assessing blameworthiness, the ultimate measure of harm cannot be denominated in dollars. Dollars do not have intrinsic value; at best, they serve an instrumental role in helping us obtain ends that are intrinsically valuable. Amounts of money stolen may serve as reasonably good proxies for harm, but when theorizing about crime or imagining a future with better measurement of experiential harms, we must remember that dollar-denominated penalty systems are, at best, rough proxies for something else we truly care about.

The fact that we examine victim harm at all implies that the severity of victim injuries is related at least to some degree to blameworthiness. If victim harm were entirely unimportant, we might not even distinguish aggravated and ordinary assaults. But we do make such distinctions because our best theories

¹⁷⁴ *Id.*

¹⁷⁵ TEX. PENAL CODE ANN. §§ 12.35(a), 31.03(e)(4) (West 2003). Those who commit state jail felonies may be fined up to \$10,000. *Id.* § 12.35(b).

¹⁷⁶ *Id.* § 31.03(e)(1)–(7); *see also* Mikos, *supra* note 173, at 328–39.

¹⁷⁷ The disparity between variation in harm caused and variation in sentence is even more readily apparent in the Federal Sentencing Guidelines. *See* U.S. SENTENCING GUIDELINES MANUAL § 2B1.1(b) (2010) (advising judges to increase offense levels by 26 for thefts with losses over \$100,000,000, 28 for losses over \$200,000,000, and 30 for losses over \$400,000,000). Importantly, there are other harms associated with theft aside from pecuniary loss, and pecuniary loss is at best a rough proxy measure of harm. I discuss pecuniary loss because that is the harm that theft statutes are most likely to reference, and it is easier to quantify than some other kinds of harms.

tell us that we should. And once we acknowledge that victim experiences are relevant to punishment, we see that there are no good *theoretical* reasons for assessing victim harm only in the coarsest manner. Granted, there are good reasons of cost and administrability for ignoring close differences in victim experiences. Perhaps our current practices are appropriate in the experiential present. But in the experiential future, the costs and administrative difficulties of measuring victim experiences will decrease, and we will have greater reason to pay more attention to such experiences than we do now.

Importantly, I have not denied the possibility that crimes also cause non-experiential harms. Compare one victim who is raped and has terrible memories of the experience to another victim who is raped while unconscious and never experiences any ill effects from the crime nor discovers that the crime occurred. The rapist of the first victim is probably more blameworthy than the rapist of the second victim. The first caused, and likely intended to cause, much more experiential harm than the second. Nevertheless, most would say that the second victim has also been seriously harmed by rape, even though the victim had no conscious experiences of the crime. If all of the harms from crime were experiential, it would be difficult to explain the harms of raping unconscious victims.

Yet I have not argued for the strong claim that experiential harms are the only harms that matter. In Part I, I defended the much more modest claim that experiences are very important to us, even if our welfare depends on more than just experiences. Similarly, even if bad things can happen to us that are non-experiential, as the rape example seems to suggest, the negative experiences of crime are still a substantial part of the harm of most crimes.

Given that experiential harms constitute at least a substantial part of all criminal harms, our current practices are difficult to justify. We frequently treat offenders the same way, even when we know they caused or risked causing very different amounts of experiential harm; often, we ignore victim harm entirely. Judges certainly do consider the extent of victim injuries at sentencing, but they do so with tremendous discretion and little obligation to gather and discuss victim-impact data. In the experiential future, biological markers will provide information not only about whether a person committed a crime, but also about *how much* harm he caused. We ought to use such technologies when they become reliable and cost-effective.

2. *Punishment Severity*

Once we have decided how blameworthy or dangerous an offender is, we still must decide how long and how severely to punish him. When discussing blameworthiness, I focused on how and why we might seek to better measure the experiences of crime *victims*. When it comes to punishment, however, the law is not merely concerned with measuring bad experiences but also with inflicting those experiences on *offenders*. If we want the suffering we cause to be justified, I will argue, we need to know how much suffering we are causing. So long as our punishments knowingly cause or risk causing substantial experiential harm, we must monitor the magnitude of those harms to make sure they do not exceed the amount justified by one's preferred theory of punishment.¹⁷⁸

a. *Our Mostly Non-Experiential Punishment Practices*

Both of the two principal ways in which theorists have sought to justify punishment require us to consider the experiences of those we punish. As I noted earlier, most retributivists believe that we are justified in punishing offenders because they deserve it. Offenders have done something wrong and should be punished in proportion to their blameworthiness. Some retributivists believe that punishment should consist in the intentional infliction of bad experiences so as to give offenders what they deserve.¹⁷⁹ Naturally, those who view punishment as intentionally dispensing bad experiences must consider the quantity of bad experiences that are dispensed.

Other retributivists have a more abstract conception of how offenders should be punished, arguing that offenders should be deprived of certain liberties.¹⁸⁰ Yet even these retributivists must still consider the amount of experiential suffering that liberty deprivations cause. Even when punishment is not designed to inflict bad experiences, it nevertheless still causes bad experiences. The causing of such severe, unpleasant experiences requires

¹⁷⁸ I provide a much more detailed defense of this claim in Kolber, *Subjective Experience*, *supra* note 146.

