

Pain as Fact and Heuristic:

How Pain Neuroimaging Illuminates Moral Dimensions of Law

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Important legal distinctions turn on the presence and degree of physical pain. Statutes refer to degrees of physical pain to define criminal offenses like torture-murder,¹ while pain that rises to the level of cruelty draws the boundary between constitutionally permissible and impermissible punishment.² Claims about pain motivate legislative action to protect previously unrecognized classes, such as in several states' recent passage of statutes concerning fetal pain and fetal anesthesia during abortion.³ In legal domains ranging from tort to torture, pain and its degree do important definitional work by establishing boundaries of lawfulness and of entitlements.

For all of the work done by pain as a term in statutes, treaties, constitutions, and administrative- and common-law jurisprudence, it has had a troubling lack of externally verifiable reality.⁴ Like other subjective, affective states, pain has been invisible and, frequently, unspeakable.⁵ Though we have been able to impute pain based on experience or knowledge or by observing expressions of it in behavior, we have not been able to observe or measure it directly.⁶ For this reason, claims of great pain come with great doubt.

But now, pain rests on the cusp of visibility. That is, neuroimaging technology is in the process of making pain, anxiety, certain forms of deception, and potentially myriad other subjective states at least partly knowable and quantifiable. This article, which is part of a broader project exploring the role of pain imaging in law, argues that statutory definitions of chronic pain and judicial interpretations both of such statutes and of evidence presented by chronic-pain claimants must be updated to reflect recent discoveries that various chronic-pain syndromes constitute verifiable and distinct neurological disorders.

Assessing the impact that the neuroimaging of pain may have on diverse areas of law illuminates the point that legal issues concerning the body rarely assume the form of straightforward questions about physical facts or measurement. Though they may involve measurement, they also fundamentally implicate the normative dimension of how suffering relates to empathy and of who deserves (or does not deserve) empathy in the law. Indeed, pain discourse in law frequently is a proxy or heuristic for values and for moral or normative judgments. Attempting to solve certain normatively freighted legal problems, like what constitutes torture, or cruel and unusual punishment, through quantification would be profoundly misguided. There are serious empirical and epistemic questions as

to whether even perfect pain quantification could modify or improve ostensibly pain-related areas of legal doctrine. This is not because the technology is not “there yet” (although it is not) but more fundamentally because certain doctrinal legal issues presented as pain-measurement problems are predominantly values problems—problems about whose suffering counts and how much suffering we will tolerate to be inflicted upon or experienced by different categories of persons.

It is not accidental that pain functions as a moral status indicator; rather, this stems from the unique relationship between pain and empathy. Our conceptions of rights and duties are necessarily informed by human physicality and constrained by the limits of empathic identification. A person's moral proscription against excess pain ends when that person encounters the boundaries of empathic identification—the ability to say that a category of subjects is in some way “like us.”⁷ This helps explain why different groups can hold incompatible intuitions about whether the infliction of excess pain constitutes a wrong, separate even from the infliction of death, in such disparate and morally contentious areas as the death penalty, pre-viability abortion, and animal welfare. Pain measurement thus represents the archetypal example of how to properly understand if, when, and how to adapt the findings of brain imaging to bodies of legal doctrine. Attempts to resolve values-laden issues with neuroimaging or other forms of hedonic quantification would suffer from a measurement fallacy; this would in turn produce policy prescriptions as morally unconvincing as they would be practically infeasible.

This article proceeds in four parts. Part I describes the biology of pain and the science of pain detection, focusing on functional magnetic resonance imaging (fMRI) for the detection of acute pain. It incorporates current medical and scientific research and interviews with leading pain researchers in the United States and United Kingdom who offer their views on the potential and limits of pain detection. This part contends that, while stunning advances have occurred in neuroimaging, current and in-principle barriers to accurate pain measurement remain.

Part II presents the first of two case studies. It analyzes criminal torture-murder statutes (with related caselaw) and then analyzes state torture statutes and treaties, both of which facially speak in terms of quanta of pain. As part II will show, torture-murder and state torture function as an expressive designation for the categories of offenses that are most norma-

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Footnotes

1. See, e.g., IDAHO CODE ANN. § 18-4001 (2004).
2. See *Baze v. Rees*, 553 U.S. 35, 47-48 (2008) (plurality opinion) (summarizing caselaw stating that execution methods imposing

more pain than is required to cause death would violate the Eighth Amendment bar on cruel and unusual punishments).

3. Robert M. Cover, *Violence and the Word*, 95 YALE L.J. 1601, 1601 (1986) (footnote omitted).
4. See *id.* at 3.
5. See *id.* at 3-4.
6. See *id.* at 7.
7. Cf. ELAINE SCARRY, *THE BODY IN PAIN: THE MAKING AND UNMAKING OF THE WORLD* 3-4 (1985) (describing a person's reaction to pain as retaining inherently personal aspects).

tively transgressive. Consistent with liberal political theory, the harm, although tied to the body, primarily lies in the expression of corrupt values relative to the autonomy and personhood of the victim.

Part III presents a second set of case studies that examine the role of pain in Eighth Amendment challenges to execution by lethal injection and in recent legislation restricting late-term abortion. In these areas, advocates who oppose state execution or abortion frame their challenges to the contested practices as challenges to excess physical suffering—that the state should neither inflict nor countenance the infliction of suffering on the condemned or the unborn. However, despite their anti-pain rhetoric, important normative commitments independent of objections to physical pain animate activists who work in these areas.

Part IV draws on the insights from the case studies to develop the concept of embodied morality: the idea that facts about the body do not translate directly into legal conclusions or concepts but do inform a community's norms about what constitutes morally permissible treatment of the body. Pain's role across different areas of law thus provides a fascinating lens through which to understand legal notions of the embodied person and its normative dimensions.

I. PAIN AND PAIN IMAGING: A BRIEF INTRODUCTION

A. ACUTE PAIN: DEFINITION AND MECHANISMS

1. Definition and Basic Mechanisms of Acute Pain

Acute pain is the pain that a person experiences immediately when something goes wrong. Such pain results from the brain's translation of signals it receives from the body's contact with a noxious external stimulus, like a hot stove, or from a sudden change in the body's internal condition, like intestinal cramps. Acute pain is characterized not by its severity but by its suddenness and short duration. Although there exists a common vernacular misuse of "acute pain" to mean "very severe pain," acute pain may indeed be only minor or moderate. For example, the pain of getting a paper cut and of breaking a leg are both acute, but the former is minor while the latter is severe. Acute pain is the basic pain model and is also a highly impor-

tant survival mechanism that motivates the sufferer to get away from the harmful thing.⁸

Regardless of where pain originates in the body, the brain acts as the central processing unit for pain. The pain-detecting nerves present in the part of the body that encounters the noxious stimulus send the message to the brain through ascending or "afferent" neurons. The brain interprets the signal and then sends signals back via descending or "efferent" neurons to where the afferent signal originated. The signal from the brain back to the peripheral site can be amped up or tamped down by descending modulation. That is, the body's physiological state (including mental state) can both magnify and moderate the pain signal.⁹

Although we often think of pain as being instantaneous and "in" a particular body part, it is possible to demonstrate in a few ways that pain is actually not "in" the place that feels hurt. One classic example is the experience of pain in body parts that no longer exist: so-called phantom limb pain. That phenomenon may cause pain in a missing hand that feels exactly like pain in a physically present hand.¹⁰ Conversely, if signaling to the brain has been blocked, a noxious stimulus applied to the physically present hand will produce no pain at all.¹¹

Thus, there is no simple one-to-one relationship between harm to the peripheral site, signal strength up to the brain, efferent signal strength back down to the site, and pain perception.¹² The brain's reception and interpretation of the afferent signal is essential for the brain's detection of and response to aversive stimuli, but pain perception requires something more.¹³ The brain must receive and interpret the afferent signal and operationalize conscious awareness of the signal.¹⁴

2. The Role of Consciousness in Pain

Without consciousness, there is no pain. Consider the case of a person who is anaesthetized with general anesthesia for a surgical procedure. Anesthesia renders the person unconscious;¹⁵

"Although we often think of pain as being instantaneous and 'in' a particular body part, [sometimes] pain is actually not 'in' the place that feels hurt."

8. See *Pain Management Basics*, WEBMD, <http://www.webmd.com/pain-management/guide/pain-basics>; see also *FAQs: What Is Pain?* THE BRITISH PAIN SOC'Y, http://www.britishpainsociety.org/patient_faq.htm#q1.

9. See *FAQs: What Is Pain?* *supra* note 8; *The Autonomic Nervous System*, NAT'L DYSAUTONOMIA RES. FOUND., <http://www.ndrf.org/ans.html>.

10. See *Phantom Pain: Definition*, MAYO CLINIC, <http://www.mayo.clinic.org/diseases-conditions/phantom-pain/basics/definition/con-20023268>; see also OLIVER SACKS, *THE MAN WHO MISTOOK HIS WIFE FOR A HAT* 66–70 (1985) (recounting a patient who had damaged proprioception that caused him to lose his sense of balance).

11. This is the mechanism through which local anesthetics like bupivacaine work: by flooding the sodium channels in the nerve fibers around where it is injected, the anesthetic blocks the nerves from transmitting signals up to the brain. See STEPHEN E. ABRAM, *PAIN MEDICINE: THE REQUISITES IN ANESTHESIOLOGY* 91–93 (2006) (describing bupivacaine and other sensory-blocking

local anesthetics).

12. *Id.* at 12–13 (describing descending control in nociception and pain).

13. *Id.* at 28.

14. A conscious person may experience no pain if nerve signaling from the site of injury to the spinal cord or brain has been blocked. This is the mechanism by which local anesthetic and epidurals work. See *supra* note 21 and accompanying text; see also, e.g., C. Richard Chapman, *Pain Perception, Affective Mechanisms, and Conscious Experience*, in *PAIN: PSYCHOLOGICAL PERSPECTIVES* 59, 59–60 (Thomas Hadjistavropoulos & Kenneth D. Craig eds., 2004).

15. Contrast this with the description of a nerve block injection, see *supra* note 11, which prevents signal transmission from the nerve to the brain. General anaesthesia does not block afferent signal transmission; rather, "[t]he anesthetized brain doesn't respond to pain signals or surgical manipulations." *General Anesthesia: Definition*, MAYO CLINIC, <http://www.mayoclinic.org/tests-procedures/anesthesia/basics/definition/prc-20014786>.

“This section describes the brain regions involved in pain processes and the fMRI research correlating brain activation with subjective experience.”

however, it does not prevent the operation’s target tissues from registering noxious stimuli.¹⁶ When the surgeon cuts into the patient’s abdomen, the tissues still send messages to the brain (unless nerves also have been locally blocked)—principally to the thalamus,¹⁷ insula,¹⁸ and somatosensory cortex¹⁹—relaying information. This signal transmission, called “nociception,” meaning the detection and transmission of signals about noxious stimuli, happens even though the patient does

not feel the incision.²⁰ Nociception does not translate into pain, though, because the brain is not at that moment conscious, and thus the person remains unaware.²¹

At first, this distinction between pain and nociception might seem peculiar. The distinction becomes intuitive and familiar, however, if we shift from thinking about pain to other phenomenological states like cold, thirst, or hunger. If a patient is anaesthetized for long enough, blood-sugar levels may drop or the patient may become dehydrated; however, the patient will not feel hungry or thirsty. Operating theaters are kept cool, causing the patient’s body temperature to drop; even so, the patient will not feel cold (at least until the patient wakes up). We would not expect the unconscious patient to feel these things; all phenomenological (or experiential) states require consciousness.²² Pain perception is continuous with all other subjectively perceived body states, which can only be said to exist when they intrude upon consciousness.²³

Accordingly, the nociception/pain distinction does not differ much from the relationships between lack of sleep and fatigue, dehydration and thirst, and so forth. This fundamentally subjective, phenomenological quality of pain has generated extensive literature (and controversy) within the field of philosophy of mind.²⁴ Certainly, different people may have different experiences of pain, even in response to the same external or internal stimuli. Yet, understanding pain—or hunger or cold or thirst—for most practical purposes ought not be particularly mysterious or require unraveling the nature of consciousness.

B. ACUTE PAIN IN THE SCANNER

The brain’s processing of different noxious stimuli correlates with activation in several specific regions. Further, the degree of activation in certain parts of the brain correlates well with the intensity of pain or discomfort reported by a subject. In other words, the physiology and the phenomenology seem closely related. The main challenge is that the degree of activation and its relationship to the intensity of pain or discomfort does not correlate very well across subjects. This section describes the brain regions involved in pain processes and the fMRI research correlating brain activation with subjective experience.

1. Specific Areas of Brain Activity Correlate with Painful Stimulus

Many regions of the brain become active in research subjects who experience a painful heat stimulus.²⁵ Identified in the 1990s with PET scanning,²⁶ the major areas that display activity in response to acute pain include the anterior insula, anterior cingulate cortex (ACC), primary and secondary somatosensory cortex, and thalamus.²⁷ More recent acute-pain studies also find activation in the prefrontal cortex, supple-

16. See Robert J. Gatchel et al., *The Biopsychosocial Approach to Chronic Pain: Scientific Advances and Future Directions*, 133 PSYCHOL. BULL. 581, 582 (2007).

17. The thalamus is “the main relay site for nociceptive inputs before cortical and subcortical structures.” Petra Schweinhardt et al., *Imaging Pain in Patients: Is It Meaningful?* 19 CURRENT OPINION NEUROLOGY 392, 397 (2006).

18. See M.N. Baliki et al., *Parsing Pain Perception Between Nociceptive Representation and Magnitude Estimation*, 101 J. NEUROPHYSIOLOGY 875, 885 (2009) (describing how the insula activates sensory modalities during pain perception).

19. NATIONAL LIBRARY OF MEDICINE, *Somatosensory Cortex*, in MEDICAL SUBJECT HEADINGS, available at http://www.nlm.nih.gov/cgi/mesh/2014/MB_cgi?mode=&index=12446&field=all&HM=&II=&PA=&form=&input= (defining the somatosensory cortex as the “[a]rea of the parietal lobe concerned with receiving general sensations”).

20. Gatchel et al., *supra* note 16, at 582.

21. See *id.*

22. Similarly, though many of us have had the experience of being woken from sleep by pain, we did not feel it as pain until we awoke.

23. See *id.*; cf. Donald D. Price et al., *Integrating Experiential-Phenomenological Methods and Neuroscience to Study Neural Mechanisms of Pain and Consciousness*, 11 CONSCIOUSNESS & COGNITION 593, 597 (2002) (arguing that a subjective, “first person experiential” approach is an essential component to the study of pain).

24. See, e.g., Murat Aydede & Güven Güzeldere, *Some Foundational Problems in the Scientific Study of Pain*, 69 PHIL. SCI. S265, S266

(2002); Price et al., *supra* note 23, at 595; Jennifer Radden, *A Confusion of Pains: The Sensory and Affective Components of Pain, Suffering, and Hurt*, in FACT AND VALUE IN EMOTION 65, 66–69 (Louis C. Charland & Peter Zachar eds., 2008); Sydney Shoemaker, *The First-Person Perspective*, in THE NATURE OF CONSCIOUSNESS: PHILOSOPHICAL DEBATES 503, 503–05 (Ned Block et al. eds., 1997).

25. A heat stimulus—a heated piece of metal applied to the arm—is the most common research protocol for acute pain in the lab. A standardized heat stimulus delivered by laser is also commonly used. Use of uniform stimuli allows researchers working in different laboratories to compare their results. See, e.g., Susanna J. Bantick et al., *Imaging How Attention Modulates Pain in Humans Using Functional MRI*, 125 BRAIN 310, 312 (2002) (applying “[t]hermal noxious stimuli . . . using a thermal resistor” in measuring “experimentally induced pain”).

26. PET stands for “positron emission tomography.” For an overview of different brain imaging techniques, see generally MATT CARTER & JENNIFER SHIEH, *GUIDE TO RESEARCH TECHNIQUES IN NEUROSCIENCE* 1–23 (2010).

27. See Kenneth L. Casey et al., *Positron Emission Tomographic Analysis of Cerebral Structures Activated Specifically by Repetitive Noxious Heat Stimuli*, 71 J. NEUROPHYSIOLOGY 802, 805–06 (1994); A. May, *Neuroimaging: Visualising the Brain in Pain*, 28 NEUROLOGICAL SCI. S101, S101 (2007) (summarizing earlier PET research). Typically, activation is seen in the contralateral thalamus. U. Bingel et al., *Single Trial fMRI Reveals Significant Contralateral Bias in Responses to Laser Pain Within Thalamus and Somatosensory Cortices*, 18 NEUROIMAGE 740, 740–41 (2003).

mental motor cortex, basal ganglia, cerebellum, amygdala, hippocampus, hypothalamus, and periaqueductal gray (PAG).²⁸ This section will briefly describe the role of these various brain regions and why pain response is distributed so widely across the brain.

So many parts of the brain respond to painful stimuli because pain is a multidimensional experience: it involves sensory, motor, and affective components as well as memory and executive functions (like planning and self-control).²⁹ When a conscious person perceives pain, activity likely arises in the prefrontal cortex, thalamus, insula, anterior cingulate cortex, and brain areas correlated with sensory perception (somatosensory cortex and somatosensory association areas). The individual may reflexively or deliberately move away from the stimulus, activating brain areas involved in motor function (like the motor cortex and cerebellum).³⁰ The individual may turn to distractions in order to minimize the experience of the pain, an exercise in self-control that also would engage the prefrontal cortex.³¹ The individual will have an instantaneous, negative affective reaction to the pain, engaging the amygdala and anterior cingulate cortex, key areas of the brain involved with emotional processing.³² The individual may utilize implicit and explicit memory to identify what the pain experience is; this would involve several areas of the brain, including the hippocampus and likely also (again) the somatosensory association cortex. If the memory involves visual recollection, there will also be activity in, among other areas, the occipital lobe. Thus, the sum of processes and reactions that we call “pain” involves nearly a whole-brain experience.

2. Degree of Brain Activation Correlates with Degree of Reported Pain

Studies involving fMRI acute-pain imaging show that a person’s degree of brain activation correlates—not perfectly, but well—with self-reported degree of pain. That is, people who report more sensitivity to a painful stimulus show greater brain activity in areas of the brain associated with pain perception (and people who report less sensitivity to the stimulus show less). Therefore, brain activation at least crudely matches subjective experience.

This is a truly striking result because it suggests an answer to the centuries-long debate about whether people who respond more or less “stoically” to pain actually experience the pain differently or whether the more stoic one is simply mentally tougher in the face of the same degree of experienced pain. In laboratory subjects who report their degree of pain honestly (*i.e.*, they have incentives neither to exaggerate nor act tough), a direct relationship exists between biological response and psychological experience. This means that people who report pain differently actually experience pain differently.

3. Experimental Error

The kinds of fMRI-based pain assessments described above could produce both type-one and type-two errors—that is, false positives and false negatives. False-positive and false-negative results from fMRI pain detection could result in several ways.

First, consider the case in which activation above a significant threshold is present in areas of the brain associated with pain perception (both nociception and affective experience). This should indicate that a person is experiencing pain. However, a person may not subjectively feel pain. Predicting pain based on this scan pattern could produce type-one errors.

The second case is where activation above a significant threshold is not present in areas of the brain associated with pain perception (nociception and affective experience). This should indicate that a person is not experiencing pain. However, the subject still could subjectively be experiencing pain because of a low pain threshold (whether as a result of transient affective state or physiology or some combination of both). Predicting the absence of pain based on this scan pattern could produce both type-one and type-two errors.

The third case is where areas of the brain associated with nociception experience activation above a significant threshold but areas related to affective experience do not. This could produce either a type-one or type-two error. It could suggest any of the following: that the subject is registering nociception but not experiencing pain; the subject is registering nociception and is experiencing pain but is not highly affectively aroused; the subject is sedated, experiencing interference with affective processing of the painful stimulus; or that the areas of the brain related to affective experience are otherwise suppressed (whether through chemical means, unconsciousness, organic brain damage, or difference). On the phenomenological level, it would not be possible to determine from the scan whether the subject definitely does or does not experience pain.