¹⁷⁹ See, e.g., JOHN KLEINIG, PUNISHMENT AND DESERT 67 (1973) ("The principle that the wrongdoer deserves to suffer seems to accord with our deepest intuitions concerning justice."); Herbert Fingarette, *Punishment and Suffering*, 50 PROC. & ADDRESSES AM. PHIL. ASS'N 499, 499 (1977) ("I would like to expound a retributivist view of punishment—one that shows why the law *must* punish lawbreakers, *must* make them suffer, in a way fitting to the crime . . ."); A. M. Quinton, *On Punishment*, 14 ANALYSIS 133, 137 (1954) (stating that punishment is "infliction of suffering on the guilty").

¹⁸⁰ See, e.g., Rawls, *supra* note 163, at 10 ("[A] person is said to suffer punishment whenever he is legally deprived of some of the normal rights of a citizen . . .").

justification. So even if we use the term “punishment” to refer to *intentionally* caused suffering or deprivation,¹⁸¹ we do not receive a free pass to inflict bad experiences without justification.

To illustrate, imagine two offenders who are equally culpable and receive punishments that are alike in all of their objective features (for example, their cells are the same size, their food is the same, and their terms of imprisonment are equal). Nevertheless, one of the prisoners, Sensitive, has a much worse experience of these conditions than does the other, Insensitive.¹⁸² Perhaps Sensitive has borderline claustrophobia, or perhaps he simply grew up living outdoors and has difficulty adjusting to the cramped, monotonous conditions of prison.

Some retributivists may claim that Sensitive’s experience in prison is irrelevant because punishment consists of deprivations of liberty, and Sensitive and Insensitive are deprived of their liberties for the same period of time. Nevertheless, if retributivists hope to justify punishment, they cannot ignore prisoner experiences for one simple reason: We must justify not only our intentional inflictions of punishment but also our knowing inflictions of punishment.¹⁸³ We knowingly inflict distress on Sensitive that we do not inflict on Insensitive when we deny Sensitive the opportunity to present evidence of his sensitivity and thereby reduce the duration or harshness of his confinement. Assuming Insensitive receives the amount of punishment he deserves, any additional suffering we knowingly cause Sensitive lacks justification.

To see why we must justify knowing inflictions of suffering, suppose a prison warden discovers that the water pipes in the prison have been contaminated with a substance that makes some prisoners extremely anxious and upset.¹⁸⁴ All the prisoners drink the water but only half are sensitive to the contaminant. The warden can easily turn a valve that will stop the contamination, but he elects not to. If we need not justify our knowing

¹⁸¹ See, e.g., H. L. A. HART, *Prolegomenon to the Principles of Punishment*, in PUNISHMENT AND RESPONSIBILITY 4–5 (2d ed. 2008) (stating that a central feature of punishment is that it is “intentionally administered”).

¹⁸² Kolber, *Subjective Experience*, *supra* note 146, at 183.

¹⁸³ They must also consider the fact that punishment severity depends on how a punishment changes offenders from their baseline conditions. Kolber, *Comparative Nature*, *supra* note 105. So, ideally, we would like to know about the baseline experiential states of Sensitive and Insensitive. For simplicity, however, we can assume that Sensitive and Insensitive have identical baselines and ignore this complication.

¹⁸⁴ Kolber, *Subjective Experience*, *supra* note 146, at 197–98.

inflictions of distress, then the warden's refusal to act requires no justification. Surely, however, we have the intuition that the warden must justify his decision. The fact that he merely knowingly inflicted distress is irrelevant. Knowing inflictions of substantial distress, like purposeful inflictions, require justification.¹⁸⁵

Though the warden's behavior requires a justification, retributivists who believe that punishment consists of liberty deprivations have none to offer. Retributivists cannot appeal to the prisoners' desert, since the prisoners are supposed to be satisfying their desert debt merely by being deprived of their liberties for the appointed period of time. In fact, retributivists have nothing else to appeal to—at least those retributivists who, like most, believe that prison time should be proportional to desert. Thus, whether retributivists believe that punishment is about inflicting distress or inflicting deprivations of liberty, they must take account of the amount of distress prisoners actually experience.

In the warden example, the inmates made anxious by the contaminant suffer more than the others in ways that are easily foreseen. So the warden needs to justify his refusal to rectify the problem. Similarly, we must justify the harsher treatment of offenders like Sensitive who foreseeably face greater difficulties in prison for equally arbitrary reasons, like having grown up spending a lot of time outdoors. After all, nothing about the warden example implies that the levels of anxiety and emotional trauma of the prisoners who receive contaminated water exceed the levels of anxiety and emotional trauma that we currently see everyday among sensitive prisoners.

Even if prisoners were aware of their own sensitivities to prison before they committed their crimes, such awareness would not eliminate the disproportionality of their sentences. We could punish murders by left-handed people with two years in prison and murders by right-handed people with twenty years in prison. Offenders would have advance notice of their punishments, but their punishments would still violate common retributive commitments to proportionality.¹⁸⁶

The second major way that theorists have sought to justify punishment, as noted earlier, is on consequentialist grounds. According to most

¹⁸⁵ *Id.*

¹⁸⁶ *Id.* at 210–11.

consequentialists, punishment itself is a bad thing.¹⁸⁷ Punishment may be justified, however, provided that it causes other good consequences. For example, punishment can deter crime, incapacitate dangerous people, and maybe even rehabilitate offenders.