The fourth case is the flipside: where activation above a significant threshold is present in areas of the brain associated with affective experience but not in the areas related to nociception. This also could produce either a type-one or type-two error. It could suggest any of the following: that the subject is not in pain; the subject is not registering significant nociception but is experiencing pain because of unusual sensitivity to pain; the subject is not registering significant nociception but is experi-

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28. See Gatchel et al., *supra* note 16, at 592–93 (citing and reviewing extensive literature).

29. See *id.* at 582.

30. See Jeanne D. Talbot et al., *Multiple Representations of Pain in Human Cerebral Cortex*, 251 *SCIENCE* 1355, 1355–56 (1991). But see Andrew K. Jones et al., *Localization of Responses to Pain in*

Human Cerebral Cortex, 255 *SCIENCE* 215, 215 (1992) (presenting Jones’s comment on Talbot’s article and Talbot’s response).

31. See Bantick et al., *supra* note 25, at 316–18.

32. See *id.* at 317 (noting how the anterior cingulate cortex provides an emotion-processing function).

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encing pain because the subject is highly affectively aroused (e.g., by fear). Thus, it would not be possible to determine with confidence from the scan whether the subject definitely is or is not experiencing pain.

In each of the above examples, the “threshold” for activation is itself absolutely critical in determining whether the subject is likely experiencing pain or not. A true resting state for the brain does not exist, as the only time when the brain

performs no activity at all is at death. Thus, researchers have to determine what degree of activity in a particular brain region counts as “significant,” a trickier and more subjective task than determining statistical significance for, say, population size in an epidemiological study or political poll. Researchers determine significance in fMRI studies by balancing signal and noise. If the software that crunches the data from the scans is programmed to be very sensitive to differences in scan signal between task one and task two, it will pick up even very faint, relative activations.³³ This may help researchers focus in on a needle in a haystack, but it will also make it look like there are needles everywhere. However, if the software is programmed to be less sensitive to differences in signal between task one and task two, then it will only pick up differences that are comparatively large; in a sense, it will find the broomstick in the haystack but might miss some needles.

C. DIRECT LEGAL UTILITY?

As summarized above, the brain does not have any single “pain spot” or pain-perceiving organ. And we know that pain varies across and within subjects and depends on internal and external context. Yet, a few affirmative generalizations can be made. First, nociception of various kinds generally will involve activation in the insula and thalamus,³⁴ although many other phenomena also involve activation of these brain regions. Second, fMRI may be useful for inferring the absence of nociception and pain. Third, fMRI may have some limited utility in supporting inferences about the presence and degree of acute pain. These proposed techniques or methods may generate type-one and type-two errors; researchers would need to do more work to establish the confidence levels in the results. Additionally, such tools may be subject to countermeasures.

1. Inferring Absence of Nociception and Pain

At this point in its development, fMRI could be used to indi-

cate the absence of nociception and acute pain. In the presence of nociception, observers can expect, at a minimum, engagement of the contralateral thalamus, insula, and somatosensory cortex. This should be true across individuals and types of noxious stimuli. Additionally, in the presence of subjectively perceived acute pain, activation would typically occur in areas related to affective processing, including the anterior cingulate cortex and amygdala. There would also be heightened activation in the prefrontal cortex as a marker of executive function.

Note that the inference of no pain follows only in the complete absence of such activation, not if merely very low coordinated activation is present. Because pain is phenomenological, the only sure way to know if a person is in pain is to ask. A person showing very low levels of activation in these target regions may still genuinely be in pain.

2. Partially Inferring Presence and Degree of Acute Pain

Inferring the presence and degree of acute pain with fMRI poses a greater challenge than demonstrating its absence. As noted above, the degree of activation correlates fairly well with degree of experienced pain. Thus, a research subject must honestly self-report experienced pain for a researcher to accurately correlate the pain to a contemporaneous scan. If a person either cannot respond (maybe he or she is in a coma or has locked-in syndrome) or has an incentive not to respond honestly, the researcher has no reliable way to infer the true pain level from the scan in the absence of a reliable self-report. Again, this result stems from the fact that people experience stimuli as “painful” at quite different thresholds and reflect the experience in different levels of brain activation.

In the best-case scenario, a researcher would take readings of an individual subject’s self-reported pain levels and brain activation over time in response to stimuli graduated from non-noxious to highly noxious. This would establish this subject’s average sensitivity to noxious stimuli. Then, the researcher could expose the subject to a stimulus, take a brain image, and estimate the subject’s phenomenological experience of pain based on a comparison with prior correlations of self-reporting and scan data. The researcher could then assign a confidence level to the phenomenological guess.

Even in this purely hypothetical best-case scenario, prediction of pain phenomenology remains dicey because individual subjects simply are not very consistent in their pain perception over time and across different internal contexts.³⁵ In testing across subjects, it might be possible to say that a particular response would fall a certain number of standard deviations away from the average subject response. The researcher could then give a probabilistic or statistical estimate of how likely the subject will experience the degree of pain reported. These

33. See ARTHUR W. TOGA & JOHN C. MAZZIOTTA, *BRAIN MAPPING: THE METHODS* 341 (2d ed. 2002) (discussing signal-to-noise ratios in fMRI scanners).

34. See *supra* notes 17–18 and accompanying text.

35. Researchers refer to this as the effect of “set and setting.” “Set” is the subject’s ingoing mindset (fearful, eager, relaxed) while “setting” is the context in which the experience takes place, including

the subject’s perceived degree of control. The same subject may receive the same amount of the same compound and have an intensely different reaction based on changes in set and setting across the two experiences. See Louis A. Faillace & Stephen Szara, *Hallucinogenic Drugs: Influence of Mental Set and Setting*, 29 *DIS-EASES NERVOUS SYS.* 124, 125–26 (1968).

numerous extrapolative steps, though, reduce the power and credibility of such tests.³⁶

II. CASE STUDY: PAIN AS HEURISTIC IN TORTURE AND TORTURE-MURDER

Part I explored the question of whether neuroimaging technologies can measure acute pain with precision and reliability on an individual level and concluded that fMRI acute-pain measurement has significant technical and in-principle limitations, as well as some power under carefully controlled experimental conditions. This part turns to the doctrinal and epistemic questions of whether, if perfect pain quantification were to exist, it would improve doctrine and practice in certain putatively pain-defined areas of law. It explores these questions through the first of two sets of case studies:³⁷ the cases of criminal torture-murder and state torture.

A. TORTURE-MURDER

The importance of pain as a signal in the law seems nowhere clearer than in the historically, deeply rooted crime of torture-murder. Torture-murder consists of a simple act requirement and a single intent requirement. For the act requirement, torture-murder must include the commission of

acts of torture resulting in death;³⁸ for the intent requirement, there must be something like the “intentional infliction of extreme and prolonged pain with the intent to cause suffering.”³⁹ Though torture-murder statutes appear to limit the offense to the infliction of pain for particular corrupt purposes only, that limitation turns out to be hollow because the statutorily proscribed purposes are often “revenge, extortion, persuasion, [punishment], or . . . any sadistic purpose.”⁴⁰

While defining “torture” relative to state actors remains highly contested,⁴¹ state legislatures and courts appear to have little difficulty defining exactly what torture is among private parties. It is the “intentional infliction of extreme and prolonged pain”⁴² or “grievous pain and suffering”⁴³ upon another. Further, courts have held that because society generally has enough common understanding of this definition of torture, torture-murder statutes provide sufficient notice of prohibited conduct and thus are not unconstitutionally vague.⁴⁴

“The importance of pain as a signal in the law seems nowhere clearer than in the deeply rooted crime of torture-murder.”

36. In presenting this work in informal talks, the suggestion has arisen several times that researchers could use fMRI to compile tables of the “average painfulness” of particular types of torture. This, proponents argue, would at least lead to transparency and enforceability in torture practices.

Three fundamental problems arise from this argument: it is unnecessary, it misses the point, and it invites more subterfuge than it eliminates. First, a sophisticated laboratory inquiry with 7-tesla magnets on a statistically significant set of subjects is not necessary to tell any mentally and morally competent person what kinds of things hurt and about how much. Second, much conduct that is physically painful but not excruciating is understood to constitute torture because of the conjunction of its painfulness and its normative meaning—for example, rape, sodomy, and sexual abuse. Third, as soon as certain conduct becomes *de jure* insufficiently painful to constitute torture, the race to exacerbate the painfulness of the permitted conduct will ignite. This would create a back door into torture—victims could be treated with every appearance of lawfulness, indeed with a presumption of lawfulness, yet suffer torture.

This is not conjecture or speculation. In 2005, the United States Department of Justice issued two interrogation memoranda that used pain-perception research in precisely this way. These recently declassified memoranda used the research of, among others, Bernd Kundermann et al., *The Effect of Sleep Deprivation on Pain*, 9 PAIN RES. & MGMT. 25, 31 (2004), available at <http://www.pulsus.com/journals/toc.jsp?sCurrPg=journal&xnjKy=7&isuy=550> (concluding that sleep deprivation leads to heightened pain sensitivity and reduced response to analgesic drugs), to recommend extended sleep deprivation—specifically for the purpose of enhancing the painfulness of otherwise-authorized interrogation techniques, including beatings and waterboarding. See *Justice Department Interrogation Memos Abuse Sleep Deprivation Research*, UNION OF CONCERNED SCIENTISTS, http://www.ucusa.org/scientific_integrity/abuses_of_science/justice-department.html (citing Justice Department memoranda to the Central Intelligence Agency, available at <http://documents.nytimes.com/justice-department-memos-on-interrogation-techniques#p=39>); Noah Schactman, *Sleep Scientists:*

Research Twisted to Justify Torture, WIRED.CO.UK, Apr. 22, 2009, <http://www.wired.co.uk/news/archive/2009-04/23/sleep-research-twisted-to-justify-torture>; Michael Scherer, *Scientists Claim CIA Misused Work on Sleep Deprivation*, TIME, Apr. 21, 2009, available at <http://content.time.com/time/nation/article/0,8599,1892897,00.html>.

37. The second set of case studies appears *infra* Part III.

38. See, e.g., CAL. PENAL CODE § 189 (West 2008) (including murder “by means of . . . torture” in the definition of first-degree murder); IDAHO CODE ANN. § 18-4001 (defining murder to include “the intentional application of torture to a human being, which results in the death of a human being”).

39. IDAHO CODE ANN. § 18-4001. In states like Idaho, the intent requirement is relaxed; an offense constitutes torture-murder not only where “intent to cause suffering” is present but also “irrespective of proof of intent to cause suffering.” *Id.* (emphasis added).

40. *People v. Cook*, 139 P.3d 492, 519 (Cal. 2006) (internal quotation marks omitted). This California standard does not include “punishment,” but many other statutes do. See, e.g., IDAHO CODE ANN. § 18-4003(a) (including “intent . . . to execute vengeance” in first-degree torture-murder). Legal dictionaries define “torture” as follows: “[t]he infliction of intense pain to the body or mind to punish, to extract a confession or information, or to obtain sadistic pleasure.” See, e.g., BLACK’S LAW DICTIONARY 1627 (9th ed. 2009).

41. See *infra* notes 66–67 and accompanying text.

42. IDAHO CODE ANN. § 18-4001. This definition of private torture has long been established in American law. See, e.g., *Territory v. Vialpando*, 42 P. 64, 65 (N.M. 1895) (defining torture as the infliction of “pain, anguish, pang[, or] . . . extreme pain”).

43. 40 AM. JUR. 2d Homicide § 41 (2008) (citing *State v. Pierce*, 488 S.E.2d 576, 588 (N.C. 1997)).

44. In *State v. Crawford*, 406 S.E.2d 579, 589 (N.C. 1991), the defendant challenged his conviction under the state’s torture-murder statute on the ground that the statute’s use of the term “torture” was vague. The North Carolina Supreme Court denied the challenge, holding that the meaning of torture as extreme or prolonged pain is more or less self-evident and “puts a reasonable person on notice of what is forbidden.” *Id.* at 590.

“One might suggest that if it were possible to quantify average pain for particular acts committed upon the body, then it might also be possible to calibrate punishment even more precisely”

A conviction on a torture-murder charge does not require intent to cause death. This is remarkable because it places torture-murder with very particular company: except for felony murder, torture-murder is the only capital crime for which the defendant need not have had any intent to kill.⁴⁵ The mere intent to inflict pain satisfies the *mens rea* requirement.⁴⁶

In states that do not have specific torture-murder statutes but that do have the death penalty, pain inflicted equal to

torture—so-called “heinous, atrocious, and cruel” (HAC) conduct upon the victim⁴⁷—can differentiate ordinary murder from capital murder. HAC factors are effectively identical to “torture” as defined under torture-murder statutes; HAC conduct is the infliction of “severe pain, agony, or anguish”⁴⁸ or the “unnecessary and wanton infliction of severe pain.”⁴⁹

Torture-murder and HAC statutes show that the state metes out additional punishment for the infliction of torture upon the victim, defined as “extreme” or “grievous pain.” These would seem, therefore, to be offenses largely defined by a quantum of pain. Published opinions in torture-murder and HAC cases dwell on the suffering of the victim’s last moments and the degree of pain and fear the victim likely felt.⁵⁰ This reinforces the apparent linkage between the extra punishment that the state inflicts on the torture- or HAC-murderer and the victim’s suffering.

One might suggest that if it were possible to quantify average pain for particular acts committed upon the body, then it might also be possible to calibrate punishment even more precisely.⁵¹ Alternatively, one might imagine a defense to a torture-murder or HAC charge that the defendant’s conduct upon the victim was not sufficiently painful to meet the standards required by these statutes.⁵²

And yet, a definition of an offense or a defense based on quantum of pain⁵³ might seem intuitively wrong even if it were empirically feasible. To illustrate this point, we might hypothesize an unconscious or insensate victim. A torture-murderer, whose sole intent is to cause pain, physically abuses the unconscious victim. The victim perceives nothing and then dies from the injuries. The offender will in all cases be liable for some category of homicide. One who subscribes to the hedonic or experiential understanding of pain-based offenses likely would argue that, because the victim did not perceive any torture, the offender does not merit any additional punishment; in hedonic terms, the torture component of such an offense is a nullity. Abuse of the unconscious victim, on the hedonic view, could equate to abuse of a dead body, a far lesser offense that obviously has no hedonic component and does not avenge hedonic wrongs.⁵⁴

The extra punishment for torture-murder of an unconscious victim (beyond the punishment for non-torture murder) shows that a concern for hedonic harms to victims does not drive the torture-murder/HAC cases. While torture-murder and HAC are indeed defined in hedonic terms, convictions for these offenses (and their affirmances) are independent of the victim’s perception. As clearly articulated by the California Supreme Court: “[A] defendant may be found guilty of murder by torture even if the victim is never aware of any pain.”⁵⁵

Numerous jurisdictions have held that a conviction for tor-

45. See, e.g., *People v. Steger*, 546 P.2d 665, 669 (Cal. 1976) (en banc).

46. Murder by torture does not require premeditation or intent to kill. Cf. *People v. Davis*, 234 Cal. Rptr. 859, 863 (Ct. App. 1987) (inferring that the jury found “willful, deliberate and premeditated killing” in the absence of a finding of torture-murder). Specific intent to kill is irrelevant when first-degree murder is perpetrated by torture. See *Crawford*, 406 S.E.2d at 587. Neither premeditation nor intent to kill is an element of first-degree murder perpetrated by torture. See *State v. Phillips*, 399 S.E.2d 293, 303 (N.C. 1991).

47. Less frequently, states use the formulation “heinous, cruel, and depraved” (HCD). See generally Richard W. Garnett, Note, *Depravity Thrice Removed: Using the “Heinous, Cruel, or Depraved” Factor to Aggravate Convictions of Nontriggermen Accomplices in Capital Cases*, 103 YALE L.J. 2471, 2497–99 (1994) (describing HCD factors and detailing the relationship between statutory cruelty and physical pain).

48. *State v. Piper*, 709 N.W.2d 783, 799 (S.D. 2006) (quoting *State v. Rhines*, 548 N.W.2d 415, 448 (S.D. 1996) (defining torture under S.D. CODIFIED LAWS § 23A-27A-1(6) (2004), as the “unnecessary and wanton infliction of severe pain, agony, or anguish” and “the intent to inflict such pain, agony or anguish”); see also *State v. Kiles*, 857 P.2d 1212, 1221 (Ariz. 1993) (en banc) (“[C]ruelty may be found when a defendant intends to inflict mental anguish or physical pain.”). Some courts require a finding of specific intent to inflict pain and suffering. See, e.g., *Bonifay v. State*, 626 So. 2d 1310, 1313 (Fla. 1993) (defining HCD factors and stating that

they are applicable only where a defendant intends extreme pain and torture); *Commonwealth v. Daniels*, 612 A.2d 395, 400 (Pa. 1992) (per curiam) (noting that the aggravating circumstance of torture requires intent to inflict pain).

49. *Piper*, 709 N.W.2d at 799. Here, “[u]nnecessary pain’ implies suffering in excess of what is required to accomplish the murder.” *Id.* (quoting *Rhines*, 548 N.W.2d at 452) (internal quotation marks omitted).

50. See, e.g., *People v. Campbell*, 239 Cal. Rptr. 214, 224 (Ct. App. 1987) (noting in a torture-murder case that the defendant left the victim “to suffer in pain”); *Evans v. State*, 800 So. 2d 182, 194 (Fla. 2001) (noting in a HAC case that the victim “suffered fear and emotional strain”).

51. See discussion *supra* Part I.C.2.

52. Cf. *People v. Cole*, 95 P.3d 811, 845 (Cal. 2004) (articulating a rule that the victim need not perceive the pain for a conviction for murder by torture to be upheld); *People v. Pensinger*, 805 P.2d 899, 910 (Cal. 1991) (en banc) (articulating a similar rule).

53. Imagine, for example, a crime that required the victim to experience one hundred units of pain. If the victim only suffered seventy-three units of provable pain before death, the defendant would enjoy immunity from conviction for the crime.

54. See, e.g., FLA. STAT. ANN. § 872.06 (West 2000) (defining abuse of a dead human body as a second-degree felony).

55. *People v. Elliot*, 122 P.3d 968, 978 (Cal. 2005) (emphasis added) (citations omitted).

ture-murder may lie where the victim has no awareness of the torture inflicted.⁵⁶ This upends the notion that what we punish in this category is the actual suffering inflicted on the victim. Yet how can actual pain be irrelevant to torture-murder, an offense statutorily defined by the infliction of “extreme” or “grievous pain” or “agony”?⁵⁷ This article posits that, in this context, “infliction of pain” is not a description of facts about the body but rather a proxy for certain values. Punishment aims at the corrupt tastes and preferences of the torture-murderer or HAC murderer, not the pain purportedly caused to the victim. A review of the reported cases supports this interpretation; in the last 25 years (1985 to present), opinions have been issued in more than 200 torture-murder cases.⁵⁸ Of those, more than half involved some kind of battery on the sexual organs of the victim.⁵⁹ Nearly half involved acts committed against children or in the presence of children.⁶⁰

Because the degree of pain experienced by the victim is largely or totally irrelevant, torture-murder doctrine and caselaw illustrate how a legal regime that appears to turn on pain experience and that is statutorily defined in terms of physical pain actually rests on the notion of pain-as-proxy-for-values. The case

of torture-murder helps show that adoption of a hedonic theory of criminal punishment would be inapposite because felt pain is not the necessary (or perhaps even the primary) object of these legal prohibitions.

B. STATE TORTURE AND PAIN MEASUREMENT

The common understanding of state-sanctioned or official torture finds close ties to pain. After reflecting upon the definition of “torture,” most people would suggest that torture equates to severe physical pain, inflicted on the victim intentionally (and not beneficially). Indeed, this sense that torture involves severe pain or the threat of severe pain to the victim or the victim’s loved ones⁶¹ is tracked by definitions drawn from dictionaries,⁶² encyclopedias,⁶³ blogs, and other repositories of cultural meaning⁶⁴ and has remained largely consistent over time.⁶⁵

“This article posits. . . ‘infliction of pain’ is not a description of facts about the body but rather a proxy for certain values.”