Consequentialists must not only attend to prisoners' *anticipated* punishment experiences but must also consider their *actual* punishment experiences because most consequentialists treat punishment itself as a *prima facie* bad thing.¹⁸⁸ Consequentialists weigh the harms of punishment against the expected benefits. Since the harms of punishment include its associated bad experiences, we cannot weigh costs and benefits unless we know how much distress punishment causes. For example, the benefits from imprisoning Sensitive and Insensitive may be the same, but all else being equal, the consequentialist costs of imprisoning Sensitive are higher because he experiences more distress. Failure to consider the ways offenders vary in their experiences of punishment will lead to incorrect consequentialist outcomes.

Even though our leading theories of punishment, both retributivist and consequentialist, require us to consider offenders' experiences, in fact, we usually ignore these experiences, at least officially. While judges can and sometimes do take variation in offenders' likely punishment experiences into account at sentencing, they rarely document such decisions. Moreover, the influential Federal Sentencing Guidelines have long advised judges to ignore certain offender characteristics that might provide information about offenders' future punishment experiences.¹⁸⁹ Recent amendments to the guidelines have increased judges' leeway to consider these characteristics, though they still substantially limit judges' discretion.¹⁹⁰

¹⁸⁷ JEREMY BENTHAM, AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION 182 (Prometheus Books 1988) (1789) (seeking to minimize the pain and suffering of punishment).

¹⁸⁸ There are, however, nontraditional versions of consequentialism that, like retributivism, treat deserved punishment as a good thing, as discussed in MICHAEL MOORE, PLACING BLAME: A GENERAL THEORY OF CRIMINAL LAW 155–59 (1997), and in Michael T. Cahill, *Retributive Justice in the Real World*, 85 WASH. U. L. REV. 815, 833–36 (2007).

¹⁸⁹ For example, the 2009 Federal Sentencing Guidelines state that: “Age (including youth) is not ordinarily relevant in determining whether a departure is warranted,” U.S. SENTENCING GUIDELINES MANUAL § 5H1.1 (2009); “[m]ental and emotional conditions are not ordinarily relevant in determining whether a departure is warranted,” unless they affect culpability, *id.* § 5H1.3; and “[p]hysical condition or appearance, including physique, is not ordinarily relevant in determining whether a departure may be warranted,” *id.* § 5H1.4.

¹⁹⁰ The 2010 Federal Sentencing Guidelines state that: “Age (including youth) may be relevant in determining whether a departure is warranted if considerations based on age, individually or in combination with other offender characteristics, are present to an unusual degree and distinguish the case from the typical

Nevertheless, there are cases where courts recognize *objective* differences in prison conditions that surely affect prisoners' subjective experiences. For example, courts have reduced sentences for prisoners especially vulnerable to abuse in prison who, for their own safety, are likely to be placed in special administrative segregation units that are both objectively and subjectively harsher places to serve prison time.¹⁹¹

In still rarer cases, courts may consider differences in experiences of confinement even absent blatantly different objective conditions of confinement.¹⁹² An Australian court, for example, appealed to an Aborigine's likely subjective experience to justify giving him a shorter sentence than other Australians would receive. According to the court:

[I]n sentencing an Aborigine who has come from a deprived background or is otherwise disadvantaged by reason of social or economic factors or who has little experience of European ways, a lengthy term of imprisonment may be particularly, even unduly, harsh when served in an environment which is foreign to him and which is dominated by inmates and prison officers of European background with little understanding of his culture and society or his own personality.¹⁹³

cases covered by the guidelines." U.S. SENTENCING GUIDELINES MANUAL § 5H1.1 (2010). Similar revisions were made to provisions covering other offender characteristics, including their "[m]ental and emotional conditions," *id.* § 5H1.3, and "[p]hysical condition or appearance," *id.* § 5H1.4.

¹⁹¹ See *United States v. Blarek*, 7 F. Supp. 2d 192, 211–13 (E.D.N.Y. 1998), *aff'd*, 166 F.3d 1202 (2d Cir. 1998); see also *United States v. Graham*, 83 F.3d 1466, 1481 (D.C. Cir. 1996) (allowing extreme vulnerability to assault in prison as a ground for reducing a sentence but noting that the "vulnerability must be so extreme as to substantially affect the severity of confinement, such as where only solitary confinement can protect the defendant from abuse").

¹⁹² For example, in *United States v. McIlrath*, 512 F.3d 421 (7th Cir. 2008), the United States Court of Appeals for the Seventh Circuit affirmed the defendant's forty-six month sentence for traveling across state lines to have sex with a minor, despite a psychologist's testimony about the defendant's poor coping skills and high likelihood of being targeted by other prison inmates. *Id.* at 422. Though the case was affirmed, the court at least acknowledged the potential relevance of the defendant's sensitivity. Writing for the panel, Judge Richard Posner stated that "[t]he defendant's history and characteristics were relevant in possibly suggesting both that imprisonment would be a more severe punishment for him than for the average Internet sexual predator," though "[a]s far as we know or the defendant's lawyer or psychologist attempted to show, the average man who trolls for young girls in Internet chat rooms is no better adjusted than the defendant." *Id.* at 423–24.

¹⁹³ *R v Stanley Edward Fernando* (1992) 76 A Crim R 58, 62–63 (Austl.). The court's statement that "a lengthy term of imprisonment may be particularly (even unduly) harsh" suggests (but does not conclusively demonstrate) that the court was considering the defendant's likely experiences in prison.

Though the court restricted its claims to the circumstances of this particular offender, there are no obvious principles for considering subjective experience under just these sorts of circumstances.