56. See, e.g., *id.* (establishing the “no awareness” rule in California); *Hill v. State*, 724 P.2d 734, 736 & n.4 (Nev. 1986) (implying a similar rule in Nevada by upholding the defendant’s conviction while noting that the victim was paralyzed); *Commonwealth v. Brown*, 711 A.2d 444, 448, 454 (Pa. 1998) (implying a similar rule in Pennsylvania). As discussed in Part I.A.2, an unconscious person cannot have subjective awareness of pain, as pain has no existence distinct from the awareness thereof.

57. See *supra* notes 42–43 and accompanying text.

58. An informal search of “all state and all feds (pub & unpub)” databases on Westlaw, with a date parameter starting (arbitrarily) with 1985, using the search phrase “tortur! /50 (homicide murder manslaughter) &da(aft 1/01/1985)” pulled several thousand cases from which relevant results were counted.

59. See, e.g., *Hernandez v. State*, 50 P.3d 1100, 1104–05 (Nev. 2002) (death of adult woman in rape and sexual battery with knife); *Commonwealth v. Elliott*, 700 A.2d 1243, 1247 (Pa. 1997) (death of adult woman during rape and sexual battery, involving strangulation).

60. See, e.g., *People v. Mincey*, 827 P.2d 388, 398–99 (Cal. 1992) (murder by prolonged beating of five-year-old boy); *State v. Lee*, 501 S.E.2d 334, 337–39 (N.C. 1998) (abuse of child over a one-week period resulting in death); *Hernandez*, 50 P.3d at 1104–05; *Brown*, 711 A.2d at 454 (death of a child by sexual torture where victim was possibly unconscious due to blood loss); *Commonwealth v. Edmiston*, 634 A.2d 1078, 1084 (Pa. 1993) (mutilation of a two-year-old kidnapping victim by beating, carving, and sexual abuse).

61. We might conceive of “mental suffering” and severe physical pain as equally constitutive of torture. The relationship of physical and mental pain, and whether mental “suffering” and mental “pain” are equivalent or identical concepts and experiences, deserve exploration in their own right but are beyond the scope of this article. Preliminary work suggests that many forms of acute emotional distress involve the same brain regions as acute-physical-pain experience—that the neurobiology tracks the phenomenology when we speak of “the pain of rejection” or the feeling of “broken-heartedness.” In this domain, language is wise; it contains intuitions of our embodiment. It is not my normative claim

that mental pain cannot constitute torture. Rather, this is a descriptive claim that, while torture definitions include a mental suffering or anguish prong, the suffering inherent to torture remains constructed as primarily physical.

62. 18 OXFORD ENGLISH DICTIONARY 278 (James A.H. Murray et al. eds., 2d ed. 1991) (defining torture as the “infliction of severe bodily pain, as punishment or a means of persuasion; spec. judicial torture, inflicted by a judicial or quasi-judicial authority, for the purpose of forcing an accused or suspected person to confess, or an unwilling witness to give evidence or information”).

63. See, e.g., Nigel S. Rodley, 11 ENCYCLOPEDIA BRITANNICA 861 (15th ed. 1998), available at <http://www.britannica.com/EBchecked/topic/600270/torture> (defining “torture” as “the infliction of severe physical or mental pain or suffering for a purpose, such as extracting information, coercing a confession, or inflicting punishment . . . [that is] normally committed by a public official or other person exercising comparable power and authority”); Seumas Miller, *Torture*, STAN. ENCYCLOPEDIA PHIL. (Apr. 29, 2011), <http://plato.stanford.edu/entries/torture/> (“Torture includes such practices as searing with hot irons, burning at the stake, electric shock treatment to the genitals . . . and denying food, water or sleep for days or weeks on end. All of these practices presuppose that the torturer has control over the victim’s body, e.g. the victim is strapped to a chair. Most of these practices, but not all of them, involve the infliction of extreme physical pain.”).

64. See, e.g., *The Ethics of Torture*, PHILOSOPHY TALK (Apr. 10, 2010), <http://philosophytalk.org/shows/ethics-torture-1> (pointing out the broader categorization of torture to include both physical and mental anguish); cf. David Luban, *The Fundamental Trick: Pretending That “Torture” is a Technical Term*, BALKINIZATION (Feb. 26, 2010), <http://balkin.blogspot.com/2010/02/fundamental-trick-pretending-that.html> (arguing that torture is defined by severe pain, as elaborated in David Luban, *Liberalism, Torture, and the Ticking Time Bomb*, 91 VA. L. REV. 1425, 1425–28 (2005) [hereinafter Luban, *Liberalism*]).

65. Elizabeth Hanson, *Torture and Truth in Renaissance England*, 34 REPRESENTATIONS 53, 57 (1991) (quoting Sir Thomas Smith to have defined torture as “torment . . . which is used by the order of the civill lawe and custome . . . to put a malefactor to excessive paine,

“The essential relationship between torture and pain is confirmed by sources of political meaning such as definitions of torture promulgated by major supranational organizations.”

What constitutes “severe pain”? This single question seems to have become the battleground for current debates about what constitutes torture and separates it from so-called “harsh interrogation tactics.” Quantum of pain provides the arena in which opponents fight out the questions of what constitutes torture, what constitutes the lesser but still prohibited “cruel, inhuman, and degrading” (CID) treatment,⁶⁶ and what constitutes permissible conduct.⁶⁷ In this way, “the threshold test of suffering has been used in an attempt to fly below the radar of the absolute prohibition on torture”⁶⁸ as well as to challenge practices not currently classified as torture.

Could pain quantification for interrogation tactics even be possible? In foreign prisons where torture is practiced and in the sites of extraordinary rendition to which the United States has sent high-value suspects for interrogation (“black sites”), the experiment is already underway. If interrogators or jailers already perform these functions, it should be possible to collect data on the average pain associated with each technique. There could be robust debate on what pain threshold should separate torture from CID treatment and CID from harsh practices, as well as data integrity. But there is no reason *a priori* why these theoretical and empirical problems could not also be resolved if torture could be reduced to pain experience.

Like torture-murder, however, torture points toward the normative dimensions of physical experience. It shows that, while we cannot separate ourselves from our physicality, we are not entirely reducible to it because we process our relationships with our bodies through normative constructs. Further, discourse about pain within the context of torture may hide the ball; for example, when the ostensible issue refers to severity of pain, the actual issue may be the values at stake in the treatment of detained persons. In relying on a discourse concerned with the apparently physical, we may actually suppress more contentious questions about values. In this way, pain serves as a heuristic for values and not as a description of physical facts at all.

In any case, no measurement system for pain quantification alone could ever definitively answer what torture is or is not and whether in any given context particular pain-causing actions ought to be permissible. Stances toward torture correlate with relative emphases on pain; that is, the harsher the conduct the proponent seeks to permit, the more closely the definition hews to a pain formula (and vice versa). Further, certain of the harms that flow from torture are independent of the harms to torture victims but rather cause harm to the state itself and to its relations with other states, again pointing to the irreducibility of torture as solely affecting the victims’ physical experience. This relationship between the harms of torture and the nature of the state is tied to the fundamental rejection of torture in classical liberal political theory.

1. Torture as Severe Pain

The essential relationship between torture and pain is confirmed by sources of political meaning such as definitions of torture promulgated by major supranational organizations. The United Nations Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (UN Convention Against Torture) defines torture as

[A]ny act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person.⁶⁹

This definition hinges on the infliction of severe physical pain or mental anguish. Severe pain does not suffice in itself, however; the definition also requires state action and the restriction to particular purposes. But the essential term of this definition is physical or mental pain; without it, conduct might be coercive but would not amount to torture.

Unlike the UN Convention Against Torture, the European Convention on Human Rights, though it bars torture, does not delineate what constitutes it.⁷⁰ Jurisprudence under the Convention, however, has relied upon a “severity of suffering” test.⁷¹

United States law defines torture compatibly with the UN Convention Against Torture. Section 2340 of Title 18 of the U.S. Code provides that torture is “an act committed by a person acting under the color of law specifically intended to inflict

to make him confesse him selfe, or of his fellowes or complices” and noting its absence in English law in the sixteenth and seventeenth centuries (internal quotation marks omitted)).

66. See, e.g., Yutaka Arai-Yokoi, *Grading Scale of Degradation: Identifying the Threshold of Degrading Treatment or Punishment Under Article 3*, 21 NETH. Q. HUM. RTS. 385, 415 (2003).

67. See, e.g., Ian Brownlie, *Interrogation in Depth: The Compton and Parker Reports*, 35 MOD. L. REV. 501, 501–02 (1972) (describing tactics classified in British colonies as permissible “interrogation in depth,” not torture). For a more recent example, consider the extensive public and academic debates over whether waterboarding constitutes torture; cruel, inhuman, and degrading conduct; or permissible enhanced interrogation.

68. Oren Gross, *Are Torture Warrants Warranted? Pragmatic Absolutism and Official Disobedience*, 88 MINN. L. REV. 1481, 1488 (2004).

69. United Nations Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment art. 1, Dec. 10, 1984, 1465 U.N.T.S. 113–14 (emphasis added).

70. See European Convention on Human Rights, Convention for the Protection of Human Rights and Fundamental Freedoms art. 3, Nov. 4, 1950, 213 U.N.T.S. 221, 224 (“No one shall be subjected to torture or to inhuman or degrading treatment or punishment.”).