Were we to consider the subjective experience of prisoners, we would rely on many of the current and futuristic techniques that I discussed in the context of emotional distress.¹⁹⁴ In the near future, we would consider expert assessments of distress, depression, panic, and anxiety, if we believe that such assessments can uncover malingerers. In the experiential future, we may rely on technologies that examine structural or functional features of the brain to help assess an offender's distress level or susceptibility to severe distress.

Difficult as it would be to assess the subjective experience of prisoners, it would surely not be impossible. After all, we at least purport to make such assessments every day in the tort system. In cases of wrongful imprisonment, for example, we even purport to assess the negative experience of confinement in small spaces.¹⁹⁵ Rather than hinging compensation merely on the number of hours or days that a plaintiff is falsely imprisoned, we purport to recognize the plaintiff's individualized amount of suffering. In a world with better methods of measuring suffering, there is no good reason, aside from cost, to measure individualized experiences in tort law but not in criminal law.

b. The Special Case of Lethal Injection

There is one punishment context where courts have taken seriously the anticipated experiences of those about to be punished. Over the last century, reformers have sought more humane forms of execution. In the years leading up to the twentieth century, "hanging was the nearly universal form of execution,"¹⁹⁶ until it was gradually replaced by electrocution under the "well-grounded belief that electrocution is less painful and more humane than hanging."¹⁹⁷ Over the last thirty years, most states with a death penalty began

¹⁹⁴ See *supra* Part II.A.2.

¹⁹⁵ See, e.g., *Kerman v. City of New York*, 374 F.3d 93, 125 (2d Cir. 2004) ("The plaintiff is entitled to compensation for loss of time, for physical discomfort or inconvenience, and for any resulting physical illness or injury to health. Since the injury is in large part a mental one, the plaintiff is entitled to damages for mental suffering, humiliation, and the like." (quoting *KEETON ET AL.*, *supra* note 140, § 11, at 48) (internal quotation marks omitted)).

¹⁹⁶ *State v. Frampton*, 627 P.2d 922, 934 (Wash. 1981); see also *Baze v. Rees*, 553 U.S. 35, 41 (2008).

¹⁹⁷ *Malloy v. South Carolina*, 237 U.S. 180, 185 (1915).

to rely on lethal injection as a still safer, less painful alternative to electrocution.¹⁹⁸

Debate continues to swirl around lethal injection as death row inmates argue in court that lethal injection protocols risk causing them excruciating pain. These protocols usually include the administration of three drugs. The first, sodium thiopental, anesthetizes the person. The second, pancuronium bromide, paralyzes him. And the third, potassium chloride, stops his heart.¹⁹⁹ If an executionee is not properly anesthetized during the first part of the lethal injection process, he will subsequently be injected with the paralytic agent that will make him physiologically incapable of communicating his pain during the rest of the execution. Deborah Denno describes concerns about use of the paralytic agent pancuronium bromide:

Without adequate anesthesia, pancuronium can cause an inmate excruciating pain and suffering because the inmate slowly suffocates from the drug's effects while paralyzed and unable to cry out. Such agony is increased all the more when executioners inject the third drug, potassium chloride, which creates an intense and unbearable burning. There is agreement that if the [anesthetic] sodium thiopental is ineffective, it would be unconscionable to inject the second and third drugs into a conscious person. A key issue in litigation is whether prison officials and executioners can determine if an inmate is aware and in torment because the pancuronium is such a powerful mask of emotions.²⁰⁰

The lethal injection debate is about the risk of causing inmates excruciating pain, and new technologies to measure the experiences of executionees have been brought to bear.²⁰¹ In 2006, Willie Brown, Jr. claimed that North Carolina's lethal injection protocol was constitutionally defective. In the U.S. District Court for the Eastern District of North Carolina, Brown argued "that the State will use an inadequate protocol for anesthesia as a precursor to carrying out his death sentence, and that as a result he faces an unacceptable and unnecessary risk of suffering excruciating pain during his execution in

¹⁹⁸ *Baze*, 553 U.S. at 42–44.

¹⁹⁹ Deborah W. Denno, *Introduction*, 35 FORDHAM URB. L.J. 701, 702 (2008) (introducing the *Fordham Urban Law Journal*'s symposium issue on "The Lethal Injection Debate: Law and Science").

²⁰⁰ *Id.*

²⁰¹ Robert Steinbrook, *New Technology, Old Dilemma—Monitoring EEG Activity During Executions*, 354 NEW ENG. J. MED. 2525 (2006); see also Deborah W. Denno, *The Lethal Injection Quandary: How Medicine Has Dismantled the Death Penalty*, 76 FORDHAM L. REV. 49 (2007).

violation of the Eighth Amendment.”²⁰² The district court decided that there were “substantial questions as to whether North Carolina’s execution protocol creates an undue risk of excessive pain.”²⁰³ Brown’s execution was permitted to proceed provided execution personnel would be “present and accessible to [him] throughout the execution . . . with sufficient medical training to ensure that [he] is in all respects unconscious *prior to* and *at the time of* the administration of any pancuronium bromide or potassium chloride.”²⁰⁴

To satisfy its obligation to the court, the state agreed to have Brown’s execution monitored by a nurse and a physician using a device called a bispectral index monitor.²⁰⁵ A bispectral index monitor uses electroencephalography to monitor electrical activity in a subject’s brain.²⁰⁶ The device is supposed to provide anesthesiologists with a measure of anesthetic depth to help them determine if patients’ anesthesia is working properly.²⁰⁷ If it accomplished its intended purpose in the execution context, it would help those engaged in the lethal injection process to determine whether an executionee has received the appropriate level of anesthesia such that he will not be in pain during execution. In Brown’s case, the court allowed his execution to proceed based, in part, on the state’s assertion “that a licensed registered nurse and a licensed physician will be positioned in the observation room where they can both observe and read the values of the BIS monitor.”²⁰⁸

In some respects, the technological monitoring of executions could be viewed as a step toward our experiential future. While the state takes a life, the state’s agents monitor the executionee’s level of awareness and, by implication, his level of pain. A retributivist who believes that loss of life (and loss of life alone) is an appropriate, proportional punishment for a death row inmate should support the idea of monitoring lethal injections. Any pain from the injection itself would be disproportional suffering for such a retributivist, at least in a world where we have relatively easy ways of knowing the level of an executionee’s pain.