71. Gross, *supra* note 68, at 1488 (citing Fionnuala Ní Aoláin, *The European Convention on Human Rights and Its Prohibition on Torture*, in TORTURE 213, 213–28 (Sanford Levinson ed., 2004)).

severe physical or mental pain or suffering (other than pain or suffering incidental to lawful sanctions) upon another person within his custody or physical control.”⁷²

Definitions from other conventions and those promulgated by nongovernmental organizations emphasize pain in varying degrees; like those in U.S. law, these definitions emphasize the intentionality of the infliction of physical pain and the specific purposes that cause the infliction of pain or suffering to constitute torture. Because of the intimate connection between torture and pain, and perhaps for other important reasons that will be discussed below, “[m]uch recent discussion of torture focuses on the severity of suffering involved.”⁷³

The most notorious recent example of torture defined exclusively in terms of infliction of severe pain is the much debated “Bybee Memo.” This August 2002 memorandum from Assistant Attorney General Jay S. Bybee to then-White House Counsel Alberto Gonzales expressly defines torture by the quantum of pain the victim experiences. The Memo states that to constitute torture under U.S. law,⁷⁴ “severe pain” must be inflicted on a prisoner; further, “severe pain” means pain “akin to that which accompanies serious physical injury such as death or organ failure.”⁷⁵

Although the Bybee Memo and its progeny equate torture and pain, they do so nonsensically: What is the degree of pain equivalent to organ failure or death? Death can be painless; organ failure, too, may be pain-free, as when heart failure causes a person to slip away during sleep. Conversely, excruciatingly painful torments may not result in organ failure. The Bybee Memo adopted this incoherent definition from other U.S. statutes that do not themselves define pain.⁷⁶ It has been criticized extensively for nearly every other aspect of its logic and legitimacy.⁷⁷ Indeed, not long after it became public, the Department of Justice replaced it with new guidance known as the “Levin Memo” that expressly condemned torture.⁷⁸

Yet the heart of the Bybee Memo has not been repudiated or abandoned. The notion remains that torture is best defined by the victim’s quantum of acute pain. The Levin Memo uses as

examples of torture only those practices that inflict the most extreme pain and which would have qualified under the definition of torture found in the Bybee Memo.⁷⁹

“[Some] scholars seek to define torture in terms of power rather than pain.”

2. Torture as Power Relations

While many efforts to define torture described above turn on degree of pain, there is nothing close to a consensus on which acts (or omissions) constitute torture. Taking a different approach, other scholars seek to define torture in terms of power rather than pain. John T. Parry, for example, has advanced the notion that torture is the infliction of even brief, non-severe pain if it occurs “against a background of total control and potential escalation that asserts the state’s dominance and unsettles or destroys the victim’s normative world.”⁸⁰ Similarly, David Sussman has described the true horror of torture as that which results from the “asymmetry of power, knowledge, and prerogative” between interrogator and subject, where “the victim is in a position of complete vulnerability and exposure, the torturer in one of perfect control and inscrutability.”⁸¹ These definitions capture something about the horror of torture that the purely pain-based definitions do not: that the normative dimensions of torture—the ability to psychologically destroy the victim and cause the renunciation of whatever had been held most sacred—comprise an essential component of torture.

At least one important supranational organization has adopted an approach to defining torture that is consistent with the intuitions about torture expressed in these non-pain-based definitions. The Inter-American Convention to Prevent and Punish Torture (Inter-American Convention) looks to the relational aspects of a torture situation rather than to degrees of pain.⁸² The Inter-American Convention defines torture such that any degree of pain may constitute torture provided

72. 18 U.S.C. § 2340(1) (2006) (emphasis added).

73. David Sussman, *Defining Torture*, 37 CASE W. RES. J. INT’L L. 225, 226 (2006).

74. 18 U.S.C. § 2340.

75. Memorandum from Jay S. Bybee, Assistant Attorney Gen., U.S. Dep’t of Justice, to Alberto R. Gonzales, Counsel to the President on Standards of Conduct for Interrogation Under 18 U.S.C. §§ 2340-2340A (Aug. 1, 2002), reprinted in MARK DANNER, TORTURE AND TRUTH: AMERICA, ABU GHRAIB, AND THE WAR ON TERROR 115, 155 (2004).

76. See, e.g., 8 U.S.C. § 1369(d) (2006) (noting that emergency medical conditions include those manifesting symptoms of severe pain); see also 42 U.S.C. § 1395w-22(d)(3)(B) (2006) (same); *id.* § 1395x(v)(1)(K)(ii) (same); *id.* § 1395dd(e)(1)(A) (same); *id.* § 1396b(v)(3) (same); *id.* § 1396u-2(b)(2)(C) (same).

77. Indeed, there is “a near consensus that the legal analysis in the Bybee Memo [is] bizarre.” Luban, *Liberalism*, *supra* note 64, at 1455.

78. Memorandum from Daniel Levin, Acting Assistant Attorney Gen., U.S. Dep’t of Justice, to James B. Comey, Deputy Attorney Gen. (Dec. 30, 2004). The Memo opens by stating: “Torture is abhorrent both to American law and values and to international norms.”

Id. at 1.

79. *Id.* The Levin Memo’s examples of practices that would cause proscribed degrees of severe pain included, for example, “severe beatings to the genitals, head, and other parts of the body with metal pipes . . . ; removal of teeth with pliers; . . . cutting off . . . fingers[.]” and other, similar conduct. *Id.* at 10 (citing *Mehinovic v. Vuckovic*, 198 F. Supp. 2d 1322, 1332–40, 1345–46 (N.D. Ga. 2002) and *Daliberti v. Republic of Iraq*, 146 F. Supp. 2d 19, 22–23 (D.D.C. 2001)); see also Luban, *Liberalism*, *supra* note 64, at 1456 (“Although the Levin Memo condemns torture and repudiates the Bybee Memo’s narrow definition of ‘severe pain,’ a careful reading shows that it does not broaden it substantially.”).

80. John T. Parry, *What Is Torture, Are We Doing It, and What If We Are?*, 64 U. PITT. L. REV. 237, 249 (2003).

81. Sussman, *supra* note 73, at 228. See generally David Sussman, *What’s Wrong with Torture?*, 33 PHIL. & PUB. AFF. 1, 3–5 (2005) (arguing for an account of why torture is morally reprehensible that transcends the mental and physical harms involved, focusing specially on “interrogational torture”).

82. Organization of American States, Inter-American Convention to Prevent and Punish Torture art. 2, Dec. 9, 1985, 25 I.L.M. 519.

“Volunteers who have experienced waterboarding describe the experience as not intensely, physically painful but nevertheless filled with panic and dread.”

it is inflicted for specified purposes: for “criminal investigation, as a means of intimidation, as personal punishment, as a preventive measure, as a penalty, or for any other purpose” other than those incident to lawful sanctions. This Convention illustrates the values component of torture—that physical pain may have less significance than the purpose for which dominance is being exerted and the impact on the mental state of the victim.

While these non-pain-based definitions capture a certain aspect of the issue, they do not grapple with what I would argue remains the essence of torture as an embodied experience. It cannot be the case that a mere disparity in power is sufficient to constitute torture. Asymmetries of power, knowledge, and prerogative are not only common but ubiquitous. In a world of inequalities, power dynamics between subjects are the norm, not the exception.

3. Harms of Torture Beyond Direct Harm to Victims

The liberal theoretical objection to torture offers another approach that is neither narrowly rooted in the victim’s pain nor focused on the victim’s emotional experience, focusing instead on the harms of torture to the body politic. The abhorrence of cruelty, as Judith N. Shklar has argued, only arises with liberal consciousness because physical subjugation of the individual to the *raison d’état* was presumed in earlier periods.⁸³ Norms of respect for the prisoner’s body began to emerge in European society only after the French Revolution.⁸⁴ The writings of statesmen and political philosophers active in the founding of the United States and in the political

underpinnings of the American and French revolutions also had parts to play, making evident that the primary party harmed by torture is the state practicing it. To take one of many examples, Patrick Henry spoke passionately against torture: “What has distinguished our ancestors? That they would not admit of tortures, or cruel and barbarous punishment. But Congress may . . . tell you that there is such a necessity of strengthening the arm of government, that they must . . . extort confession by torture We are then lost and undone.”⁸⁵ As David Luban argues, “torture is a microcosm, raised to the highest level of intensity, of . . . tyrannical political relationships,”⁸⁶ of the elevation of the state (*Staatsraison* or *raison d’état*) over the autonomy and dignity of the individual.⁸⁷ This puts torture in direct opposition to liberal political theory. Rather, the individual’s triumph over the state may be seen as liberalism’s core achievement.⁸⁸

4. Torture, Measurement, and Embodied Morality

Definitions of torture that focus exclusively on degree of bodily pain ultimately mislead because they suggest a measurement fallacy—the fallacy that torture is no more than a lot of pain. Waterboarding provides the paradigmatic example of the shortcomings of and subterfuges permitted by the notion of torture as specific and measurable pain. Volunteers who have experienced waterboarding describe the experience as not intensely, physically painful but nevertheless filled with panic and dread.⁸⁹ Because of the emphasis on physical pain in recent interpretative guidelines governing torture,⁹⁰ proponents of waterboarding and similar practices may argue that it categorically does not constitute torture because it simply does not hurt enough.

Conversely, definitions of torture that abjure a connection to the body’s suffering are overinclusive and fail to account for the status of the body in relation to moral theory and political theory. Thus, both torture and torture-murder show how legal categories defined by pain cannot be reduced to facts about the body yet remain rooted in it through embodied morality.

83. JUDITH N. SHKLAR, *ORDINARY VICES* 43 (1984); see Luban, *Liberalism*, *supra* note 64, at 1429.

84. JAMES Q. WHITMAN, *HARSH JUSTICE: CRIMINAL PUNISHMENT AND THE WIDENING DIVIDE BETWEEN AMERICA AND EUROPE* 9–10 (2003); see also Heikki Pihlajamäki, *The Painful Question: The Fate of Judicial Torture in Early Modern Sweden*, 25 *LAW & HIST. REV.* 557, 582 (2007) (“[T]he idea of respectful treatment of the prisoner only ar[ose] in Europe after the French Revolution.” (footnote omitted)).

85. *THE DEBATES IN THE SEVERAL STATE CONVENTIONS ON THE ADOPTION OF THE FEDERAL CONSTITUTION, AS RECOMMENDED BY THE GENERAL CONVENTION AT PHILADELPHIA, IN 1787*, at 447–48 (Jonathan Elliot ed., 2d ed. 1891 prt.g.).