²⁰² Brown v. Beck, 445 F.3d 752, 753 (4th Cir. 2006) (Michael, J., dissenting).

²⁰³ Brown v. Beck, No. 5:06CT3018, 2006 WL 3914717, at *8 (E.D.N.C. Apr. 7, 2006).

²⁰⁴ *Id.*

²⁰⁵ Steinbrook, *supra* note 201, at 2527.

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ Andrea Weigl, *Doc’s Execution Role: “Be Present,”* NEWS & OBSERVER (Raleigh, N.C.), Mar. 30, 2007, at A1 (quoting Judge Malcolm J. Howard’s April 17, 2006 order) (internal quotation marks omitted). Nevertheless, the physician present at Brown’s execution apparently did *not* monitor the machine, possibly in violation of the court’s order. *Id.*

Similarly, in a world where anesthetic depth can be cost-effectively monitored, consequentialists should also support monitoring the pain of lethal injection. The pain of execution with insufficient anesthesia would be excruciating, yet would have no deterrent, incapacitative, or rehabilitative effect on the executed offender. Painful executions might deter others from committing death-penalty-eligible crimes, but that is an argument for reducing anesthesia, not for declining to monitor whatever pain we do cause.

If Willie Brown's case was a step toward our experiential future, however, it was at most a small one. In a recent Supreme Court case, *Baze v. Rees*, the Court rejected the need for bispectral index monitoring.²⁰⁹ In that case, two death row inmates claimed that Kentucky's lethal injection protocol constituted "cruel and unusual punishment" under the Eighth Amendment "because of the risk that the protocol's terms might not be properly followed, resulting in significant pain."²¹⁰ Among their claims, they argued that Kentucky's execution protocol should require states to use technologies, like a bispectral index monitor, to measure anesthetic depth.²¹¹ Ultimately, the Court, in a three-Justice plurality opinion, wrote that Kentucky's lethal injection procedure did not constitute cruel and unusual punishment.²¹² The plurality noted that Kentucky already had sufficient precautions to ensure delivery of the appropriate amount of anesthesia and noted that the bispectral index monitor had yet to be endorsed by the medical community as a whole.²¹³ The plurality also noted that requiring use of a device like a bispectral index monitor would effectively halt executions because the device is supposed to be read by anesthesiologists, yet anesthesiologists are prohibited by Kentucky law and by their code of conduct from participating in executions.²¹⁴

Even though the Court in *Baze* determined that the Constitution does not require more stringent monitoring of the lethal injection protocol in Kentucky and in those states with a "substantially similar" protocol,²¹⁵ most of the Court seemed to agree that the Constitution limits the acceptable level of pain that

²⁰⁹ 128 S. Ct. 1520, 1526–27 (2008) (plurality opinion).

²¹⁰ *Id.* at 1526.

²¹¹ *Id.* at 1536.

²¹² *Id.* at 1538.

²¹³ *Id.* at 1536 (citing Task Force on Intraoperative Awareness, Am. Soc'y of Anesthesiologists, *Practice Advisory for Intraoperative Awareness and Brain Function Monitoring*, 104 ANESTHESIOLOGY 847, 855 (2006)).

²¹⁴ *Id.*

²¹⁵ *Id.* at 1537.

can be risked when engaging in lethal injection.²¹⁶ Had a better, cheaper technology been available to monitor the subjective experience of those being executed, one that did not require a doctor's supervision, the case may have come out differently.

The claim that we must better monitor the experiences of those who are punished may not be a popular one. Many find it distasteful to hook people up to machines to see how they are experiencing the unpleasant things we do to them. While such aversion is understandable, it must be resisted because it has the wrong target. We may understandably be troubled by the state's purposeful or knowing inflictions of harm on offenders. But once we decide as a society to permit such inflictions, we are obligated to monitor the amount of harm inflicted, at least when we can do so cost effectively. We must distinguish our understandable distaste for the nasty business of making people suffer from our moral obligation to make sure that people are not suffering excessively.

3. *Interrogation and Torture*

In the nasty business of intentionally making people suffer, there is no activity more vicious than torture. Torture has been prominently defined in terms of the infliction of bad experiences. The United Nations Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment prohibits "any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person" by a state actor.²¹⁷ Similarly, federal criminal law in the United States prohibits torture, defined as "an act committed by a person acting under the color of law specifically intended to inflict severe physical or mental pain or suffering (other than pain or suffering incidental to lawful sanctions) upon another person within his

²¹⁶ See *id.* at 1532 (stating the plurality's view that, absent a legitimate penological justification for some method of execution, condemned prisoners can challenge it by presenting another method that is "feasible, readily implemented, and in fact significantly reduce[s] a substantial risk of severe pain"); *id.* at 1563 (Breyer, J., concurring in the judgment) (agreeing with Justice Ginsburg that the Court should review claims that a method of execution is unconstitutional by considering "whether the method creates an untoward, readily avoidable risk of inflicting severe and unnecessary suffering"); *id.* at 1568 (Ginsburg, J., dissenting) (voicing agreement "with petitioners and the plurality that the degree of risk, magnitude of pain, and availability of alternatives must be considered" when evaluating the constitutionality of a method of execution).

²¹⁷ United Nations Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment art. 1, Dec. 10, 1984, 1465 U.N.T.S. 85.

custody or physical control.”²¹⁸ These provisions make clear that the intentional infliction of negative experiences constitutes the central harm that torture prohibitions are trying to prevent.

Earlier, I noted how technology may help us determine whether a crime has occurred. Torture provides another example. New technologies can help us determine whether an alleged torture victim has actually been tortured. One research group recently used magnetoencephalography, a technique similar to electroencephalography, to examine the long-term effects of torture on victims’ brain waves.²¹⁹ The researchers found dysfunctional brain wave activity in those who experienced torture that was not present in healthy subjects.²²⁰ Research like this could someday lead to technologies that support or cast doubt on claims that a person was severely tortured and thereby provide helpful evidence in war-crime proceedings, asylum applications, tort suits, and other venues.

Perhaps the most difficult challenge when it comes to torture, however, is determining when a so-called enhanced interrogation technique causes so much distress that its intentional use should be deemed torture. One way to protect interrogatees from torture is to prohibit interrogation techniques that are likely to cause extreme pain or suffering. For example, when a person is waterboarded, he is strapped down on an incline, with his feet elevated above his head, while water is poured over his face to give him the sensation that he is drowning.²²¹ Prohibiting waterboarding may be one good method of prohibiting behavior likely to lead to extreme pain or suffering.

Importantly, however, a ban on a particular interrogation technique is still a very rough proxy approach. Whether or not waterboarding causes legally impermissible pain and suffering depends on how we expect particular interrogatees to experience waterboarding, and their reactions will vary to some degree. An interrogatee who developed post-traumatic stress disorder from having nearly drowned in a swimming pool as a child will react differently to waterboarding than will a United States Marine who has

²¹⁸ 18 U.S.C. § 2340(1) (2006). Interestingly, the prohibition’s exception of “pain or suffering incidental to lawful sanctions” seems to recognize, as I argued earlier, that criminal punishment intentionally or at least foreseeably causes bad experiences. *Id.*

²¹⁹ William J. Ray et al., *Decoupling Neural Networks from Reality: Dissociative Experiences in Torture Victims Are Reflected in Abnormal Brain Waves in Left Frontal Cortex*, 17 *PSYCHOL. SCI.* 825 (2006).

²²⁰ *Id.* at 827.

²²¹ Kermit Roosevelt III, *Detention and Interrogation in the Post-9/11 World*, 42 *SUFFOLK U. L. REV.* 1, 6 n.35 (2008).

advanced training in how to resist waterboarding interrogations. In other words, the public debate about torture focuses on whether some technique, in the abstract, is permissible, when what really matters depends on (an interrogator's beliefs about) an interrogatee's experiential responses. Those responses depend on the relationship between the interrogatee and the way he is treated, not just the method of interrogation in the abstract.

Given the inadequacy of current technology to assess experiences, we may need to prohibit broad categories of enhanced interrogation like waterboarding. We may also fear that those tasked with measuring distress levels will simply rubber stamp torture (though if people can be dishonest about measuring distress, they can be dishonest about what categories of interrogation they use).²²²

But if we had sufficiently reliable technologies to measure acute distress, we could further protect interrogatees by stipulating maximum levels of distress an interrogatee is permitted to experience.²²³ In this regard, our experiential future may be close at hand. It is almost certainly easier to measure acute distress than chronic distress. We already have some biological markers of acute distress, like pulse, blood pressure, levels of stress hormones, galvanic skin response, and others.²²⁴

As noted above, the idea that we should measure the acute distress of interrogatees seems disturbing. The harm caused by inflicting some amount of distress, however, is far more troublesome than the comparatively slight invasion caused by measuring it. If we are permitted to engage in some behavior that is likely to cause distress, then we are permitted to *measure* the distress we cause. The reason that the measurement of distress seems so

²²² Jurisdictions might also adopt procedures to ensure that the party that measures distress is independent of the party that conducts the interrogation.

²²³ Importantly, it is not sufficient to merely protect interrogatees' health, for such protections may still permit excessively distressful treatment. In *Public Committee Against Torture v. Prime Minister*, for example, Israel's High Court of Justice discussed directives issued by the country's General Security Service that described permissible occasions for interrogators to use harsh tactics, including an especially distressing tactic known as "shaking." H CJ 5100/94 IsrSC 567, 577–78 [1999]. According to the Court, the directives provided that before shaking, "the investigator must first provide an evaluation of the suspect's health and ensure that no harm comes to him or her." *Id.* at 578. But even if the directives protect interrogatees against long-term health risks, interrogatees may still suffer impermissible, intense physical or emotional distress during shaking.