86. Luban, *Liberalism*, *supra* note 64, at 1430.

87. Pihlajamäki, *supra* note 84, at 558 (citing MATHIAS SCHMOECKEL, *HUMANITÄT UND STAATSRATION: DIE ABSCHAFFUNG DER FOLTER IN EUROPA UND DIE ENTWICKLUNG DES GEMEINEN STRAFPROZESS- UND BEWEISRECHTS SEIT DEM HOHEN MITTELALTER* 359, 536, 591 (2000)).

88. See Gerald Gaus & Shane D. Courtland, *Liberalism*, *STAN. ENCYCLOPEDIA OF PHIL.* (Sept. 16, 2010), <http://plato.stanford.edu/entries/liberalism/#PreFavLib> (“The a priori assumption is in

favour of freedom This might be called the Fundamental Liberal Principle: freedom is normatively basic, and so the onus of justification is on those who would limit freedom, especially through coercive means. It follows from this that political authority and law must be justified, as they limit the liberty of citizens.” (citations omitted) (internal quotation marks omitted)); see also JOHN LOCKE, *TWO TREATISES ON GOVERNMENT* § 119, at 291 (1821) (“Every man being . . . naturally free, and nothing being able to put him into subjection to any earthly power, but only his own consent. . . .”); JOHN STUART MILL, *ON LIBERTY* 21–22 (London, Longman, Roberts & Green 2d ed. 1859), *available at* <http://www.bartleby.com/130/index.html> (advocating the limitation of society’s authority over individuals).

89. Memorandum for John A. Rizzo, Senior Deputy General Counsel, Central Intelligence Agency re: Application of 18 U.S.C. §§ 2340-2340A to Certain Techniques That May Be Used in the Interrogation of a High Value al Qaeda Detainee (May 10, 2005), *reprinted in* *THE TORTURE MEMOS: RATIONALIZING THE UNTHINKABLE* 152, 191–96 (David Cole ed., 2009).

90. See sources cited *supra* notes 78–79.

III. CASE STUDY: ACUTE PAIN IN DEATH PENALTY AND ABORTION LAWMAKING

Two highly contentious, current legal controversies appear to be framed exclusively in terms of quanta of pain: Eighth Amendment challenges to the death penalty and limitations on abortion based upon fetal pain. In Eighth Amendment challenges to the death penalty, the battlefield has moved from the constitutionality of execution to the question of whether lethal injection is unconstitutionally painful. In abortion legislation and jurisprudence, the pressing contemporary question has transformed from the constitutionality of access to the procedure to whether the procedure may be limited on the ground that fetuses experience pain. In these areas, the major public claims have shifted from arguments for outright abolition to arguments for pain-limiting restrictions. That is, opponents of these practices argue for their severe curtailment based on the unwarranted degree of pain they cause while supporters either assert that current practices are sufficiently humane or not painful.

These two controversies, at first glance, appear to represent classic instances where empirical information about degree of pain would be dispositive. Yet the terms of the debates themselves show that the appeal to pain is substantially strategic. Guaranteeing complete painlessness in administering abortions and the death penalty would not resolve the abovementioned problems; the abolition debate would simply shift to yet another area. This is not to say that real pain does not count, or that limiting suffering is not in itself a worthy goal; rather, these discourses do not view the limiting of suffering as the primary issue.

A. PAIN-BASED CHALLENGES TO THE DEATH PENALTY

Since 2006, all major anti-death-penalty litigation has focused on Eighth Amendment challenges to the painfulness of lethal injection.⁹¹ Prior to 2006, the Supreme Court had rejected method-of-execution challenges to lethal injection.⁹² Then, in *Hill v. McDonough*, the Court held that petitioners could employ 42 U.S.C. § 1983 to challenge the method of their scheduled lethal injections as a violation of their civil rights.⁹³

The usual claim raised under § 1983 is the following: The most common lethal injection protocol, which involves three

drugs being injected in sequence, sometimes fails. If the drug that induces unconsciousness is not administered successfully, the condemned remains conscious during injection of the final drugs.⁹⁴ Without adequate anesthesia, one such drug, potassium chloride, causes “excruciating pain”⁹⁵ as it “inflames . . . the sensory nerve fibers, literally burning up the veins as it travels to the heart.”⁹⁶ The third drug, pancuronium bromide, is believed to be no less painful.⁹⁷

Post-*Hill* Eighth Amendment challenges to the painfulness of lethal injection have necessarily styled themselves as method-of-execution cases. Yet, they effectively use the claim of pain to challenge the practice of execution itself. This is clearest in *Baze v. Rees*, in which the Supreme Court both clarified and confounded the state of pain-based challenges to lethal injection.⁹⁸ In *Baze*, two Kentucky death-row inmates challenged the state’s lethal injection protocol as unconstitutional because it had the potential to cause a cruel or unusual level of pain.⁹⁹

This surely looked like a purely pain-based challenge in which success on the merits would have done nothing for the petitioners but tweak the execution protocol to which they were entitled. But the petitioners (or their attorneys) had a clever play: they asserted that only physician monitoring would assure an execution sufficiently pain-free to satisfy constitutional standards.¹⁰⁰ However, physicians in Kentucky may not legally assist in any capacity with executions. Since doctors cannot participate in executions, a decision requiring physician monitoring of pain would have the underlying effect of halting executions.¹⁰¹

The Court did not bite. The Court very narrowly held that Kentucky’s execution protocol did not require medical monitoring while reserving judgment as to the constitutionality of

“Two highly contentious, current legal controversies appear to be framed exclusively in terms of quanta of pain: Eighth Amendment challenges to the death penalty and limitations on abortion based upon fetal pain.”

91. See generally Note, *A New Test for Evaluating Eighth Amendment Challenges to Lethal Injections*, 120 HARV. L. REV. 1301, 1301, 1304–06 (2007) (noting that “[a]n explosion of Eighth Amendment challenges to lethal injection protocols has struck the federal courts” and describing such litigation).

92. *Id.* at 1304 (citing *Morales v. Hickman*, 415 F. Supp. 2d 1037, 1043 (N.D. Cal.), *aff’d per curiam*, 438 F.3d 926 (9th Cir. 2006)) (collecting cases).

93. 547 U.S. 573 (2006); see also Douglas A. Berman, *Finding Bickel Gold in a Hill of Beans*, 2005–2006 CATO SUP. CT. REV. 311, 318 (“[T]he Court’s work in *Hill* had a profound nationwide ripple effect on lethal injection litigation and on state efforts to carry out scheduled executions.”). Section 1983 permits a petitioner to challenge the circumstances of a lawfully imposed sentence; thus it is more limited than a habeas claim, which challenges the law-

fulness of the sentence itself. See *Hill*, 547 U.S. at 579.

94. See HUMAN RIGHTS WATCH, *SO LONG AS THEY DIE: LETHAL INJECTIONS IN THE UNITED STATES 21* (2006), available at <http://hrw.org/reports/2006/us0406/us0406web.pdf>.

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

96. HUMAN RIGHTS WATCH, *supra* note 94, at 22.

97. See *AbdurRahman v. Bredesen*, 181 S.W.3d 292, 300, 309, 312–13 (Tenn. 2005) (declining to apply a state animal euthanasia statute to humans but noting the potential painfulness of the challenged substance).

98. 553 U.S. 35, 41, 49–50 (2008).

99. See *id.* at 41.

100. See *id.* at 59.

101. See *id.*

“As death-penalty litigation has evolved toward challenges to the practice’s painfulness, so too has the controversy around another great lightning rod in American politics—abortion.”

the risk and amount of pain incident to the execution protocol of any other state.¹⁰²

Baze shows how pain stands in as a proxy for the larger values and commitments at stake. In bringing a challenge to the degree of painfulness of Kentucky’s execution protocol, the litigants meant to do no less than halt the practice of execution in Kentucky. In deciding *Baze* so narrowly, the Court effectively left the door open not only for future method-of-execution cases but for challenges to the practice of execution itself (regardless of whether intent can be imputed to a fractured court).

At the same time, there is no doubt that the facts of bodily pain also played a non-incident role in *Baze*. At one extreme, if Kentucky’s execution method were demonstrably painless, the litigants could not have styled the case as a pain-based Eighth Amendment challenge. At the other extreme, if the Kentucky execution protocol involved gratuitous pain, no justice could have affirmed it because settled precedent would deem it unconstitutional.¹⁰³

Pain thus played a real role in this question, if only at the extremes. But everything in between these extremes involves clearly normative judgments as to the level of pain a state or a society finds tolerable in the specific context of the death penalty. And it is in this unquantifiable, normative ground that ideological differences between members of the Court emerge. On the one hand, if the punishment of execution equates to the taking of life, execution should be actually painless—anything

else is gratuitous, additional punishment. Justices espousing this view, unsurprisingly, have espoused anti-death-penalty views and have proven instrumental in limiting the application of the death penalty to special populations like juveniles and the intellectually disabled.¹⁰⁴ On the other hand, justices who view pain incident to death as an acceptable part of execution do not find themselves ideologically opposed to the death penalty.¹⁰⁵ The “pain tolerance,” as it were, of justices on both sides of the issue is a reflection of and a proxy for their values.

B. FETAL PAIN AS ABORTION CHALLENGE

As death-penalty litigation has evolved toward challenges to the practice’s painfulness, so too has the controversy around another great lightning rod in American politics—abortion. The strategy of focusing on fetal pain allows the debate to shift away from the endless and irresolvable controversy over personhood. Instead, it permits anti-abortion advocates to propose, along with Bentham, that “[t]he question is not Can they reason?, nor, Can they talk?, but Can they suffer?”¹⁰⁶ In addition to Bentham’s moral question, the disgust factor related to thinking about fetal pain also plays a role, a factor that may be more viscerally effective than the philosophical and rhetorical strategies related to personhood.