²²⁴ See, e.g., Germaine M. Buck Louis et al., *Stress Reduces Conception Probabilities Across the Fertile Window: Evidence in Support of Relaxation*, FERTILITY & STERILITY 1–2 (2010) (using salivary cortisol and α -amylase to measure stress levels); Simpson, *supra* note 67, at 491 (noting that autonomic arousal has been measured using "pulse rate, respiration, blood pressure, and sweating (variously known as the galvanic skin response [GSR], skin conductance response [SCR], or electrodermal activity)").

troubling is that it forces us to palpably recognize our participation in the nasty business of intentionally making others suffer. Measuring distress is not the principal act of harm, however. Measurement merely forces us to confront and better quantify what is always happening when a person is subjected to enhanced forms of interrogation. By way of rough analogy, consider the sport of boxing, where participants intentionally cause each other substantial suffering. There may be good arguments for banning the sport entirely. But once we permit the activity to proceed, we affirmatively ought to have an official who is trained to end a fight when a boxer's suffering becomes too dangerous or distressing.

Of course, if one believes that a particular instance of intentionally caused suffering is illegal or immoral, then one should also oppose measuring its severity when the act of measuring is a form of aiding or participating in the infliction. Many people believe that some psychologists who aided the CIA during post-9/11 interrogations should be criminally punished or at least professionally disciplined for their assistance.²²⁵ Such judgments make sense if these psychologists participated in or helped plan acts of torture. But we should not feel the same way about psychologists who attend interrogations when their participation does not aid or abet torture. So, for example, if a police department hires a psychologist to monitor its interrogations—and there is no reason to think that officers plan to use more intense interrogations as a result—the act of monitoring is less likely to be troublesome. It may even be a commendable safety precaution.

C. The Experiential Gap Between Tort Law and Criminal Law

Tort law pays much more attention to bad experiences than criminal law does. In tort law, experiences matter, both in terms of actual doctrine and our justifications of doctrine. True, it is difficult to identify physiological markers of current or past experiences, so it is not surprising that tort law often resorts to rough proxy measurements (by considering, for example, whether plaintiffs were in a zone of danger or had physical manifestations of distress). These inexact proxies for bad experiences reduce the likelihood that litigants will

²²⁵ See Leonard S. Rubenstein & Stephen N. Xenakis, *Doctors Without Morals*, N.Y. TIMES, Mar. 1, 2010, at A27 (arguing that government agencies, state licensing boards, or professional medical societies should investigate doctors and psychologists who may have participated in or authorized acts of torture of detainees at Guantanamo Bay and elsewhere); Scott Shane, 2 *U.S. Architects of Harsh Tactics in 9/11's Wake*, N.Y. TIMES, Aug. 12, 2009, at A1 (noting that two psychologists who assisted the CIA's interrogation program after the attacks on September 11, 2001, may face criminal charges).

invent or exaggerate their symptoms. But at least in tort contexts, the law purports to care about individualized measurements of harm. If a person is falsely imprisoned, he can sue for the amount of harm that *he* experienced. There is no general formula that converts objective measurements, like the number of hours falsely imprisoned and the dimensions of confinement, into amounts of compensation.²²⁶

Though we frequently fail to recognize it, experiences also matter in criminal contexts. Technologies better able to assess experience can help us decide when a crime occurred, how blameworthy the perpetrator was, and how much punishment he should receive. If we can measure the harms of false imprisonment to individual tort plaintiffs (who have incentives to lie), then we can calculate the severity of confinement experienced by particular prisoners. Moreover, we usually say that criminal defendants are entitled to *more* process than tort plaintiffs, not less. While we presumably don't want to spend the money to make such assessments of prisoners, we should stop pretending that rough subjective assessments are impossible: they just cost more than we are willing to spend.

D. Why the Experiential Future Matters Now

To sum up the current state of technology, a lot of research has suggested methods of making better inferences about subjective experience. Much of this research, however, tells us something about people in general and is not yet sufficiently powerful or reliable to use in individual cases. In order to be useful in the courtroom, we need to continue to refine and test technologies to enable us to make reasonably accurate inferences about the experiences of particular individuals, even when they have incentives to lie.

But even if many of the technologies I discuss never pan out, others that have yet to be discovered will certainly prove useful. In all likelihood, we will eventually combine a wide variety of technologies to help us make more confident assessments of subjective experience than we can with any single technology.

When we look at current research from a bird's eye view, a picture of our experiential future emerges. The picture interests us, in part, simply because we want to know what the future will be like. There are four principal reasons,

²²⁶ See Kolber, *Comparative Nature*, *supra* note 105, at 1574.

however, why our experiential future matters today, even though the most dramatic technological advances are still in the future.

First, many of the technologies discussed raise important issues about the privacy of our thoughts and experiences.²²⁷ Our privacy interests in our physical and emotional pain are not especially strong to the extent that we already require litigants to submit to invasive medical examinations in order to prove their claims.²²⁸ And in contexts where the government causes suffering, like punishment and enhanced interrogation, the invasion of privacy required to measure experiences is small relative to the invasiveness of the suffering itself.

In other contexts, however, privacy interests in our experiences may be quite substantial and controversial. For example, researchers have made progress in identifying the neural correlates of racial bias²²⁹ and sexual arousal and orientation.²³⁰ Sexually aroused pedophiles show a different pattern of brain activation than do sexually aroused nonpedophiles.²³¹ Thus, we have reason to begin thinking about the privacy protections that will apply to such technologies.

Moreover, privacy concerns can arise long before new technologies are developed. As I noted earlier, the mere possibility that we will develop accurate lie detectors in the future should change our behavior today because we might be asked about our current behavior on some distant, future occasion.²³² Precisely how such technologies should change our behavior depends, in part, on whatever future privacy protections we think we will have. So our beliefs about the privacy protections accompanying future technologies may affect our behavior even today.

²²⁷ See generally Kolber, *Pain Detection*, *supra* note 1, at 451–55.

²²⁸ FED. R. CIV. P. 35(a)–(b) (“[A] party whose mental or physical condition . . . is in controversy [may be ordered] to submit to a physical or mental examination . . . on motion for good cause . . .”).

²²⁹ See, e.g., William A. Cunningham et al., *Separable Neural Components in the Processing of Black and White Faces*, 15 PSYCHOL. SCI. 806 (2004); Elizabeth A. Phelps et al., *Performance on Indirect Measures of Race Evaluation Predicts Amygdala Activation*, 12 J. COGNITIVE NEUROSCIENCE 729 (2000); Mary E. Wheeler & Susan T. Fiske, *Controlling Racial Prejudice: Social-Cognitive Goals Affect Amygdala and Stereotype Activation*, 16 PSYCHOL. SCI. 56 (2005).

²³⁰ See, e.g., Bruce A. Arnow et al., *Brain Activation and Sexual Arousal in Healthy, Heterosexual Males*, 125 BRAIN 1014 (2002); Jorge Ponseti et al., *A Functional Endophenotype for Sexual Orientation in Humans*, 33 NEUROIMAGE 825 (2006).

²³¹ Martin Walter et al., *Pedophilia Is Linked to Reduced Activation in Hypothalamus and Lateral Prefrontal Cortex During Visual Erotic Stimulation*, 62 BIOLOGICAL PSYCHIATRY 698 (2007).

²³² See *supra* Part II.B.2.

Second, by looking toward the experiential future, we can help guide research into new technologies in ways that will benefit the legal system. For example, I noted that quite a bit of research looks at experiential differences in groups of people, but far less identifies experiential differences among individuals. Identifying individual differences is more expensive and more difficult technologically. Moreover, scientists have less incentive to develop individualized measurements than lawyers do. An ambitious neuroscientist might search for the region of the brain generally associated with some experience and then move on to another issue, rather than seek to refine the methodology and statistical power of an experiment to look for differences at the individual level that can be used in court. The legal profession can help identify applications of new technologies that would be especially beneficial.

The third principal reason our experiential future matters today is that our failure to direct the development of the experiential future may delay the development of technologies that are quite valuable from a societal perspective but are politically unpopular and unlikely to garner the interests of the research community. For example, I described how epigenetic evidence may someday give us reason to believe that a person was not a childhood victim of severe or repeated neglect or abuse.²³³ I noted that such tools may only provide evidence asymmetrically: they may tell us that an alleged perpetrator is innocent, even if they are incapable of telling us that an actual perpetrator is guilty. Such a technology could be enormously valuable to society if it reduces the risk that innocent people are erroneously sent to prison. Nevertheless, because alleged child abusers are not politically well organized, they are unlikely to lobby for funds or form large foundations that can underwrite expensive research.

Neuroscience research is particularly expensive. It costs over \$500 per hour to scan one subject in an fMRI machine.²³⁴ Since researchers depend heavily on grant money, some important but unpopular research may be underfunded. By drawing attention to possible forensic uses of new technologies, we can hope to steer the course of research in promising (but likely overlooked) directions.

Finally, and most importantly, our experiential future matters today because it illuminates how we often hide our need for better information about

²³³ See *supra* Part III.B.1.a.i.

²³⁴ See, e.g., *fMRI Lab Policies*, MICH. FMRI LAB, <http://www.umich.edu/~fmri/policies.html> (last visited Feb. 12, 2011).

experiences by using rough proxies for those experiences. For example, we determine whether a person was tortured by examining the techniques that were used on the alleged victim rather than the individualized amount of distress he experienced (or was expected to experience). Because the law developed over hundreds of years without good technologies to assess experience, objective approaches to the law predominate, in ways that are often unseen and unconsidered. By considering our experiential future, we gain a better appreciation of the importance of subjective experience to the law even today.

CONCLUSION

I have argued that, even though experiences are critically important to our lives and to our best theories of what the law should consider, in many respects, the law ignores our experiences or uses very rough proxies to take them into consideration.

Among the many claims in this Article, I have argued that, in the experiential future: (1) the tort system should develop more objective units to describe pain and other forms of suffering; (2) worker's compensation and other administrative compensation schemes should arguably consider actual amounts of pain and suffering rather than merely consulting objectively defined compensation schedules; (3) the law of deceptive advertising should at least recognize that placebo pain relief is real relief, even if there are still good policy reasons to prohibit advertising that leaves a false impression about a product's efficacy relative to a placebo; (4) claims for negligent or intentional infliction of emotional distress should rely less on doctrines that limit recoveries to the most extreme cases; (5) the criminal justice system should continue to develop new methods of assessing whether crimes occurred and the nature of the experiential harms they caused; (6) sentencing should pay greater attention to the amount that offenders suffer as a result of punishment, not only in the context of executions, but in general; and (7) policies against torture should not rely solely on banning particular categories of interrogation but should also consider the amount of experiential distress a particular interrogatee undergoes.

This list provides just a short sample of the many ways in which the legal system should change in the experiential future. While we still have to wait for practical, reliable methods of assessing the full range of human experiences, we will not have to wait long for some of these technologies, in primitive form,

to be tested in court. In the meantime, we should more carefully scrutinize those areas of the law where our best theories require us to pay more attention to subjective experience.