The tactic of focusing on pain has had considerable success. In 2010, Nebraska passed the Abortion Pain Prevention Act, which bans abortions of any fetus deemed “pain capable.”¹⁰⁷ The statute establishes a bright-line rule (subject to the typical exceptions)¹⁰⁸ that no abortion may be performed at or after the 20th week of gestation on the ground that such fetuses can experience pain.¹⁰⁹ Arkansas, Georgia, Illinois, Minnesota, and Oklahoma passed inform-and-consent, fetal pain abortion legislation.¹¹⁰ A proposed federal inform-and-consent statute, the Unborn Child Pain Awareness Act, also known as the “Abortion Pain Bill,” nearly passed the House of Representatives in 2006.¹¹¹

102. *Baze*, 553 U.S. at 61-63.

103. See *Gregg v. Georgia*, 428 U.S. 153, 183 (1976) (plurality opinion) (noting that a criminal sanction may not impose “gratuitous infliction of suffering” unrelated to “penological justification”); see also *In re Kemmler*, 136 U.S. 436, 447 (1890) (“Punishments are cruel when they involve torture or a lingering death . . . It implies there [sic] something inhuman and barbarous, something more than the mere extinguishment of life.”).

104. See, e.g., *Roper v. Simmons*, 543 U.S. 551, 575 (2005) (holding that the death penalty is unconstitutional for juvenile offenders); *Atkins v. Virginia*, 536 U.S. 304, 321 (2002) (same with respect to mentally retarded defendants).

105. See, e.g., *Louisiana ex rel. Francis v. Resweber*, 329 U.S. 459, 464 (1947) (permitting a second attempt to execute by electrocution).

106. Katherine E. Engelman, Note, *Fetal Pain Legislation: Protection Against Pain Is Not an Undue Burden*, 10 QUINNIPIAC HEALTH L.J. 279, 279 (2007) (quoting JEREMY BENTHAM, AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION (Dover Publ’ns 2007) (1789)) (internal quotation marks omitted) (analogizing between Bentham’s animal-welfare argument and positions adopted by those who understand abortion at least partially in terms of a fetus as a rights-bearing entity with a right to be free of pain).

107. The relevant part of this legislation is known as the Pain-Capable Unborn Child Protection Act, 2010 Neb. Laws 874.

108. The statute makes an exception where the abortion is necessary to avert the death or “serious risk of substantial and irreversible physical impairment of a major bodily function” of the mother or to save the life of the unborn child. See *id.* at 875.

109. See *id.*

110. See ARK. CODE ANN. §§ 20-16-1101 to -1111 (2005); GA. CODE ANN. § 31-9A-3(2)(D) (West 2009) (“The physician . . . shall orally inform the female that materials have been provided by the State of Georgia . . . [that] contain information on fetal pain.”); 720 ILL. COMP. STAT. 510/6(6) (2005) (requiring physician to inform pregnant woman of the availability of an anesthetic to “alleviate organic pain to the fetus”); MINN. STAT. ANN. § 145.4242(a)(1)(iv) (West 2011) (requiring that the female be told “whether or not an anesthetic or analgesic would eliminate or alleviate organic pain to the unborn child”); OKLA. STAT. ANN. tit. 63, §§ 1-738.6 to -17 (West 2011) (requiring physician to inform female of state-provided materials containing “information on pain and the unborn child”).

111. H.R. 6099, 109th Cong. (2006); see also H.R. 6099: Unborn Child Pain Awareness Act of 2006, GOVTRACK.US, <http://www.govtrack.us/congress/bill.xpd?bill=h109-6099>.

The Abortion Pain Bill had a similar rationale to those of the state inform-and-consent statutes currently in force, made evident from its requirement that abortion providers make accessible to pregnant women a brochure stating the following:

There is substantial evidence that the process of being killed in an abortion will cause the unborn child pain, even though you receive a pain-reducing drug or drugs. Under [this Act], you have a right to know that there is evidence that the process of being killed in an abortion will cause your unborn child pain.¹¹²

As the language above indicates, repugnance to abortion—not fetal pain itself—is the driving force behind these statutes. These statutes can be understood as symbolic in several ways. First, they do not curtail any significant abortion practice, applying to 1% or less of abortions.¹¹³ Second, they do not conform to the best objective, current science on fetal pain.

The American Medical Association suggests that fetuses cannot experience pain until at least 29 weeks,¹¹⁴ while the British Royal College of Obstetricians and Gynaecologists concludes that fetuses cannot feel pain up until birth because “the fetus never experiences a state of true wakefulness in utero and is kept . . . in a continuous, sleep-like unconsciousness or sedation.”¹¹⁵ Other researchers conclude that fetuses prior to 24 weeks may, like a person in a coma, experience nociception without experiencing pain.¹¹⁶ The 24-week threshold holds significance for another reason: by 24 weeks, the fetus is viable.

In this arena, judgments about the presence and degree of pain align well with moral precommitments. The moral substrate of this discourse makes it highly improbable that any degree of scientific knowledge about fetal pain would materially change basic positions on abortion. For those to whom abortion equals the unjustified taking of human life, knowledge of the presence or absence of fetal pain would not alter their view of its wrongfulness. For those to whom abortion does not constitute the taking of a human life, knowledge of the presence or absence of fetal pain might at the margin change views about abortion timing or protocols but would not alter their central belief that the rights of the individual

trump those of the merely incipient individual. Again, the role of pain in the abortion debate seems best explained by ideologies and moral commitments.

CONCLUSION

The development of neurotechnologies prompts us to reexamine the role that the body, including the brain and brain state, plays within the law. Without opportunities to measure and ascertain brain states like pain, legal discourse about pain can function as both a heuristic and as a set of facts about the body, shifting back and forth between both. When neurotechnology promises the ability to measure pain, it requires us to ask the question of what, precisely, measurement will solve. This forces us to untangle the heuristic nature of pain discourse from its physical, factual bases. Thus, pain neuroimaging not only provides a possible tool for measuring pain but also for separating which types of legal discourse about pain are principally heuristic or principally factual.

This set of technologies will or should lead to a more explicit realization of how culture, as mediated through legal culture, engages in and produces embodied normativity. How we experience the body is shaped by norms; reciprocally, our norms about the body are shaped by physical experience itself. In turn, physical experience provides grounding for defining what constitutes moral or immoral treatment of the bodies of others and what conduct toward the bodies of others valorizes or corrupts our values.

A sense of the normative relationship to the body leads to moral judgments about what is or is not morally permissible conduct. Pain occupies a unique position in this regard ontologically and epistemologically. There is an ontological pri-

“[P]ain neuroimaging not only provides a tool for measuring pain but also for separating which types of legal discourse about pain are principally heuristic or principally factual.”

112. H.R. 6099, § 2902(c)(1)(B). On December 6, 2006, the bill failed in the House of Representatives by roll-call vote, which required a two-thirds majority for the bill to pass. The bill received a 58% majority, failing to pass by 35 votes. There were 250 votes in favor; 162 opposed; 20 voting “present” only. H.R. 6099: Unborn Child Pain Awareness Act of 2006, GOVTRACK.US, <http://www.govtrack.us/congress/bill.xpd?bill=h109-6099> (under “Bill Overview,” click on “view all 1 votes on this bill”). This bill was subsequently reintroduced in the Senate in 2007 and 2011 as the Unborn Child Pain Awareness Act, where it has remained in committee. S. 314, 112th Cong. (2011); S. 356, 110th Cong. (2007).

113. The inform-and-consent statutes and Nebraska’s ban (entitled the Pain-Capable Unborn Child Act) apply only to abortions performed at or after the 20th week of gestation. Such late-term procedures account for just over 1% of all abortions in the United States. See *Facts on Induced Abortion in the United States*, GUTTMACHER INST. (Aug. 2011), <http://www.guttmacher.org/>

pubs/fb_induced_abortion.html. About 90% of abortions in the United States take place at or prior to 12 weeks’ gestation. See *id.*

114. See Susan J. Lee et al., *Fetal Pain: A Systematic Multidisciplinary Review of the Evidence*, 294 JAMA 947, 947 (2005). Behavioral studies have shown that neonatal facial movements in response to invasive procedures at 28 to 30 weeks mimic those of adults experiencing pain. See *id.* at 950. Premature infants born at 28 weeks or earlier may also feel pain. See ROYAL COLL. OF OBSTETRICIANS & GYNAECOLOGISTS, FETAL AWARENESS: REVIEW OF RESEARCH AND RECOMMENDATIONS FOR PRACTICE 9, 23 (2010), available at <http://www.rcog.org.uk/files/rcog-corp/RCOGFetalAwareness-WPR0610.pdf> [hereinafter RCOG Report]. Hormonal, environmental, and neurological changes brought about by birth account for these differences between pain perception in an in-utero fetus and one born at the same gestational age. See *id.* at 10.

115. RCOG Report, *supra* note 114, at viii.

116. See Lee et al., *supra* note 114; RCOG Report, *supra* note 114. See generally sources cited *supra* notes 113-114.

macy to pain because it is through the suffering of the self that we understand the wrongfulness of causing gratuitous suffering to others; some of this is direct, empathic, and likely physiological. In a sense, such reasoning is grounded in the body's physicality. And yet, it is also grounded in the body's status within the nomos, which is informed by—but not coextensive with—physiological experience. The experience of the body, both of self and “other,” is also contingent. Sociohistorical context defines which “others” are seen as sufficiently like the self such that their pain experience is credited as real; once categorized, they are deemed deserving of protection from pain. Since such questions as “who can suffer?” and “whose suffering counts?” define the membership of the community of empathic inclusion, they also define what degree of treatment toward particular legal subjects (whether humans, human fetuses, animals, conscious machines, and others yet to be named) is permissible.

Though primarily normative determinations about status, these questions also involve factual determinations of bodily capacities and of the subject's relationship (if any) to its embodiment. In these ways, the question of pain neuroimaging shows that there must always be significant translational work in moving from neuroimaging technologies to their legal uses and implications. Questions in law about or involving the body (perhaps particularly questions about the brain) are rarely pure questions of fact or value. Rather, we must understand the heuristic and normative role of the law's body-language—of

the embodied morality implicit within the law—to properly understand if, when, and how to adapt the findings of brain imaging to bodies of legal doctrine. Knowledge of what causes the body to suffer informs what a society views as moral or immoral treatment of the person; nevertheless, simple measurement can never resolve fundamental questions about just treatment.



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